ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	Royal Boon Edam International B.V.
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-BEN-20250216-IBA1-EN
Issue date	26.08.2025
Valid to	25.08.2030

Tourniket

Boon Edam

Institut Bauen und Umwelt e.V.

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BOON EDAM
YOUR ENTRY EXPERTS.

1. General Information

Boon Edam

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-BEN-20250216-IBA1-EN

This declaration is based on the product category rules:

Automatic doors, automatic gates, and revolving door systems, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

26.08.2025

Valid to

25.08.2030

Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

Tourniket

Owner of the declaration

Royal Boon Edam International B.V.
Ambachtstraat 4
1135GG Edam
Netherlands

Declared product / declared unit

The declaration represents one automatic revolving door, consisting of three (3) door leaves and with a diameter of 3000 mm and a height of 2400 mm.

Scope:

Raw materials and components are provided by suppliers from around the globe and shipped to Boon Edam, where the product is manufactured and assembled before being shipped and installed on a construction site in Europe.
The energy use on-site and maintenance during the 20 years of use are both taken into account.
The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025:2011
☐ internally ☒ externally

Mrs Kim Allbury,
(Independent verifier)

2. Product

2.1 Product description/Product definition

The Tourniket is Boon Edam's most versatile entry solution. Available in virtually every colour or finish, with three or four door wings, manual or automatic operation, and with a variety of door set options, it is the ultimate solution for many different types of buildings.
For the product studied in this document, the following options were selected:

- Diameter of 3000 mm and height under canopy of 2400mm,
- 3 collapsible door leaves,
- Windows curved walls,
- Automated drive positioned in the canopy (hence a higher canopy),
- Motion detector control and idle speed control,
- Night locking, including monitoring,
- Lighting, with 4 LEDs.

For the placing on the market in the EU/EFTA (with the exception of Switzerland) the following legal provisions apply:

- *2006/42/EC*
- *EMC directive 2014/30/EU*
- *EN 16005*
- *EN 60335*
- *EN ISO 13849*
- *EN 61000*

The CE-marking takes into account the proof of conformity with the respective harmonised norms based on the legal provisions above.
For the application and use the respective national provisions apply.

2.2 Application

Tournikets are intended to be used in commercial buildings, in particular in:

- Airports
- Retail
- Banks
- Corporate Headquarters
- Governmental buildings
- Healthcare
- Hotels & Restaurants

2.3 Technical Data

Constructional data

Name	Value	Unit
Heat transfer coefficient of the entire door or gate system. Acc. to EN 16361	4.4	W/(m^{2}K)
joint permeability coefficient acc. to EN 1026	19.8	m^3/mh
Airborne sound reduction acc. to EN ISO 10140-2	32	dB
Power input "Standby"	75	W
Power input "Operation"	150	W

Performance data of the product according to the harmonised norms, based on the harmonisation provisions.

2.4 Delivery status

The Tourniket modelled for this study is delivered ready for installation with a wooden packaging, with a total weight of 1300kg.
It presents the following dimensions:

- External diameter: 3077 mm
- Internal diameter: 3000 mm
- Height: 2800 mm
- Height under canopy: 2400 mm

2.5 Base materials/Ancillary materials

Base materials

Name	Value	Unit
Aluminium 32% of the total	400	kg
Steel 5% of the total	65	kg
Wood 6% of the total	75	kg
Glass 48% of the total	600	kg
Fasteners 1% of the total	10	kg
Electronic components 2% of the total	25	kg
Drive components 2% of the total	30	kg
Elastomers 2% of the total	25	kg
Other plastics 1% of the total	10	kg

Royal Boon Edam International B.V. use substances on their own or in a preparation within its industrial or commercial activities, and is therefore a downstream user as defined in Article 3 No. 13 of *Regulation (EC) No. 1907/2006 (so-called REACh regulation)*. As a downstream user, Boon Edam has already requested that all suppliers provide confirmation regarding the correct implementation of *REACh*, and that our products do not contain SVHCs with a concentration greater than 0.1 percent by weight, as for the list published on the 7th of July 2017. Thus, the following declarations hold true for a Tourniket:

1. Contains substances on the candidate list of SVHC (date:25.01.2021) exceeding 0.1 percentage by mass in at least one partial product: **No**
2. Contains other carcinogenic, mutagenic, reprotoxic (CMR) substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass in at least one partial product : **No**
3. 'Biocide products were added to this construction product or it has been treated with biocide products(this then concerns a treated product as defined by the (EU) *Ordinance on Biocide Products No. 528/2012*): **No**

2.6 Manufacture

All materials are shipped from suppliers to Boon Edam Manufacturing EMEA site in Edam, The Netherlands.
Depending on the product, steel and aluminium profiles are cut to shape and size on site, and are assembled with the rest of the materials by Boon Edam.
The manufacturing site in Edam is *ISO 9001* certified.

2.7 Environment and health during manufacturing

Standard cutting and coating machinery are used on-site.
Safety measures are implemented on-site and employees are required to wear personal protective equipment.
Boon Edam's Manufacturing EMEA site in Edam, Netherlands, has set up several take-back schemes, with customers in the Netherlands and with suppliers. Metal cuttings from production (steel and aluminium alloys) are collected and sent back to suppliers to be reprocessed.
The site is *ISO 14001* certified.

2.8 Product processing/Installation

Boon Edam's installation teams in Europe are following a strict safety process to define, together with the clients, safe access and working conditions during the installation. A list of personal protective equipment to be worn for each different task is defined as part of this process.

2.9 Packaging

Packaging materials should be discarded according to the regulations in place in the country of installation, and can be recycled or incinerated (for energy recovery) once the product is installed.
The following materials are used for packaging:

- Wood - 115 kg
- Cardboard - 2 kg
- LDPE sheet - 1 kg
- Paper - 0.22 kg

2.10 Condition of use

Maintenance instructions are provided by Boon Edam and will ensure efficient operations of the product. Annual maintenance checks are advised, and should be carried out by Boon Edam or an approved agent.
The materials used in the composition of Boon Edam products are very stable, and their composition is not expected to change in the time frame of use of the product, provided the advised maintenance procedures are respected.

2.11 Environment and health during use

The products manufactured by Boon Edam do not release any fluid, fumes, or chemical substances if used in accordance with the specifications provided, and if proper maintenance checks are performed regularly.
Automatic doors and gates are fitted with safety sensors and actuators that will prevent any physical damage in case of malfunction or improper use.

2.12 Reference service life

To calculate the indicators for potential impact during the use stage of a Tourniket, a service life of 20 years has been selected, as suggested in the 'Nutzungsdauern von Bauteilen' (Service Lives of Components) from the *BBSR*
Provided that proper maintenance procedures are followed, the characteristics of the installed product will remain stable over the years and will not suffer from ageing of materials or components.

NB: A service life in accordance with the *BBSR* table is not a RSL according to *ISO 15686*.
Description of the influences on the ageing of the product when applied in accordance with the rules of technology.

2.13 Extraordinary effects

Fire

Information on the fire performance according to *EN 13501:1* or established national standards. According to *EN 13501:1*:

- The classes of building products regarding their fire performance are predefined as: A1, A2, B, C, D, E, and F;
- The classes of flaming droplets/particles are pre-defined as: d0, d1, or d2;
- The classes for smoke density are pre-defined as: s1, s2, or s3

Fire protection

Name	Value
Building material class	Class D
Burning droplets	Class d0
Smoke gas development	Class s1

Water

Automatic doors contain electric and electronic equipment that may malfunction in the event of contact with water. Please refer to instructions regarding maintenance and cleaning.
No impact on the environment will occur in case of such malfunction.

Mechanical destruction

Mechanical destruction will never result from a malfunction of the door or gate itself.
In case mechanical destruction is caused by an external event, no environmental damage will be caused.
A damaged door or gate will need to be deconstructed with care and replaced.

2.14 Re-use phase

At the end-of-life, Boon Edam Netherlands and several Boon Edam entities in other European countries, offer a take back scheme. Products that reached their end-of-life can be dismantled by Boon Edam, and transported to local recycling or to the waste separation facility of Boon Edam in Edam.
Parts obtained from dismantled doors are not reused, for quality and safety reasons, but materials are separated and prepared for recycling.

2.15 Disposal

Waste materials are produced at the end-of-life of the product. They are listed below according to the *European List of Waste 2014/955/EU*.

16 02 Wastes from electrical and electronic equipment
17 02 01 Wood
17 02 02 Glass
17 02 03 Plastic
17 04 02 Aluminium
17 04 05 Iron and steel
17 04 11 Cables (with no hazardous substances)

Products that reached their end-of-life can be dismantled by Boon Edam on location and transported to local recycling or to the waste separation facility of Boon Edam in Edam.

2.16 Further information

See contact details

3. LCA: Calculation rules

3.1 Declared Unit

The declaration represents one automatic revolving door, consisting of three (3) door leaves and with a diameter of 3000 mm and a height of 2400 mm.
The declaration and background LCA report represent an automatic revolving door Boon Edam Tourniket, type TQ.
Raw materials and components are provided by suppliers from around the globe and shipped to Boon Edam, where the doors are manufactured and assembled before being shipped and installed on a construction site in Europe.
The energy use on site and maintenance during the 20 years of use are taken into account.

Declared unit and mass reference

Name	Value	Unit
Weight of materials and coatings	1358.22	kg/pce
Mass reference of the entire system	1358.22	kg/pce
Declared unit	1	pce.

Tourniket are produced at a single production plant in Edam, the Netherlands. No significant changes were made to the product or production process in the time between the data collection and the publishing of the EPD. As such, this EPD is

expected to be representative for all Tourniket with similar specifications.

3.2 System boundary

Type of EPD: cradle-to-grave.
The following modules were considered in this analysis:

Product stage

- Raw material supply (A1): Production of raw and semi-finished materials throughout the supply chain.
- Transport from the suppliers to the factory (A2)
- Manufacturing (A3): Cutting profiles to size and assembly, Lighting and heating of the shopfloor. Considered as energy input and waste output.

Construction stage

- Transport to the building site (A4)
- Installation, including packaging disposal (A5)

Use stage

- Maintenance (B2): Replacement of wear parts, such as steel guides, rubber joints... Replacement of electronic modules and motor... (see chapter 4, table Maintenance for more details). Upstream effort to produce these replacement parts and transport to building site, as well as waste treatment of the removed parts, are accounted for in this module.
- Operation energy use (B6)

End-of-life stage

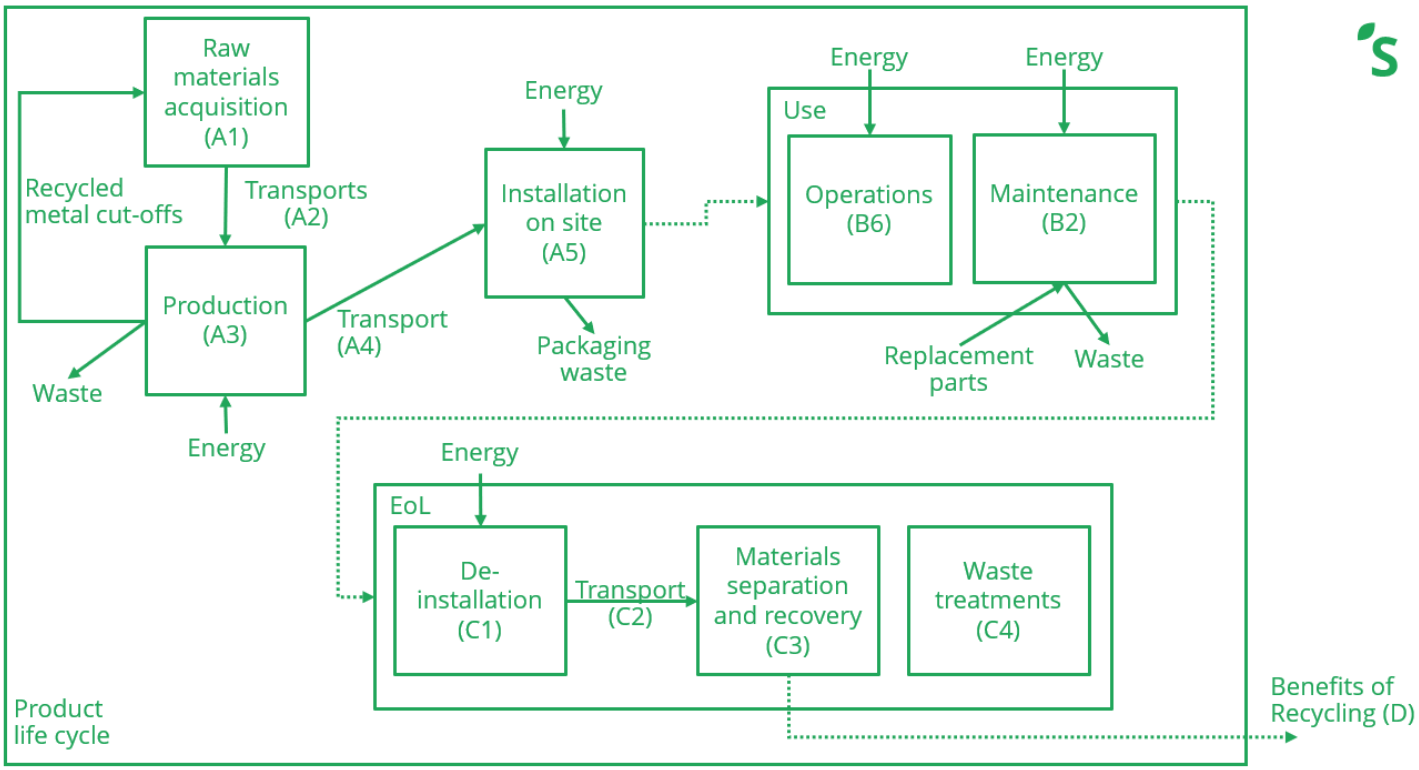
- De-construction (C1)
- Transport to disposal (C2)
- Waste processing (C3): Incineration of materials that do not reach end-of-waste state. Since the model follows the cut-off principle, recycling processes are not included in C3, but are described in module D.
- Disposal (C4): Landfill of materials that didn't reach end-of-waste state and were not incinerated.

Benefits and loads beyond the system boundary

- Reuse, recovery, and recycling potential (D)

This includes provision of all materials, products and energy, packaging processing and its transport, as well as waste processing up to the end-of waste state or disposal of final residues.

No materials are required during use (B1) and no water is needed for operation (B7). Repair (B3), Replacement (B4) and Refurbishment (B5) are not needed if proper maintenance is followed. These sub-modules are not declared as they would be zero, or are estimated to fall below the cut-off criteria.



3.3 Estimates and assumptions

Survey and modelling methodology: This EPD is generated through an automated LCA tool. As a first step, users are invited to answer a data questionnaire which contains questions about the amount of materials and energy used in the BoM, for packaging, manufacturing, installation of the product, as well as the maintenance. The answers to these questions serve as an input to a LCA model.

Cutting losses: Boon Edam manufactures doors made from (stainless) steel, aluminium and glass. However, the cutting losses are not available at product level, nor product range, and the site-level cutting losses are modelled as a proxy, for each material. This might lead to some distortion for products that require fewer cuttings.
Furthermore, since the cutting losses are sent back to the suppliers who process them into new aluminium and steel, they do not contribute to waste disposal (C) and avoided burden (D) stages.

Waste processing data assumptions: Boon Edam provides the option to its users to collect back the waste and return it to suppliers for processing. However, in the absence of any other data, the waste scenarios for different materials were treated according to the average waste scenarios for that particular product in the Netherlands. For example, for packaging wastes, 97% of waste was assumed to be incinerated and 3% of waste was assumed to be landfilled. For some metals and alloys, such as aluminium and steel, there are no specific datasets for

incineration and landfill. So, the environmental impacts of incineration and landfill of these materials have been accounted for through the incineration and landfill processes of common municipal solid waste, albeit not providing any electricity or heat recovery for these processes.

3.4 Cut-off criteria

Production stage

All materials and energy inputs and outputs were considered, based on the nomenclature of the product considered, and on the energy inputs and waste flows from the factory.
To the best of our knowledge, no input or output having a significant impact on the indicators have been left aside.

Use stage

During the use stage, the only maintenance activities not included are the cleaning and technical checks. These would consist of the energy necessary to power the cleaning devices, water, soap and transport of personnel for the technical checks. Given the predominance of the operational energy use (B6), these impacts will be negligible in comparison.

End-of-life

During the end of life stage, all the end-of-life activities have been accounted for. The end of life phase is divided into recycling, incineration and landfill. Environmental impacts of these activities for all materials have been accounted for to the best of our knowledge, and no material having a significant impact has been left aside. The avoided burden from materials recycled, electricity and heat recovered has also been considered for all packaging as well as constituent materials of a Tourniket.

3.5 Background data

The EPD is generated by an EPD tool, which enables the modelling of the environmental impacts of a revolving glass door. For the application of the EPD tool, its users are required to enter the weight of different materials used in manufacture and packaging of the door through a survey, which then triggers a model run and generates the EPD. The EPD is generated from the EPD tool version 2.0 (validity: September 2025 to September 2030), owned by *PRé Sustainability bv*, Amersfoort, NL.

3.6 Data quality

ecoinvent 3.10 is used for all background datasets, ensuring consistency of the scope.
Global market data were used for all supplies that are procured on the market without a specific requirement for location, and more specific geographies were used otherwise (e.g. electricity used on-site is representative of the Dutch electricity market).
All background data have been reviewed by the editor in 2023.

Primary data have been collected specifically for the product considered, at the time when the assessment were made, and are representative of the current situation at Boon Edam.

Based on the data quality framework of *EN 15804* provided by UN environment, the data are assessed on three criteria, namely geography, time and technical accuracy. According to the framework, the data quality for Boon Edam's TOURNIKET is assessed as follows:

- **Geographical representativeness - Good**: Most of the data on production, transport and energy use is representative of the whole of Europe. So, the data is from a larger area (Europe) in which the area under study (Netherlands) is included. This satisfies the good quality data criteria of the UN environment global guidance on LCA development. Furthermore, most of the data for waste processing of different materials is representative of the Netherlands in the *ecoinvent* database. So, it satisfies the very good data quality criteria according to the UN environment global guidance. Thus, overall, the processes included in the model are well representative of the geography under consideration.
- **Time representativeness - Good**: Most of the processes in *ecoinvent* accurately reflect the data for 2023. For some of the processes which are older than 10 years, they are extrapolated to 2023. According to the UN environment global guidance on LCA database development, if there is less than a 6 years difference between the reference year (2023) and the time period for which the data is representative, the data quality is considered good. For the case of Boon Edam, the difference for most of the processes is 4 years and thus, the requirement of good temporally representative data quality is satisfied.
- **Technical representativeness - Good:** For Boon Edam's products, the materials used are very commonly available on the market, and thus, the processes corresponding to their production are readily available in the *ecoinvent* database, and they represent the actual material accurately. The only limitation is for end-of- life processes: Incineration of materials like Aluminium and steel are represented by the treatment of municipal solid waste by incineration, which have been generated considering a different content-ratio of waste. As a consequence, the emissions from these processes might accurately represent the actual emissions at end-of-life. However, their contribution to the overall results are minimal. Thus, the overall technical representativeness of the data is good.

3.7 Period under review

Manufacturing data for the production site have been collected in 2024 and represents an average of the consumption in 2023.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Europe

3.9 Allocation

Given the variations in size of products manufactured by Boon Edam, allocating manufacturing (A3) inputs and outputs per product was not deemed fair. As production lines within the facility were similar, allocation was done on the basis of the number of production lines.

3.10 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. Background data processes were obtained from *ecoinvent* version 3.10, with the Cut-off system model, as compiled for *SimaPro* in August 2024.

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The biogenic carbon content quantifies the amount of biogenic carbon in a construction product leaving the factory gate, and it

shall be separately declared for the product and for any accompanying packaging.
If the total mass of biogenic carbon containing materials is less than 5 % of the total mass of the product and accompanying packaging, the declaration of biogenic carbon content may be omitted. The mass of packaging containing biogenic carbon shall always be declared.

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	30.7	kg C
Biogenic carbon content in accompanying packaging	49.2	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

Transport to the manufacturer (A2)
A survey from Boon Edam in 2016 showed that all their suppliers are local companies, the furthest being situated 260km from Edam. This maximum value has been selected for all transport distances.

Note: 'market' datasets from *ecoinvent* were selected to model materials, meaning that upstream transports - occurring before the last transport step to Edam - are computed in the A1 module.

Assembly (A3)
The electricity use on the production site is modelled with the standard residual mix from *ecoinvent* 3.10 for the Netherlands. The associated emission factor is 0.417kg CO_2e/kWh.

Natural gas used on site (for heating purpose) is also modeled from the standard NL mix from *ecoinvent* 3.10.
The associated emission factor is 0.215kg CO_2e/kWh.

Transport to the building site (A4)
The distance is calculated as an average of Boon Edam's actual delivery, and is modelled as a freight truck transport.

Name	Value	Unit
Litres of fuel	4.5	l/100km
Transport distance	3500	km
Capacity utilisation (including empty runs)	-	%

Installation into the building (A5)

Name	Value	Unit
Waste wood	115	kg
Waste cardboard	2	kg
Waste LDPE plastic	1	kg

Maintenance (B2)
A yearly maintenance check is recommended. Motors and moving parts are prone to wear, and are replaced every few years. Over the 20 years of the product, the following materials are used for replacement parts

Name	Value	Unit
Materials replaced per cycle:		
Electronics	14.5	kg
Rubber	17.8	kg
Motor	36	kg
Steel rails	5.7	kg

Reference service life

Name	Value	Unit
Life Span (according to BBSR)	20	a

Operational energy use (B6)
The electricity consumption of the motor drive is divided in three ranges of use:

- The door or gate is idle or turned off (building is closed)
- The door or gate is in standby mode
- The door or gate is active

The electricity consumption process was modelled using low-voltage electricity mix for Europe.
The estimated operating conditions are given below.

Name	Value	Unit
Years of use	20	years
Days used per year	312	days/year
Hours idle (on day used)	8	h/day
Hours standby (on day used)	8	h/day
Hours active (on day used)	8	h/day
Power while idle	0	W
Power in standby	75	W
Power when active	150	W
Electricity consumption	11232	kWh

End of life (C1-C4)
Boon Edam Netherlands offers its customers a recycling scheme, in which the materials recovered from deconstruction are delivered to recycling stations, which are also the suppliers of Boon Edam. Their exact recycling rate is not known, therefore, average Dutch percentages of recycled steel and aluminium were used in the model. They are based on the data from the Dutch waste scenario in *ecoinvent* 3.10.
For glass, which is used in the product but not included as recyclable in *ecoinvent* dataset, the collection rate of 25% was used.
The remaining materials are treated according to the same ecoinvent waste scenario, based on Eurostat 2012 data.

At the end-of-life, it is assumed that, from the BoM, aluminium, steel, stainless steel and glass are collected separately, whereas the remaining materials, consisting of fasteners, drive parts, electrical components, rubber and plastics, are collected as mixed municipal waste.
The percentages of each material going to recycling, incineration and landfill respectively, are aggregated over the BoM to compute the amount of waste recycled, incinerated and landfilled.

Name	Value	Unit
Collected separately waste type	1090	kg
Collected as mixed construction waste	150	kg
Recycling	1107	kg
Energy recovery	-	kg
Waste incineration	110	kg
Landfilling	41	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information
The total amount of material recycled, electricity and heat recovered are shown in the table below. The main materials recycled are steel, stainless steel, glass and aluminium.
The amount of recycled materials are obtained by multiplying the total masses of respective products by the corresponding percentages that go to recycling. e.g., for each kg of glass used, 25% goes to recycling and there is 15% of recycling loss thus, the glass recycled correspondingly is 0.21 kg per kg in the product.

Name	Value	Unit
Aluminium	320	kg
Steel	57	kg
Glass	600	kg
Electricity exported	360	MJ
Heat exported	762	MJ

5. LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	X	MNR	MNR	MNR	X	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 Tourniket TQ

Parameter	Unit	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	9.8E+03	1.74E+02	1.88E+01	1.94E+03	3.66E+03	1.96E+00	9.99E+00	5.31E+01	1.19E+00	-4.25E+03
GWP-fossil	kg CO_2 eq	9.76E+03	1.74E+02	1.81E+01	1.93E+03	3.64E+03	1.95E+00	9.99E+00	5.27E+01	1.19E+00	-4.23E+03
GWP-biogenic	kg CO_2 eq	1.73E+01	2.83E-02	7.07E-01	2.31E+00	8.19E+00	4.38E-03	1.63E-03	4.58E-01	5.3E-05	-5.03E+00
GWP-luluc	kg CO_2 eq	2.2E+01	5.74E-02	1.05E-02	2.95E+00	1.12E+01	6.01E-03	3.3E-03	2.5E-04	2.61E-05	-1.19E+01
ODP	kg CFC11 eq	1.21E-04	3.46E-06	3.12E-07	5.49E-05	6.3E-05	3.37E-08	1.99E-07	2.33E-08	4.35E-09	-2.76E-05
AP	mol H^+ eq	6.76E+01	6.9E-01	6.95E-02	1.87E+01	1.85E+01	9.9E-03	3.96E-02	1.5E-02	8.93E-04	-2.68E+01
EP-freshwater	kg P eq	3.82E+00	1.15E-02	2.88E-03	2.05E+00	3.24E+00	1.73E-03	6.6E-04	2.93E-04	8.81E-06	-1.17E+00
EP-marine	kg N eq	1.26E+01	2.6E-01	2.94E-02	5.62E+00	3.21E+00	1.72E-03	1.49E-02	1.14E-02	2.71E-02	-4.51E+00
EP-terrestrial	mol N eq	1.2E+02	2.83E+00	2.66E-01	2.79E+01	2.79E+01	1.49E-02	1.63E-01	7.58E-02	3.96E-03	-4.77E+01
POCP	kg NMVOC eq	3.72E+01	1.05E+00	9.49E-02	8.79E+00	9.26E+00	4.94E-03	6.03E-02	1.94E-02	1.78E-03	-1.47E+01
ADPE	kg Sb eq	3.39E-01	5.38E-04	4.64E-05	4.1E-01	7.44E-03	3.97E-06	3.09E-05	2.45E-06	2.51E-07	1.66E-02
ADPF	MJ	5.95E+04	2.01E+02	4.96E+01	1.3E+04	6.19E+04	3.31E+01	1.15E+01	2E+00	2.1E-01	-2.87E+04
WDP	m^3 world eq deprived	2.96E+03	1.44E+01	5.91E-01	7.91E+02	3.07E+03	1.64E+00	8.28E-01	1.16E+00	-2.5E+00	-9.56E+02

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 Tourniket TQ

Parameter	Unit	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	D
PERE	MJ	1.54E+04	4.15E+01	1.42E+01	2.92E+03	2.01E+04	1.07E+01	2.39E+00	1.43E+03	9.41E-02	-4.44E+03
PERM	MJ	3.65E+03	0	0	0	0	0	0	-1.43E+03	0	0
PERT	MJ	1.91E+04	4.15E+01	1.42E+01	2.92E+03	2.01E+04	1.07E+01	2.39E+00	6.19E-01	9.41E-02	-4.44E+03
PENRE	MJ	5.88E+04	2.01E+02	9.24E+01	1.3E+04	6.19E+04	3.31E+01	1.15E+01	5.6E+02	2.1E-01	-2.86E+04
PENRM	MJ	6.01E+02	0	-4.29E+01	0	0	0	0	-5.58E+02	0	0
PENRT	MJ	5.94E+04	2.01E+02	4.96E+01	1.3E+04	6.19E+04	3.31E+01	1.15E+01	2E+00	2.1E-01	-2.86E+04
SM	kg	1.55E+02	0	0	4.16E+00	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0
FW	m^3	6.9E+01	3.32E-01	1.35E-02	1.84E+01	7.15E+01	3.82E-02	1.91E-02	2.69E-02	-5.82E-02	-2.23E+01

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 = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 Tourniket TQ

Parameter	Unit	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	D
HWD	kg	1.12E+00	1.65E-02	1.45E-03	2.78E-01	1.27E-01	6.8E-05	9.47E-04	2.77E-04	2.05E-05	2.2E+00
NHWD	kg	3.87E+02	1.16E+02	2.21E+01	1.51E+02	1.76E+02	9.41E-02	6.68E+00	8.61E+00	1.3E+01	-9.29E+01
RWD	kg	1.3E-01	7.8E-04	3.93E-04	1.42E-01	6.17E-01	3.3E-04	4.48E-05	9.09E-06	1.18E-06	-2.49E-02
CRU	kg	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	6.9E+01	1.14E+01	0	0	0	1.15E+03	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	4.79E+01	1.06E+02	0	0	0	1.94E+02	0	0
EET	MJ	0	0	1E+02	2.07E+02	0	0	0	4.03E+02	0	0

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:
1 Tourniket TQ

Parameter	Unit	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	D
PM	Disease incidence	7.24E-04	1.14E-05	9.9E-07	1.22E-04	5.96E-05	3.18E-08	6.57E-07	9.48E-08	2.05E-08	-3.23E-04
IR	kBq U235 eq	3.81E+02	3.14E+00	1.54E+00	2.28E+02	2.4E+03	1.28E+00	1.81E-01	3.58E-02	5.07E-03	-9.93E+01
ETP-fw	CTUe	5.8E+04	4.99E+02	4.73E+01	5.17E+04	5.36E+03	2.86E+00	2.87E+01	1.09E+02	3.44E+00	-1.08E+04
HTP-c	CTUh	5E-05	1.21E-06	1.06E-07	2.18E-05	7.04E-06	3.76E-09	6.96E-08	1.34E-08	7.78E-10	-1.54E-05
HTP-nc	CTUh	2.47E-05	2.67E-07	2.4E-08	2.97E-05	2.28E-06	1.22E-09	1.54E-08	9.02E-09	1.29E-10	2.75E-06
SQP	SQP	7.07E+04	1.51E+03	1.34E+02	1.66E+04	1.53E+04	8.2E+00	8.71E+01	7.63E+00	7.62E+00	-8.58E+03

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. 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 or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

This EPD was created using a software tool.

6. LCA: Interpretation

The environmental impacts of a Tourniket TQ are mainly driven by the raw material supply and manufacturing (A1-A3), followed by the operational energy use (B6) and maintenance (B2).

This is applicable for all Environmental Impact and Resource Use indicators, and for Hazardous and Non-hazardous Waste Disposed indicators.
Radioactive Waste Disposed is mainly the result of electricity consumption, due to the average European mix used in the model.
The last two output flow indicators are naturally dominated by the Disposal step at the End-of-Life Stage. Out of the three main materials used in the production of a Tourniket (glass, aluminium and steel), aluminium has the highest contribution in all impact categories.

7. Requisite evidence

Not applicable for this product. It relies on electric energy for functioning and no emissions will be released in normal conditions.

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Also referred to as Biocidal Products Regulation or BPR

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