Environmental Product Declaration (EPD)

Declaration code EPD-VT-GB-0.6.2

Hörmann Alkmaar B.V.

Loading technology

Dock leveller, dock seal, pedestal, accessories and loading house

Basis:

DIN EN ISO 14025
EN 15804 + A2

Company EPD
Environmental
Product **D**eclaration

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Declaration code	EPD-VT-GB-0.6.2	
Designation of declared product	Loading technology composed of dock leveller, dock seal, pedestal, accessories and loading house.	
Scope	Hörmann loading technology in or in front of a building for an efficient, safe and protected loading and unloading process in the industrial or commercial sector.	
Basis	This EPD was prepared on the basis of EN ISO 14025:2011 and DIN EN 15804:2012+A2:2019. In addition, the "Allgemeiner Leitfaden zur Erstellung von Typ III Umweltproduktdeklarationen" (General guideline for preparation of Type III Environmental Product Declarations) applies. The declaration is based on the PCR documents "PCR Part A" PCR-A-0.3:2018 and "Loading systems" PCR-VS-3.0:2023	
Validity	Publication date: 31.10.2023	Last revision: 31.10.2023 / Valid until: 31.10.2028
	This verified Company Environmental Product Declaration (company EPD) applies solely to the specified products and is valid for a period of five years from the date of publication in accordance with DIN EN 15804.	
LCA Basis	The LCA was prepared in accordance with DIN EN ISO 14040 and DIN EN ISO 14044. The data collected from the production plants of the company Hörmann Alkmaar B.V. were used as a data basis, as well as generic data from the database “LCA for Experts 10". LCA calculations were carried out for the included “cradle to gate – with options” including all upstream chains (e.g. raw material extraction, etc.).	
Notes	The ift-Guidance Sheet “Conditions and Guidance for the Use of ift Test Documents” applies. The declaration holder assumes full liability for the underlying data, certificates and verifications.	

Christian Kehrer Head of Certification and Surveillance Body	Dr. Torsten Mielecke Chairman of Expert Committee ift-EPD and PCR	Benedikt Dellawalle Independent verifier

1 General Product Information

Product definition

The EPD belongs to the product group loading technology components and applies to

1 m² loading house,
1 kg dock leveller, dock seal, pedestal, accessories
of company Hörmann Alkmaar B.V.

The declared unit is obtained by summing up:

Product group	Assessed product	Reference size	Declared unit	Mass
PG1	Loading house	Top view 10.5 m² (3.0m x 3.5m)	1 m²	38.4 kg/m²
PG2	Dock seal	1 pc	1 kg	103.4 kg/pc
PG3	Accessories	1 pc	1 kg	15.5 kg/pc
PG4	Pedestal	1 pc	1 kg	554.0 kg/pc
PG5	Dock leveller	1 pc	1 kg	1,109.1 kg/pc

Table 1 Product groups

The average unit is declared as follows:
Directly used material flows are determined using reference sizes and allocated to the declared unit. All other inputs and outputs in the manufacture were scaled to the declared unit as a whole, since no direct assignment to the reference size is possible. The reference period is the year 2021.

The validity of the EPD is restricted to the following loading technology components:

- loading house Types LHF2, LHC2, LHP2
- dock seal Types DSL, DAS, DDF
- accessories consisting of undercarriage cover, drive-in aid and marking posts
- pedestal
- dock leveller Types HLS, HLS-2, HTL-2, HRT, HRS

Product description

Loading technology consisting of dock leveller, dock seal, pedestal, accessories and loading house. For a detailed product description refer to the manufacturer specifications at www.hoermann.de or the product specifications of the respective offer/quotation.

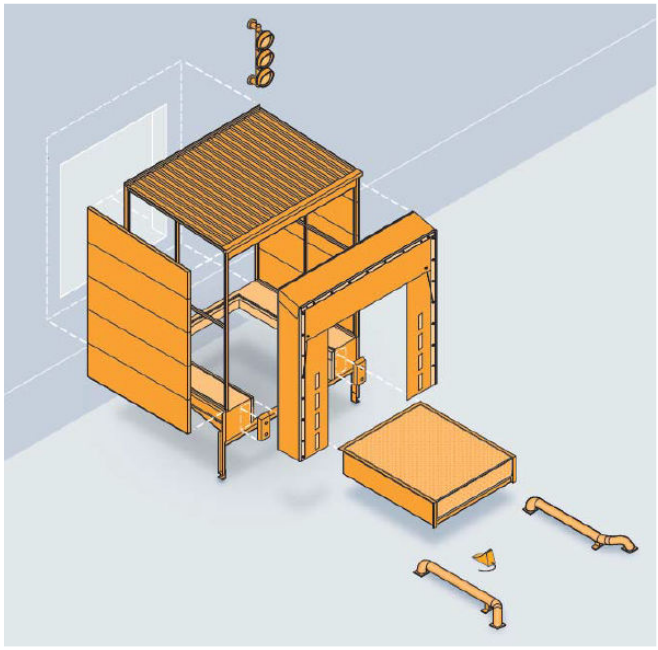
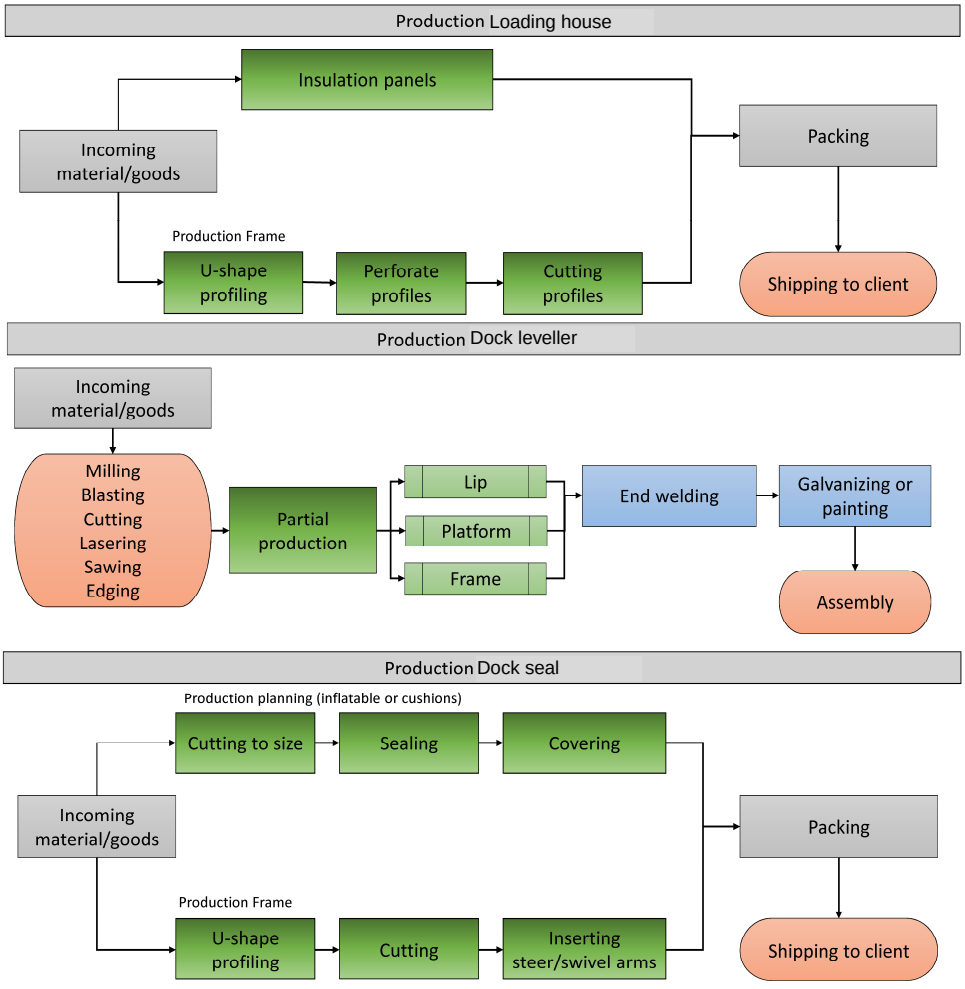
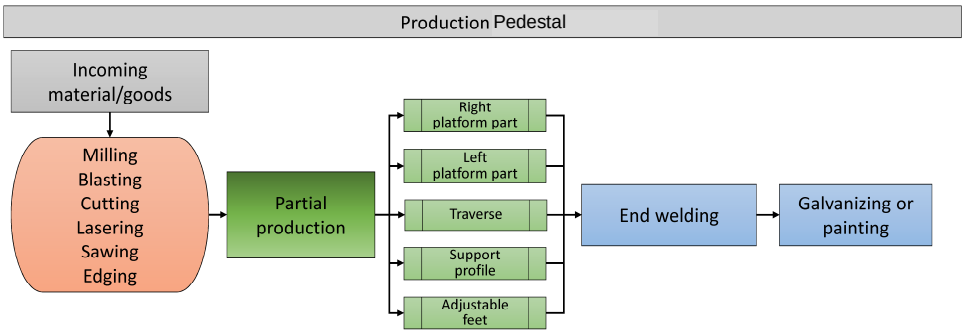


Illustration 1 Loading technology components

Product manufacture





Application

Hörmann loading technology in or in front of a building for an efficient, safe and protected loading and unloading process in the industrial or commercial sector.

Additional information

For additional verifications of applicability or conformity refer to the CE marking and the documents accompanying the product, if applicable.

2 Materials used

Primary materials

The raw materials used can be found in Section 6.2 Inventory analysis (Inputs).
The primary materials used are listed in the LCA (see Section 7).

Declarable substances

No substances according to REACH candidate list are included (declaration of 10.05.2023).

All relevant safety data sheets can be obtained from company Hörmann Alkmaar B.V..

3 Construction process stage

Processing recommendations, installation

Observe the instructions for assembly/installation, operation, maintenance and disassembly, provided by the manufacturer. This is supplied with the respective products. See also www.hoermann.de

4 Use stage

Emissions to the environment

No emissions to indoor air, water and soil are known. There may be VOC emissions.

Reference service life (RSL)

The RSL information was provided by the manufacturer. The RSL must be established under specified reference conditions of use and relate to the declared technical and functional performance of the product within the building. It must be determined according to all specific rules given in European product standards or, if none are available, according to a c-PCR. It must also take into account ISO 15686-1, -2, -7 and -8. If there is guidance on deriving RSLs from European Product Standards or a c-PCR, then such guidance must take precedence.

If it is not possible to determine the service life as the RSL in accordance with ISO 15686, the BBSR table “Nutzungsdauer von Bauteilen zur Lebenszyklusanalyse nach BNB” (service life of building components for life cycle assessment in accordance with the sustainable construction evaluation system) can be used. For further information and explanations refer to www.nachhaltigesbauen.de.

For this EPD the following applies:
For an EPD "cradle to factory gate with options", with modules C1-C4 and module D (A1-A3 + C + D and one or more additional modules from A4 to B7), the specification of a reference service life (RSL) is only possible if the reference service life conditions are specified.

The service life of the loading technology components of company Hörmann Alkmaar B.V. is optionally specified with 25 years (loading house, dock leveller, pedestal as well as accessories) and dock seal with 20 years according to the BBSR table.

The reference service life is dependent on the characteristics of the product and reference conditions in use. The conditions and characteristics described in the EPD are applicable, in particular the characteristics listed below:

- Outdoor environment: Climatic influences may have a negative impact on the reference service life.
- Indoor environment: No impacts known that have a negative effect on the reference service life.

The service life solely applies to the characteristics specified in this EPD or the corresponding references.
The RSL does not reflect the actual life time, which is usually determined by the service life and the redevelopment of a building. It does not give any information on the useful life, warranty referring to performance characteristics or guarantees.

5 End-of-life stage

Possible end-of-life stages

The components of the Loading technology are sent to central collection points. There the products are usually shredded and sorted into their constituents. The end-of-life stage depends on the site where the products are used and is therefore subject to the local regulations. Observe the locally applicable regulatory requirements.

In this EPD, the modules of after-use are presented according to the market situation.
Steel and aluminum are completely recycled. Plastics and residual fractions are thermally recycled.

Disposal routes

The LCA includes the average disposal routes.

All life cycle scenarios are detailed in the Annex.

6 Life Cycle Assessment (LCA)

Environmental product declarations are based on life cycle assessments (LCAs) which use material and energy flows for the calculation and subsequent representation of environmental impacts.

As a basis for this, life cycle assessments were prepared for the components of Loading technology. These LCAs are in conformity with the requirements set out in DIN EN 15804 and the international standards DIN EN ISO 14040, DIN EN ISO 14044, ISO 21930 and EN ISO 14025.

The LCAs are representative of the products presented in the Declaration and the specified reference period.

6.1 Definition of goal and scope

Aim

The goal of the LCA is to demonstrate the environmental impacts of the products. In accordance with DIN EN 15804, the environmental impacts covered by this Environmental Product Declaration are presented for the entire product life cycle in the form of basic information. No other additional environmental impacts are specified.

Data quality, data availability and geographical and time-related system boundaries

The specific data originate exclusively from the 2021 fiscal year. They were collected on-site at the plant located in Alkmaar (NL) and Osła (PL) and originate in parts from company records and partly from values directly obtained by measurement. Validity of the data was checked by ift Rosenheim.

The generic data originates from the professional database and building materials database software “LCA for Experts 10”. The last update of both databases was in 2023. Data from before this date originate also from these databases and are not more than ten years old. No other generic data were used for the calculation.

Generic data are selected as accurately as possible in terms of geographic reference. If no country-specific data sets are available or if the regional reference cannot be determined, European or globally valid data sets are used.

Data gaps were either filled with comparable data or conservative assumptions, or the data were cut off in compliance with the 1% rule.

The life cycle was modelled using the sustainability software tool “LCA for Experts” for the development of life cycle assessments.

The data quality complies with the requirements of prEN 15941:2022.

Scope / system boundaries

The system boundaries refer to the supply of raw materials and purchased parts, manufacture/production, use and end-of-life stage of Loading technology.
No additional data from pre-suppliers/subcontractors or sites other than those mentioned were taken into consideration.

Cut-off criteria

All company data collected, i.e. all commodities/input and raw materials used, the thermal energy and electricity consumption, were taken into consideration.

The boundaries cover only the product-relevant data. Building sections/parts of facilities that are not relevant to the manufacture of the products, were excluded.

The transport distances of the pre-products, ancillary materials and packaging used were taken into consideration as a function of >80 % of the mass of the products.

Means of transport, utilization,
Truck, more than 32 t gross weight / 24.7 t payload, Euro 6, freight, 85 % capacity utilization, distance 249.5 km (Alkmaar NL) and 486 km (Osła PL)

The remaining transport routes of the pre-products to the plants in Alkmaar (NL) and Osła (PL) were taken into account as follows:

The transport mix is consisted as follows and is derived from the research project "EPDs for transparent components":

- Truck, 26 – 28 t total weight / 18.4 t payload, Euro 6, freight, 85 % capacity used, 100 km,
- Truck-trailer, 28 – 34 t total weight / 22 t payload, Euro 6, 50 % capacity used, 50 km,
- Freight train, electrical and diesel driven; D 60 %, E 51 % capacity used, 50 km,
- Seagoing vessel, consumption mix, 50 km.

The transport of generated waste in Module A3 to the recycling site was not considered.

The criteria for the exclusion of inputs and outputs as set out in DIN EN 15804 are fulfilled. From the data analysis it can be assumed that the total of negligible processes per life cycle stage does not exceed 1% of the mass/primary energy. This way the total of negligible processes does not exceed 5% of the energy and mass input. The life cycle calculation also includes material and energy flows that account for less than 1%.

6.2 Inventory analysis

Aim

All material and energy flows are described below. The processes covered are presented as input and output parameters and refer to the declared/functional units.

Life cycle stages

The complete life cycle of Loading technology is shown in the annex. The product stage "A1 – A3", construction process stage "A4 – A5", use stage “B2, B3, B4, B6 and B7", end-of-life stage "C1 – C4" and the benefits and loads beyond the system boundaries "D" are considered.

Benefits

The below benefits have been defined as per DIN EN 15804:

- Benefits from recycling
- Benefits (thermal and electrical) from incineration

Allocation of co-products

During the manufacture of Loading technology, no allocations occur.

Allocations for re-use, recycling and recovery

If the products are reused/recycled and recovered during the product stage (rejects), the elements are shredded, if necessary and then sorted into their constituents. This is done by various process plants, e.g. magnetic separators.
The system boundaries were set following their disposal, reaching the end-of-waste status.

Allocations beyond life cycle boundaries

The use of recycled materials in the manufacturing process was based on the current market-specific situation. In parallel to this, a recycling potential was taken into consideration that reflects the economic value of the product after recycling (recyclate).
Secondary material designated as inputs to components of loading technology is calculated as input without loads. No benefits are assigned to Module D, but consumption to Modules C3 and C4 (worst case consideration).
The system boundary set for the recycled material refers to collection.

Secondary material

The use of secondary material by Hörmann Alkmaar B.V. was considered in Module A3. Secondary material is not used.

Inputs

The following manufacturing-related inputs were included in the LCA per Loading technology component:

Energy
For the input material gas, "Thermal energy from natural gas NL" was assumed. For electricity from hydropower, photovoltaics and wind, "Electricity from hydropower PL", "Electricity from photovoltaics PL", "Electricity from hydropower PL" and "Electricity from wind power NL" are assumed.

Electricity disclosure of energy supplier Plant in Alkmaar	Shares in %
Plant in Alkmaar (NL): Wind energy	100

Table 2 Electricity mix of plant in Alkmaar

Electricity disclosure of energy supplier Plant in Legnica	Shares in %
Plant in Legnica (PL): Hydropower	11.3
Plant in Legnica (PL): Wind energy	39.7
Plant in Legnica (PL): Photovoltaics	49.0

Table 3 Electricity mix of plant in Legnica

Water
There is no water consumption in the individual process steps for production.

The consumption of fresh water specified in Section 6.3 arises from the process chain of the pre-products.

Raw material / pre-products
The charts below show the share of raw materials/pre-products per component in percent.

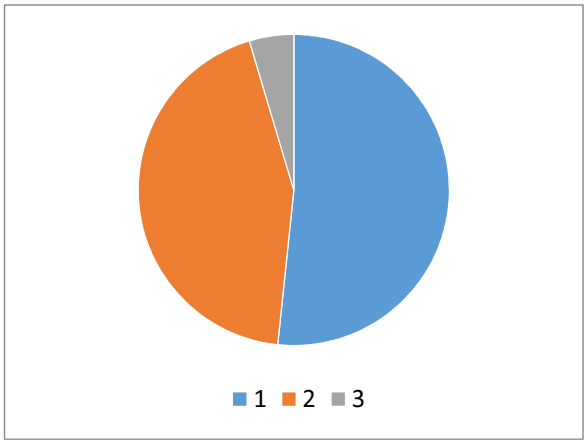


Illustration 2 Percentage of individual materials per declared unit accessories

No.	Material	Mass fraction in %
1	steel	51.6
2	Plastics	43.7
3	Aluminium	4.6

Table 4 Percentage of individual materials in % per declared unit accessories

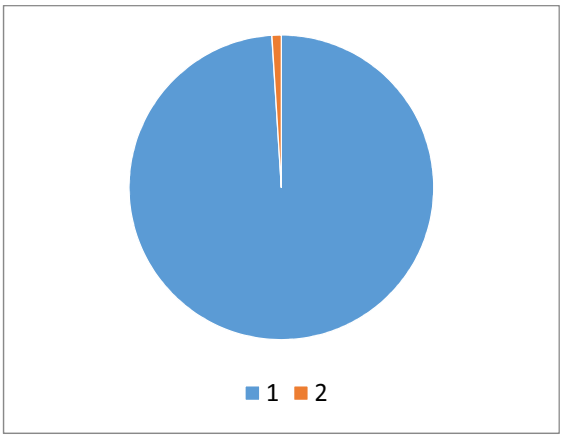


Illustration 3 Percentage of individual materials per declared unit pedestal

No.	Material	Mass fraction in %
1	Steel	99.9
2	Plastics	< 1

Table 5 Percentage of individual materials in % per declared unit pedestal

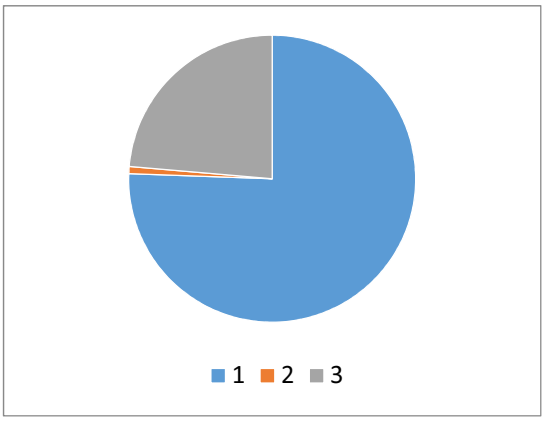


Illustration 4 Percentage of individual materials per declared unit loading house

No.	Material	Mass fraction in %
1	Steel	76.1
2	PU foam	< 1
3	PU sandwich panel	23.8

Table 6 Percentage of individual materials in % per declared unit loading house

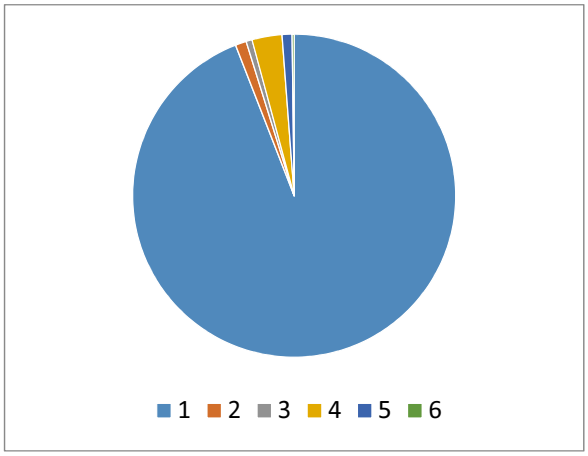


Illustration 5 Percentage of individual materials per declared unit dock leveller

No.	Material	Mass fraction in %
1	Steel	94.0
2	Aluminium	1.1
3	Plastics/rubber	< 1
4	Insulation material	3.0
5	Varnish	1.0
6	Control	< 1

Table 7 Percentage of individual materials in % per declared unit dock leveller

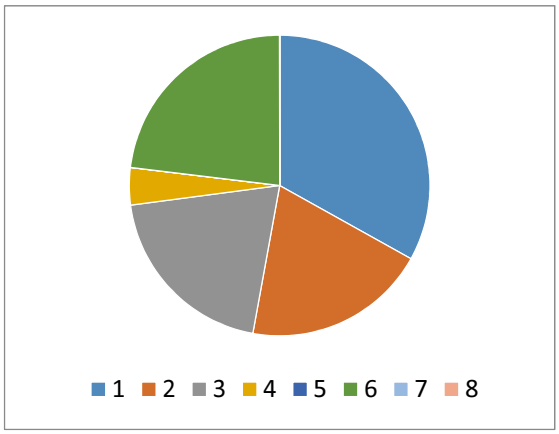


Illustration 6 Percentage of individual materials per declared unit dock seal

No.	Material	Mass fraction in %
1	Steel	33.0
2	PVC	19.7
3	Aluminium	20.0
4	Other plastics	4.0
5	Brass	< 1
6	Panel	23.0
7	Rubber	< 1
8	Copper	< 1

Table 8 Percentage of individual materials in % per declared unit dock seal

Ancillary materials and consumables

The proportion of ancillary materials and consumables is low, but was taken into account in the life cycle assessment.

No.	Component	Mass of auxiliary materials in g
1	Loading house	60
2	Dock leveller	25
3	Dock seal	< 1
4	Pedestal	25
5	Accessories	46

Table 9 Mass of ancillary materials in g per declared unit

Product packaging
The amounts used for product packaging are as follows:

No.	Material	Mass in kg per declared unit				
		Accessories	Pedestal	Loading house	Dock seal	Dock leveller
1	Wood	0.1E-02	5.3E-02	5.65	0.105	-
2	Cardboard	-	-	-	0.6E-02	-
3	PE film	1.9E-02	1.9E-03	0.6E-01	0.1E-02	5.03E-04
4	Paper	-	-	-	-	2.27E-04

Table 10 Weight in kg of packaging per declared unit

Biogenic carbon content
Only the biogenic carbon content of the associated packaging is reported, as the total mass of biogenic carbon-containing materials is less than 5% of the total mass of the product and associated packaging. According to EN 16449, the following amounts of biogenic carbon are generated for packaging:

No.	Material	Biogenic carbon content of the packaging	
		Content in kg C per kg	Content in CO_2 equivalent
1	Loading house	2.52	9.25
2	Dock leveller	8.20E-05	3.02E-04
3	Dock seal	0.00	0.00
4	Pedestal	2.00E-02	9.00E-02
5	Accessories	2.88E-04	1.06E-03

Table 11 Biogenic carbon content of the packaging on the material

Outputs

The following manufacturing-related outputs were included in the LCA per Loading technology component:

Waste
Secondary raw materials were included in the benefits.
See Section 6.3 Impact assessment.

Waste water
No waste water is produced during the manufacturing process.

6.3 Impact assessment

Aim

The impact assessment covers both inputs and outputs. The impact categories applied are stated below:

Core indicators

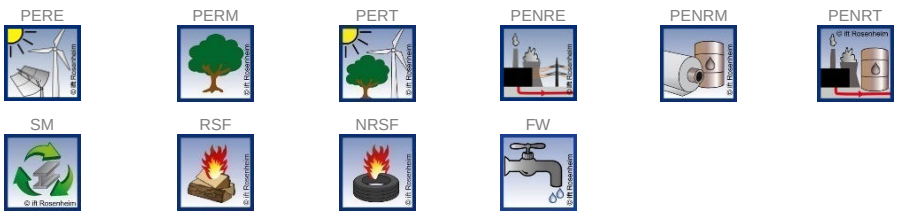
The models for impact assessment were applied as described in DIN EN 15804-A2.
The core indicators presented in the EPD are as follows:

- Climate change - total (GWP-t)
- Climate change - fossil (GWP-f)
- Climate change - biogenic (GWP-b)
- Climate change - land use & land use change (GWP-l)
- Ozone depletion (ODP)
- Acidification (AP)
- Eutrophication freshwater (EP-fw)
- Eutrophication salt water (EP-m)
- Eutrophication land (EP-t)
- Photochemical ozone creation (POCP)
- Depletion of abiotic resources - fossil fuels (ADPF)
- Depletion of abiotic resources - minerals and metals (ADPE)
- Water use (WDP)

Resource management

The models for impact assessment were applied as described in DIN EN 15804-A2.
The following resource use indicators are presented in the EPD:

- Renewable primary energy as energy source (PERE)
- Renewable primary energy for material use (PERM)
- Total use of renewable primary energy (PERT)
- Non-renewable primary energy as energy source (PENRE)
- Renewable primary energy for material use (PENRM)
- Total use of non-renewable primary energy (PENRT)
- Use of secondary materials (SM)
- Use of renewable secondary fuels (RSF)
- Use of non-renewable secondary fuels (NRSF)
- Net use of freshwater resources (FW)

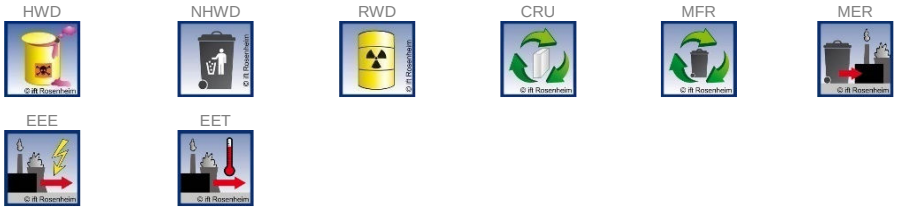


Waste

The waste generated during the production of Loading technology components is evaluated and shown separately for the fractions trade wastes, special wastes and radioactive wastes. Since waste handling is modelled within the system boundaries, the amounts shown refer to the deposited wastes. A portion of the waste indicated is generated during the manufacture of the pre-products.

The models for impact assessment were applied as described in DIN EN 15804-A2.
The following waste categories and indicators for output closures are presented in the EPD:

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



Additional environmental impact indicators

The models for impact assessment were applied as described in DIN EN 15804-A2.
The additional impact categories presented in the EPD are as follows:

- Particulate matter emissions (PM)
- Ionizing radiation, human health (IRP)
- Ecotoxicity – freshwater (ETP-fw)
- Human toxicity, carcinogenic effects (HTP-c)
- Human toxicity, non-carcinogenic effects (HTP-nc)
- Impacts associated with land use/soil quality (SQP)

	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Results per 1 kg of accessories																
Core indicators																
GWP-t	kg CO_2 equivalent	3.07	6.01E-02	6.13E-02	ND	1.46E-05	0.00	8.70E-02	ND	0.00	0.00	0.00	3.14E-03	5.17E-02	1.42E-03	-1.07
GWP-f	kg CO_2 equivalent	3.06	5.98E-02	5.95E-02	ND	1.29E-05	0.00	8.66E-02	ND	0.00	0.00	0.00	3.13E-03	5.12E-02	1.46E-03	-1.07
GWP-b	kg CO_2 equivalent	1.13E-02	-8.42E-05	1.79E-03	ND	1.63E-06	0.00	4.48E-04	ND	0.00	0.00	0.00	-4.31E-06	4.61E-04	-4.31E-05	-2.23E-03
GWP-l	kg CO_2 equivalent	1.37E-03	3.32E-04	6.62E-08	ND	3.55E-09	0.00	5.92E-05	ND	0.00	0.00	0.00	1.74E-05	1.08E-05	2.69E-06	-2.53E-04
ODP	kg CFC-11-eq.	9.49E-09	3.57E-15	2.69E-15	ND	5.75E-17	0.00	3.80E-10	ND	0.00	0.00	0.00	1.87E-16	7.50E-13	3.46E-15	-2.41E-12
AP	mol H^+-eq.	7.38E-03	5.84E-05	6.16E-06	ND	2.31E-08	0.00	1.84E-04	ND	0.00	0.00	0.00	3.06E-06	1.12E-04	1.03E-05	-2.96E-03
EP-fw	kg P-eq.	4.38E-06	1.78E-07	6.27E-10	ND	1.85E-09	0.00	1.50E-07	ND	0.00	0.00	0.00	9.31E-09	1.49E-07	2.47E-09	-9.66E-07
EP-m	kg N-eq.	1.74E-03	1.85E-05	1.32E-06	ND	1.34E-08	0.00	4.69E-05	ND	0.00	0.00	0.00	9.70E-07	2.52E-05	2.64E-06	-6.17E-04
EP-t	mol N-eq.	1.81E-02	2.22E-04	2.89E-05	ND	7.10E-08	0.00	4.80E-04	ND	0.00	0.00	0.00	1.16E-05	2.65E-04	2.90E-05	-6.66E-03
POCP	kg NMVOC-eq.	6.26E-03	5.11E-05	3.90E-06	ND	1.88E-08	0.00	1.79E-04	ND	0.00	0.00	0.00	2.67E-06	6.82E-05	8.02E-06	-1.91E-03
ADPF*²	MJ	46.07	0.80	7.30E-03	ND	1.85E-04	0.00	1.45	ND	0.00	0.00	0.00	4.00E-02	0.93	1.91E-02	-11.50
ADPE*²	kg Sb equivalent	9.29E-06	4.99E-09	6.50E-11	ND	1.54E-12	0.00	2.02E-07	ND	0.00	0.00	0.00	2.61E-10	1.40E-08	1.50E-10	-4.26E-06
WDP*²	m^3 world-eq. deprived	0.11	5.35E-04	5.67E-03	ND	7.10E-03	0.00	3.64E-03	ND	0.00	0.00	0.00	0.00	1.17E-02	1.59E-04	-0.037
Resource management																
PERE	MJ	12.53	4.53E-02	1.77E-02	ND	3.27E-05	0.00	0.43	ND	0.00	0.00	0.00	0.00	0.52	0.11	-2.52
PERM	MJ	0.16	0.00	-1.60E-02	ND	0.00	0.00	1.36E-03	ND	0.00	0.00	0.00	0.00	0.00	-0.11	0.00
PERT	MJ	12.69	4.53E-02	1.72E-03	ND	3.27E-05	0.00	0.43	ND	0.00	0.00	0.00	0.00	0.52	2.00E-03	-2.52
PENRE	MJ	46.19	0.80	7.31E-03	ND	1.85E-04	0.00	1.82	ND	0.00	0.00	0.00	0.04	9.88	1.91E-02	-11.54
PENRM	MJ	9.34	0.00	-0.39	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	-8.95	0.00	0.00
PENRT	MJ	55.53	0.80	-0.38	ND	1.85E-04	0.00	1.82	ND	0.00	0.00	0.00	0.04	0.93	1.91E-02	-11.54
SM	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RSF	MJ	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRSF	MJ	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	m^3	1.26E-02	5.12E-05	1.32E-04	ND	1.61E-04	0.00	3.69E-04	ND	0.00	0.00	0.00	2.68E-06	4.92E-04	4.83E-06	-4.07E-03
Categories of waste																
HWD	kg	4.82E-07	3.83E-12	6.89E-13	ND	1.68E-14	0.00	1.92E-08	ND	0.00	0.00	0.00	2.00E-13	8.04E-11	9.81E-13	-1.45E-09
NHWD	kg	0.16	1.14E-04	2.48E-04	ND	4.59E-05	0.00	7.53E-03	ND	0.00	0.00	0.00	5.99E-06	7.00E-04	0.10	-7.29E-02
RWD	kg	1.03E-03	9.84E-07	4.42E-07	ND	6.21E-09	0.00	3.38E-05	ND	0.00	0.00	0.00	5.15E-08	1.49E-04	2.09E-07	-3.36E-04
Output material flows																
CRU	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	kg	0.16	0.00	0.00	ND	0.00	0.00	6.40E-03	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MER	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	MJ	0.00	0.00	0.13	ND	0.00	0.00	5.16E-03	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EET	MJ	0.00	0.00	0.23	ND	0.00	0.00	9.20E-03	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Key:
GWP-t – Global warming potential – total **GWP-f** – global warming potential fossil fuels **GWP-b** – global warming potential - biogenic **GWP-l** – global warming potential - land use and land use change **ODP** – ozone depletion potential **AP** - acidification potential **EP-fw** - eutrophication potential - aquatic freshwater **EP-m** - eutrophication potential - aquatic marine **EP-t** - feutrophication potential - terrestrial **POCP** - photochemical ozone formation potential **ADPF*²** - abiotic depletion potential – fossil resources **ADPE*²** - abiotic depletion potential – minerals&metals **WDP*²** – Water (user) deprivation potential **PERE** - Use of renewable primary energy **PERM** - use of renewable primary energy resources **PERT** - total use of renewable primary energy resources **PENRE** - use of non-renewable primary energy **PENRM** - use of non-renewable primary energy resources **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 **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
ND - not considered

	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Results per 1 kg of accessories																
Additional environmental impact indicators																
PM	Disease incidence	8.28E-08	3.47E-10	3.58E-11	ND	4.56E-13	0.00	1.97E-09	ND	0.00	0.00	0.00	1.81E-11	9.32E-10	1.27E-10	-3.50E-08
IRP*[1]	kBq U235-eq.	0.15	1.44E-04	7.25E-05	ND	9.16E-07	0.00	4.89E-03	ND	0.00	0.00	0.00	7.54E-06	2.52E-02	2.28E-05	-5.33E-02
ETP-fw*[2]	CTUe	32.20	0.55	3.37E-03	ND	3.03E-04	0.00	1.22	ND	0.00	0.00	0.00	2.89E-02	0.41	1.00E-02	-2.71
HTP-c*[2]	CTUh	2.52E-09	1.12E-11	3.90E-13	ND	1.16E-14	0.00	6.02E-11	ND	0.00	0.00	0.00	5.83E-13	1.17E-11	1.63E-12	-1.04E-09
HTP-nc*[2]	CTUh	4.04E-08	5.77E-10	1.22E-11	ND	1.06E-12	0.00	1.13E-09	ND	0.00	0.00	0.00	3.02E-11	4.28E-10	1.80E-10	-1.34E-08
SQP*[2]	dimensionless	4.60	0.27	2.22E-03	ND	2.45E-05	0.00	0.17	ND	0.00	0.00	0.00	1.43E-02	0.34	4.15E-03	-1.10

Key:
PM – particulate matter emissions potential **IRP*[1]** – ionizing radiation potential – human health **ETP-fw*[2]** - Ecotoxicity potential – freshwater **HTP-c*[2]** - Human toxicity potential – cancer effects **HTP-nc*[2]** - Human toxicity potential – non-cancer effects **SQP*[2]** – soil quality potential
ND - not considered

Disclaimers:
*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.

*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 experience with the indicator.

Results per 1 kg of pedestal															
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Core indicators																
GWP-t	kg CO_2 equivalent	2.86	6.43E-02	0.17	ND	1.63E-06	0.00	6.04E-02	ND	0.00	0.00	0.00	3.14E-03	5.17E-02	1.42E-03	-1.64
GWP-f	kg CO_2 equivalent	3.00	6.40E-02	8.28E-03	ND	1.44E-06	0.00	5.95E-02	ND	0.00	0.00	0.00	3.13E-03	5.12E-02	1.46E-03	-1.64
GWP-b	kg CO_2 equivalent	-0.14	-8.82E-05	0.16	ND	1.83E-07	0.00	7.70E-04	ND	0.00	0.00	0.00	-4.31E-06	5.0E-04	-4.31E-05	-1.08E-03
GWP-l	kg CO_2 equivalent	0.001	3.56E-04	3.15E-07	ND	3.98E-10	0.00	4.57E-05	ND	0.00	0.00	0.00	1.74E-05	0.00	2.69E-06	-5.45E-04
ODP	kg CFC-11-eq.	9.08E-12	3.82E-15	1.25E-14	ND	6.44E-18	0.00	2.53E-13	ND	0.00	0.00	0.00	1.87E-16	7.50E-13	3.46E-15	-3.52E-12
AP	mol H^+-eq.	1.41E-02	6.25E-05	2.36E-05	ND	2.58E-09	0.00	2.50E-04	ND	0.00	0.00	0.00	3.06E-06	1.12E-04	1.03E-05	-8.05E-03
EP-fw	kg P-eq.	2.53E-06	1.91E-07	2.98E-09	ND	2.07E-10	0.00	6.06E-08	ND	0.00	0.00	0.00	9.31E-09	1.49E-07	2.47E-09	-1.37E-06
EP-m	kg N-eq.	1.83E-03	1.99E-05	7.66E-06	ND	1.50E-09	0.00	3.57E-05	ND	0.00	0.00	0.00	9.70E-07	2.52E-05	2.64E-06	-9.95E-04
EP-t	mol N-eq.	2.00E-02	2.37E-04	1.12E-04	ND	7.94E-09	0.00	3.94E-04	ND	0.00	0.00	0.00	1.16E-05	2.65E-04	2.90E-05	-1.08E-02
POCP	kg NMVOC-eq.	6.02E-03	5.47E-05	2.08E-05	ND	2.10E-09	0.00	1.17E-04	ND	0.00	0.00	0.00	2.67E-06	6.82E-05	8.02E-06	-3.26E-03
ADPF*²	MJ	35.39	0.85	3.44E-02	ND	2.06E-05	0.00	0.70	ND	0.00	0.00	0.00	4.17E-02	0.93	1.91E-02	-19.70
ADPE*²	kg Sb equivalent	5.72E-05	5.34E-09	3.04E-10	ND	1.73E-13	0.00	9.61E-07	ND	0.00	0.00	0.00	2.61E-10	1.40E-08	1.50E-10	-3.32E-05
WDP*²	m^3 world-eq. deprived	0.75	0.00	1.74E-02	ND	7.94E-04	0.00	1.48E-02	ND	0.00	0.00	0.00	2.80E-05	1.17E-02	1.59E-04	-0.41
Resource management																
PERE	MJ	15.37	4.85E-02	1.36	ND	3.66E-06	0.00	0.58	ND	0.00	0.00	0.00	2.37E-03	0.52	2.87E-03	-2.86
PERM	MJ	1.35	0.00	-1.35	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERT	MJ	16.72	4.85E-02	7.98E-03	ND	3.66E-06	0.00	0.58	ND	0.00	0.00	0.00	2.37E-03	0.52	2.87E-03	-2.86
PENRE	MJ	35.40	0.86	0.074	ND	2.07E-05	0.00	0.70	ND	0.00	0.00	0.00	4.50E-02	0.93	1.92E-02	-19.71
PENRM	MJ	0.04	0.00	-0.04	ND	0.00	0.00	-3.29E-04	ND	0.00	0.00	0.00	-4.06E-03	-4.06E-03	-1.15E-04	0.00
PENRT	MJ	35.44	0.86	3.44E-02	ND	2.07E-05	0.00	0.70	ND	0.00	0.00	0.00	4.09E-02	0.93	1.91E-02	-19.71
SM	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RSF	MJ	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRSF	MJ	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	m^3	2.13E-02	5.48E-05	4.10E-04	ND	1.81E-05	0.00	1.33E-03	ND	0.00	0.00	0.00	2.86E-06	4.92E-04	4.83E-06	0.011
Categories of waste																
HWD	kg	1.90E-07	4.10E-12	3.32E-12	ND	1.88E-15	0.00	7.54E-09	ND	0.00	0.00	0.00	2.00E-13	8.04E-11	9.81E-13	-1.70E-09
NHWD	kg	0.23	1.23E-04	1.19E-03	ND	5.13E-06	0.00	8.48E-03	ND	0.00	0.00	0.00	5.99E-06	7.00E-04	0.10	-0.12
RWD	kg	7.79E-04	1.05E-06	2.04E-06	ND	6.95E-10	0.00	1.67E-05	ND	0.00	0.00	0.00	5.15E-08	1.49E-04	2.09E-07	-5.13E-04
Output material flows																
CRU	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	kg	1.85E-02	0.00	0.00	ND	0.00	0.00	7.40E-04	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MER	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	MJ	0.00	0.00	0.25	ND	0.00	0.00	0.01	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EET	MJ	0.00	0.00	0.45	ND	0.00	0.00	0.02	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Key:

GWP-t – Global warming potential – total **GWP-f** – global warming potential fossil fuels **GWP-b** – global warming potential - biogenic **GWP-l** – global warming potential - land use and land use change **ODP** – ozone depletion potential **AP** - acidification potential **EP-fw** - eutrophication potential - aquatic freshwater **EP-m** - eutrophication potential - aquatic marine **EP-t** - feutrophication potential - terrestrial **POCP** - photochemical ozone formation potential **ADPF*²** - abiotic depletion potential – fossil resources **ADPE*²** - abiotic depletion potential – minerals&metals **WDP*²** – Water (user) deprivation potential **PERE** - Use of renewable primary energy **PERM** - use of renewable primary energy resources **PERT** - total use of renewable primary energy resources **PENRE** - use of non-renewable primary energy **PENRM** - use of non-renewable primary energy resources **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 **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

ND - not considered

	Results per 1 kg of pedestal														
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Additional environmental impact indicators																
PM	Disease incidence	2.14E-07	3.71E-10	1.17E-10	ND	5.10E-14	2.14E-07	4.06E-09	ND	0.00	0.00	0.00	1.81E-11	9.32E-10	1.27E-10	-1.14E-07
IRP*[1]	kBq U235-eq.	0.13	1.54E-04	3.34E-04	ND	1.03E-07	0.13	4.25E-03	ND	0.00	0.00	0.00	2.52E-02	2.52E-02	2.28E-05	-7.47E-02
ETP-fw*[2]	CTUe	11.58	0.59	1.52E-02	ND	3.39E-05	11.58	-53.30	ND	0.00	0.00	0.00	0.41	0.41	1.07E-02	-1345.45
HTP-c*[2]	CTUh	6.69E-07	1.19E-11	1.05E-12	ND	1.30E-15	6.69E-07	1.07E-08	ND	0.00	0.00	0.00	1.17E-11	1.17E-11	1.63E-12	-4.01E-07
HTP-nc*[2]	CTUh	4.57E-08	6.17E-10	3.66E-11	ND	1.19E-13	4.57E-08	9.52E-10	ND	0.00	0.00	0.00	4.28E-10	4.28E-10	1.80E-10	-2.36E-08
SQP*[2]	dimensionless	29.88	0.29	1.02E-02	ND	2.74E-06	29.88	1.15	ND	0.00	0.00	0.00	0.34	0.34	4.15E-03	-2.07

Key:
PM – particulate matter emissions potential **IRP*[1]** – ionizing radiation potential – human health **ETP-fw*[2]** - Ecotoxicity potential – freshwater **HTP-c*[2]** - Human toxicity potential – cancer effects **HTP-nc*[2]** - Human toxicity potential – non-cancer effects **SQP*[2]** – soil quality potential
ND - not considered

Disclaimers:

*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.

*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 experience with the indicator.

Results per 1 kg of dock seal															
Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Core indicators															
GWP-t	kg CO_2 equivalent	3.14	6.54E-02	0.20	ND	8.74E-06	0.00	9.06E-02	ND	250.00	0.00	0.00	3.14E-03	5.17E-02	1.42E-03	-1.65
GWP-f	kg CO_2 equivalent	3.26	6.51E-02	6.03E-03	ND	7.74E-06	0.00	8.68E-02	ND	248.00	0.00	0.00	3.13E-03	5.12E-02	1.46E-03	-1.65
GWP-b	kg CO_2 equivalent	-0.12	-8.96E-05	0.19	ND	9.79E-07	0.00	3.33E-03	ND	2.68	0.00	0.00	-4.31E-06	4.61E-04	-4.31E-05	-3.68E-03
GWP-l	kg CO_2 equivalent	1.28E-03	3.62E-04	3.97E-07	ND	2.13E-09	0.00	6.40E-05	ND	0.0266	0.00	0.00	1.74E-05	1.08E-05	2.69E-06	-3.94E-04
ODP	kg CFC-11-eq.	9.96E-09	3.89E-15	1.52E-14	ND	3.45E-17	0.00	4.98E-10	ND	4.52E-09	0.00	0.00	1.87E-16	7.50E-13	3.46E-15	-5.25E-12
AP	mol H^+-eq.	0.01	6.35E-05	2.93E-05	ND	1.38E-08	0.00	2.33E-04	ND	0.52	0.00	0.00	3.06E-06	1.12E-04	1.03E-05	-5.55E-03
EP-fw	kg P-eq.	3.10E-06	1.94E-07	3.70E-09	ND	1.11E-09	0.00	9.34E-08	ND	9.14E-04	0.00	0.00	9.31E-09	1.49E-07	2.47E-09	-1.59E-06
EP-m	kg N-eq.	1.90E-03	2.02E-05	9.63E-06	ND	8.05E-09	0.00	5.06E-05	ND	0.13	0.00	0.00	9.70E-07	2.52E-05	2.64E-06	-9.46E-04
EP-t	mol N-eq.	0.021	2.41E-04	1.38E-04	ND	4.26E-08	0.00	5.29E-04	ND	1.31	0.00	0.00	1.16E-05	2.65E-04	2.90E-05	-1.11E-02
POCP	kg NMVOC-eq.	8.32E-03	5.56E-05	2.61E-05	ND	1.13E-08	0.00	2.79E-04	ND	0.33	0.00	0.00	2.67E-06	6.82E-05	8.02E-06	-2.91E-03
ADPF*²	MJ	47.87	0.87	0.04	ND	1.11E-04	0.00	1.48	ND	5160.00	0.00	0.00	4.17E-02	0.93	1.91E-02	-20.14
ADPE*²	kg Sb equivalent	6.95E-06	5.43E-09	3.71E-10	ND	9.25E-13	0.00	-1.46E-07	ND	3.80E-05	0.00	0.00	2.61E-10	1.40E-08	1.50E-10	-9.89E-06
WDP*²	m^3 world-eq. deprived	0.54	5.82E-04	0.02	ND	4.26E-03	0.00	2.21E-02	ND	54.60	0.00	0.00	2.80E-05	1.17E-02	1.59E-04	-0.13
Resource management															
PERE	MJ	14.48	4.93E-02	1.68	ND	1.96E-05	0.00	0.51	ND	3080.00	0.00	0.00	2.37E-03	0.52	2.87E-03	-6.48
PERM	MJ	1.68	0.00	-1.68	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERT	MJ	16.16	4.93E-02	9.70E-03	ND	1.96E-05	0.00	0.51	ND	3080.00	0.00	0.00	2.37E-03	0.52	2.87E-03	-6.48
PENRE	MJ	47.98	0.87	0.082	ND	1.11E-04	0.00	1.97	ND	5160.00	0.00	0.00	4.18E-02	7.96	2.73	-20.19
PENRM	MJ	7.07	0.00	-0.041	ND	0.00	0.00	-0.14	ND	0.00	0.00	0.00	0.00	-7.03	-2.71	0.00
PENRT	MJ	55.05	0.87	0.041	ND	1.11E-04	0.00	1.84	ND	5160.00	0.00	0.00	4.18E-02	0.93	1.91E-02	-20.19
SM	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RSF	MJ	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRSF	MJ	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	m^3	6.27E-02	5.58E-05	4.90E-04	ND	9.67E-05	0.00	2.56E-03	ND	2.50	0.00	0.00	2.68E-06	4.92E-04	4.83E-06	-1.25E-02
13E **Categories of waste**															
HWD	kg	1.68E-04	4.16E-12	4.06E-12	ND	1.01E-14	0.00	8.40E-06	ND	-4.04E-07	0.00	0.00	2.00E-13	8.04E-11	9.81E-13	-2.14E-09
NHWD	kg	0.44	1.25E-04	1.63E-03	ND	2.75E-05	0.00	1.56E-02	ND	3.78	0.00	0.00	5.99E-06	7.00E-04	0.10	-0.23
RWD	kg	1.53E-03	1.07E-06	2.47E-06	ND	3.72E-09	0.00	3.87E-05	ND	0.82	0.00	0.00	5.15E-08	1.49E-04	2.09E-07	-9.09E-04
Output material flows															
CRU	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	kg	0.02	0.00	0.00	ND	0.00	0.00	4.60E-02	ND	0.00	0.00	0.00	0.00	0.90	0.00	0.00
MER	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	MJ	0.00	0.00	0.29	ND	0.00	0.00	1.45E-02	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EET	MJ	0.00	0.00	0.52	ND	0.00	0.00	2.60E-02	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Key:
GWP-t – Global warming potential – total **GWP-f** – global warming potential fossil fuels **GWP-b** – global warming potential - biogenic **GWP-l** – global warming potential - land use and land use change **ODP** – ozone depletion potential **AP** - acidification potential **EP-fw** - eutrophication potential - aquatic freshwater **EP-m** - eutrophication potential - aquatic marine **EP-t** - feutrophication potential - terrestrial **POCP** - photochemical ozone formation potential **ADPF*²** - abiotic depletion potential – fossil resources **ADPE*²** - abiotic depletion potential – minerals&metals **WDP*²** – Water (user) deprivation potential **PERE** - Use of renewable primary energy **PERM** - use of renewable primary energy resources **PERT** - total use of renewable primary energy resources **PENRE** - use of non-renewable primary energy **PENRM** - use of non-renewable primary energy resources **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 **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
ND - not considered

	Results per 1 kg of dock seal														
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Additional environmental impact indicators																
PM	Disease incidence	1.53E-07	3.77E-10	1.45E-10	ND	2.74E-13	0.00	4.75E-09	ND	4.40E-06	0.00	0.00	1.81E-11	9.32E-10	1.27E-10	-5.95E-08
IRP*[1]	kBq U235-eq.	0.27	1.57E-04	4.04E-04	ND	5.49E-07	0.00	7.29E-03	ND	136.60	0.00	0.00	7.54E-06	2.52E-02	2.28E-05	-0.15
ETP-fw*[2]	CTUe	19.26	0.60	1.80E-02	ND	1.81E-04	0.00	14.68	ND	2280.00	0.00	0.00	2.89E-02	0.41	1.07E-02	273.33
HTP-c*[2]	CTUh	2.60E-09	1.21E-11	1.26E-12	ND	6.96E-15	0.00	7.49E-11	ND	7.60E-08	0.00	0.00	5.83E-13	1.17E-11	1.63E-12	-1.13E-09
HTP-nc*[2]	CTUh	6.90E-08	6.28E-10	4.45E-11	ND	6.38E-13	0.00	2.52E-09	ND	1.87E-06	0.00	0.00	3.02E-11	4.28E-10	1.80E-10	-2.00E-08
SQP*[2]	dimensionless	41.99	0.30	1.20E-02	ND	1.47E-05	0.00	2.01	ND	2020.00	0.00	0.00	1.43E-02	0.34	4.15E-03	-2.44

Key:
PM – particulate matter emissions potential **IRP*[1]** – ionizing radiation potential – human health **ETP-fw*[2]** - Ecotoxicity potential – freshwater **HTP-c*[2]** - Human toxicity potential – cancer effects **HTP-nc*[2]** - Human toxicity potential – non-cancer effects **SQP*[2]** – soil quality potential
ND - not considered

Disclaimers:

*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.

*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 experience with the indicator.

Results per 1 kg of dock leveller															
Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Core indicators															
GWP-t	kg CO_2 equivalent	2.36	6.12E-02	1.89E-03	ND	8.15E-07	0.00	5.64E-02	ND	62.40	0.00	0.00	3.14E-03	5.17E-02	1.42E-03	-1.07
GWP-f	kg CO_2 equivalent	2.35	6.10E-02	1.58E-03	ND	7.21E-07	0.00	5.63E-02	ND	61.60	0.00	0.00	3.13E-03	5.12E-02	1.46E-03	-1.06
GWP-b	kg CO_2 equivalent	3.92E-03	-8.40E-05	3.13E-04	ND	9.12E-08	0.00	8.09E-05	ND	0.67	0.00	0.00	-4.31E-06	4.61E-04	-4.31E-05	-2.54E-03
GWP-l	kg CO_2 equivalent	1.11E-03	3.39E-04	3.09E-07	ND	1.99E-10	0.00	4.71E-05	ND	6.60E-03	0.00	0.00	1.74E-05	1.08E-05	2.69E-06	-3.03E-04
ODP	kg CFC-11-eq.	2.60E-10	3.64E-15	1.03E-16	ND	3.22E-18	0.00	1.03E-11	ND	1.13E-09	0.00	0.00	1.87E-16	7.50E-13	3.46E-15	-4.04E-12
AP	mol H^+-eq.	5.95E-03	5.95E-05	2.45E-07	ND	1.29E-09	0.00	9.54E-05	ND	0.13	0.00	0.00	3.06E-06	1.12E-04	1.03E-05	-3.75E-03
EP-fw	kg P-eq.	2.44E-06	1.81E-07	2.69E-11	ND	1.04E-10	0.00	6.45E-08	ND	2.28E-04	0.00	0.00	9.31E-09	1.49E-07	2.47E-09	-1.17E-06
EP-m	kg N-eq.	1.36E-03	1.89E-05	6.49E-08	ND	7.50E-10	0.00	3.37E-05	ND	0.0312	0.00	0.00	9.70E-07	2.52E-05	2.64E-06	-5.66E-04
EP-t	mol N-eq.	1.47E-02	2.26E-04	1.14E-06	ND	3.97E-09	0.00	3.65E-04	ND	0.33	0.00	0.00	1.16E-05	2.65E-04	2.90E-05	-6.12E-03
POCP	kg NMVOC-eq.	4.47E-03	5.21E-05	1.83E-07	ND	1.05E-09	0.00	1.12E-04	ND	0.0832	0.00	0.00	2.67E-06	6.82E-05	8.02E-06	-1.81E-03
ADPF*²	MJ	24.62	0.81	2.81E-04	ND	1.03E-05	0.00	0.54	ND	1284.00	0.00	0.00	4.17E-02	0.93	1.91E-02	-13.02
ADPE*²	kg Sb equivalent	2.27E-05	5.08E-09	2.51E-12	ND	8.62E-14	0.00	1.77E-07	ND	9.46E-06	0.00	0.00	2.61E-10	1.40E-08	1.50E-10	-1.83E-05
WDP*²	m^3 world-eq. deprived	0.14	5.45E-04	1.85E-02	ND	3.97E-04	0.00	-1.56E-03	ND	13.58	0.00	0.00	2.80E-05	1.17E-02	1.59E-04	-0.21
Resource management															
PERE	MJ	4.24	4.62E-02	1.76	ND	1.83E-06	0.00	0.16	ND	766.00	0.00	0.00	2.37E-03	0.52	2.87E-03	-2.46
PERM	MJ	1.76	0.00	-1.76	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERT	MJ	6.00	4.62E-02	6.54E-05	ND	1.83E-06	0.00	0.16	ND	766.00	0.00	0.00	2.37E-03	0.52	2.87E-03	-2.46
PENRE	MJ	24.73	0.81	4.10E-02	ND	1.04E-05	0.00	0.55	ND	1284.00	0.00	0.00	4.18E-02	1.04	2.47E-02	-13.02
PENRM	MJ	7.07	0.00	-4.10E-02	ND	0.00	0.00	0.28	ND	0.00	0.00	0.00	0.00	-0.11	-5.68E-03	0.00
PENRT	MJ	31.77	0.81	2.81E-04	ND	1.04E-05	0.00	0.82	ND	1284.00	0.00	0.00	4.18E-02	0.93	1.91E-02	-13.02
SM	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RSF	MJ	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRSF	MJ	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	m^3	6.27E-02	5.22E-05	4.34E-06	ND	9.02E-06	0.00	2.28E-03	ND	0.62	0.00	0.00	2.68E-06	4.92E-04	4.83E-06	-6.28E-03
13E **Categories of waste**															
HWD	kg	4.21E-06	3.90E-12	2.70E-14	ND	9.41E-16	0.00	1.68E-07	ND	-1.00E-07	0.00	0.00	2.00E-13	8.04E-11	9.81E-13	-1.55E-09
NHWD	kg	6.05E-02	1.17E-04	1.63E-05	ND	2.56E-06	0.00	3.95E-03	ND	0.94	0.00	0.00	5.99E-06	7.00E-04	0.10	-6.25E-02
RWD	kg	2.70E-04	1.00E-06	1.64E-08	ND	3.47E-10	0.00	4.05E-06	ND	0.20	0.00	0.00	5.15E-08	1.49E-04	2.09E-07	-3.19E-04
Output material flows															
CRU	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	kg	0.04	0.00	0.00	ND	0.00	0.00	1.60E-03	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MER	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	MJ	0.00	0.00	3.84E-03	ND	0.00	0.00	1.54E-04	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EET	MJ	0.00	0.00	6.85E-03	ND	0.00	0.00	2.74E-04	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Key:
GWP-t – Global warming potential – total **GWP-f** – global warming potential fossil fuels **GWP-b** – global warming potential - biogenic **GWP-l** – global warming potential - land use and land use change **ODP** – ozone depletion potential **AP** - acidification potential **EP-fw** - eutrophication potential - aquatic freshwater **EP-m** - eutrophication potential - aquatic marine **EP-t** - feutrophication potential - terrestrial **POCP** - photochemical ozone formation potential **ADPF*²** - abiotic depletion potential – fossil resources **ADPE*²** - abiotic depletion potential – minerals&metals **WDP*²** – Water (user) deprivation potential **PERE** - Use of renewable primary energy **PERM** - use of renewable primary energy resources **PERT** - total use of renewable primary energy resources **PENRE** - use of non-renewable primary energy **PENRM** - use of non-renewable primary energy resources **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 **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
ND - not considered

	Results per 1 kg of dock leveller														
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Additional environmental impact indicators																
PM	Disease incidence	7.36E-08	3.77E-10	1.40E-12	ND	2.55E-14	0.00	1.05E-09	ND	1.10E-06	0.00	0.00	1.81E-11	9.32E-10	1.27E-10	-4.87E-08
IRP*[1]	kBq U235-eq.	0.033	1.57E-04	2.67E-06	ND	5.12E-08	0.00	5.36E-04	ND	34.00	0.00	0.00	7.54E-06	2.52E-02	2.28E-05	-4.50E-02
ETP-fw*[2]	CTUe	6.95	0.60	1.31E-04	ND	1.69E-05	0.00	11.17	ND	566.00	0.00	0.00	2.89E-02	0.41	1.07E-02	271.17
HTP-c*[2]	CTUh	6.61E-09	1.21E-11	1.26E-14	ND	6.49E-16	0.00	-5.49E-09	ND	1.89E-08	0.00	0.00	5.83E-13	1.17E-11	1.63E-12	-1.44E-07
HTP-nc*[2]	CTUh	5.07E-08	6.28E-10	4.23E-13	ND	5.95E-14	0.00	1.54E-09	ND	.64E-07	0.00	0.00	3.02E-11	4.28E-10	1.80E-10	-1.35E-08
SQP*[2]	dimensionless	2.24	0.30	8.29E-05	ND	1.37E-06	0.00	0.04	ND	504.00	0.00	0.00	1.43E-02	0.34	4.15E-03	-1.84

Key:
PM – particulate matter emissions potential **IRP*[1]** – ionizing radiation potential – human health **ETP-fw*[2]** - Ecotoxicity potential – freshwater **HTP-c*[2]** - Human toxicity potential – cancer effects **HTP-nc*[2]** - Human toxicity potential – non-cancer effects **SQP*[2]** – soil quality potential
ND - not considered

Disclaimers:
*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.

*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 experience with the indicator.

Results per 1 m² of loading house															
Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Core indicators															
GWP-t	kg CO_2 equivalent	106.95	2.99	11.13	ND	4.52E-04	0.00	2.47	ND	0.00	0.00	0.00	0.14	2.19	6.32E-02	-61.73
GWP-f	kg CO_2 equivalent	116.18	2.97	0.34	ND	4.00E-04	0.00	2.41	ND	0.00	0.00	0.00	0.14	2.17	6.50E-02	-61.61
GWP-b	kg CO_2 equivalent	-9.26	-4.09E-03	10.79	ND	5.06E-05	0.00	5.77E-02	ND	0.00	0.00	0.00	-1.93E-04	1.96E-02	-1.92E-03	-0.10
GWP-l	kg CO_2 equivalent	3.24E-02	1.65E-02	2.08E-05	ND	1.10E-07	0.00	1.53E-03	ND	0.00	0.00	0.00	7.77E-04	4.59E-04	1.20E-04	-1.20E-02
ODP	kg CFC-11-eq.	6.45E-11	1.78E-13	8.25E-13	ND	1.78E-15	0.00	-2.48E-11	ND	0.00	0.00	0.00	8.35E-15	3.18E-11	1.54E-13	-7.17E-10
AP	mol H^+-eq.	0.26	2.90E-03	1.56E-03	ND	7.16E-07	0.00	5.59E-03	ND	0.00	0.00	0.00	1.36E-04	4.77E-03	4.60E-04	-0.13
EP-fw	kg P-eq.	1.22E-04	8.85E-06	1.97E-07	ND	5.74E-08	0.00	3.86E-06	ND	0.00	0.00	0.00	4.16E-07	6.34E-06	1.10E-07	-4.15E-05
EP-m	kg N-eq.	6.49E-02	9.22E-04	5.08E-04	ND	4.16E-07	0.00	1.38E-03	ND	0.00	0.00	0.00	4.33E-05	1.07E-03	1.18E-04	-3.31E-02
EP-t	mol N-eq.	0.70	1.10E-02	7.42E-03	ND	2.20E-06	0.00	1.53E-02	ND	0.00	0.00	0.00	5.19E-04	1.12E-02	1.29E-03	-0.35
POCP	kg NMVOC-eq.	0.21	2.54E-03	1.38E-03	ND	5.82E-07	0.00	4.29E-03	ND	0.00	0.00	0.00	1.19E-04	2.89E-03	3.58E-04	-0.11
ADPF*²	MJ	1266.48	39.61	2.28	ND	5.72E-03	0.00	28.64	ND	0.00	0.00	0.00	1.86	39.40	0.85	-634.43
ADPE*²	kg Sb equivalent	6.29E-04	2.48E-07	2.01E-08	ND	4.78E-11	0.00	1.16E-05	ND	0.00	0.00	0.00	1.17E-08	5.92E-07	6.70E-09	-3.41E-04
WDP*²	m^3 world-eq. deprived	16.40	2.66E-02	1.15	ND	0.22	0.00	0.71	ND	0.00	0.00	0.00	1.25E-03	0.50	7.10E-03	-0.26
Resource management															
PERE	MJ	187.62	2.25	92.04	ND	1.01E-03	0.00	9.94	ND	0.00	0.00	0.00	0.11	21.88	0.13	-55.53
PERM	MJ	91.51	0.00	-91.51	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERT	MJ	279.13	2.25	0.53	ND	1.01E-03	0.00	9.94	ND	0.00	0.00	0.00	0.11	21.88	0.13	-55.53
PENRE	MJ	1269.52	39.71	3.51	ND	5.74E-03	0.00	30.74	ND	0.00	0.00	0.00	4.18E-02	90.81	0.85	-635.98
PENRM	MJ	55.35	0.00	-1.23	ND	0.00	0.00	0.11	ND	0.00	0.00	0.00	0.00	-51.40	0.00	0.00
PENRT	MJ	1324.87	39.71	2.28	ND	5.74E-03	0.00	30.96	ND	0.00	0.00	0.00	4.18E-02	39.41	3.56	-635.98
SM	kg	0.00	0.00	0.00	ND	0.00	0.00	-0.11	ND	0.00	0.00	0.00	0.00	0.00	-2.71	0.00
RSF	MJ	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRSF	MJ	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	m^3	0.49	2.55E-03	2.69E-02	ND	5.00E-03	0.00	1.12E-02	ND	0.00	0.00	0.00	2.68E-06	2.09E-02	2.16E-04	-0.26
13E **Categories of waste**															
HWD	kg	1.00E-07	1.90E-10	2.20E-10	ND	5.22E-13	0.00	7.15E-10	ND	0.00	0.00	0.00	8.94E-12	3.41E-09	4.38E-11	-8.60E-08
NHWD	kg	3.36	5.69E-03	7.90E-02	ND	1.42E-03	0.00	0.24	ND	0.00	0.00	0.00	2.68E-04	2.97E-02	4.36	-1.79
RWD	kg	8.05E-03	4.89E-05	1.35E-04	ND	1.92E-07	0.00	2.55E-04	ND	0.00	0.00	0.00	2.30E-06	6.30E-03	9.33E-06	-8.18E-03
Output material flows															
CRU	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	kg	0.84	0.00	0.00	ND	0.00	0.00	1.73	ND	0.00	0.00	0.00	0.00	42.30	0.00	0.00
MER	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	MJ	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EET	MJ	0.00	0.00	0.00	ND	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Key:
GWP-t – Global warming potential – total **GWP-f** – global warming potential fossil fuels **GWP-b** – global warming potential - biogenic **GWP-l** – global warming potential - land use and land use change **ODP** – ozone depletion potential **AP** - acidification potential **EP-fw** - eutrophication potential - aquatic freshwater **EP-m** - eutrophication potential - aquatic marine **EP-t** - feutrophication potential - terrestrial **POCP** - photochemical ozone formation potential **ADPF*²** - abiotic depletion potential – fossil resources **ADPE*²** - abiotic depletion potential – minerals&metals **WDP*²** – Water (user) deprivation potential **PERE** - Use of renewable primary energy **PERM** - use of renewable primary energy resources **PERT** - total use of renewable primary energy resources **PENRE** - use of non-renewable primary energy **PENRM** - use of non-renewable primary energy resources **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 **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
ND - not considered

	Results per 1 m² of loading house														
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Additional environmental impact indicators																
PM	Disease incidence	4.36E-06	1.72E-08	7.68E-09	ND	1.41E-11	0.00	1.10E-07	ND	0.00	0.00	0.00	8.11E-10	3.95E-08	5.67E-09	-1.68E-06
IRP*[1]	kBq U235-eq.	1.35	7.17E-03	2.21E-02	ND	2.84E-05	0.00	4.28E-02	ND	0.00	0.00	0.00	3.37E-04	1.07	1.02E-03	-1.38
ETP-fw*[2]	CTUe	356.85	27.50	1.01	ND	9.38E-03	0.00	0.67	ND	0.00	0.00	0.00	1.29	17.26	0.48	-387.56
HTP-c*[2]	CTUh	9.66E-08	5.54E-10	6.90E-11	ND	3.60E-13	0.00	1.90E-09	ND	0.00	0.00	0.00	2.61E-11	4.96E-10	7.27E-11	-5.04E-08
HTP-nc*[2]	CTUh	1.86E-06	2.87E-08	2.41E-09	ND	3.30E-11	0.00	4.30E-08	ND	0.00	0.00	0.00	1.35E-09	1.81E-08	8.06E-09	-8.44E-07
SQP*[2]	dimensionless	4.60	0.27	2.22E-03	ND	7.58E-04	0.00	0.17	ND	0.00	0.00	0.00	1.43E-02	0.34	4.15E-03	-1.10

Key:
PM – particulate matter emissions potential **IRP*[1]** – ionizing radiation potential – human health **ETP-fw*[2]** - Ecotoxicity potential – freshwater **HTP-c*[2]** - Human toxicity potential – cancer effects **HTP-nc*[2]** - Human toxicity potential – non-cancer effects **SQP*[2]** – soil quality potential
ND - not considered

Disclaimers:
*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.

*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 experience with the indicator.

6.4 Interpretation, LCA presentation and critical review

Evaluation

The environmental impact of 1 m² of loading house is influenced in almost all impact categories by the manufacturing costs of the steel and sheet steel used. A secondary role is played by the manufacturing costs of the sandwich panel used. The environmental impact of transportation and production is very marginal.

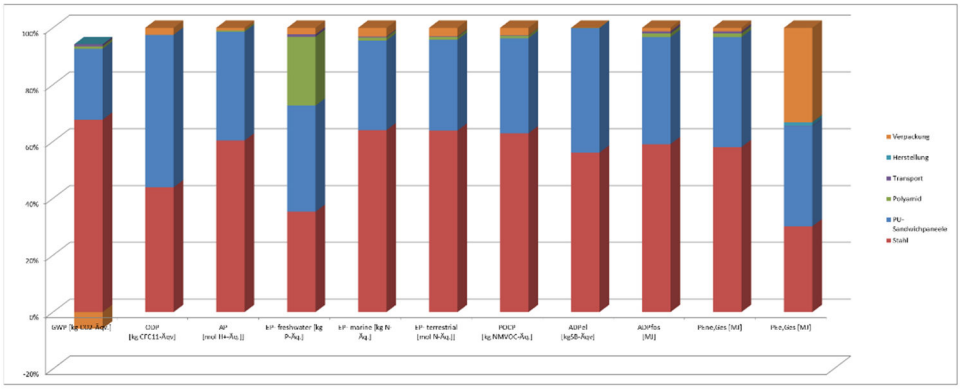
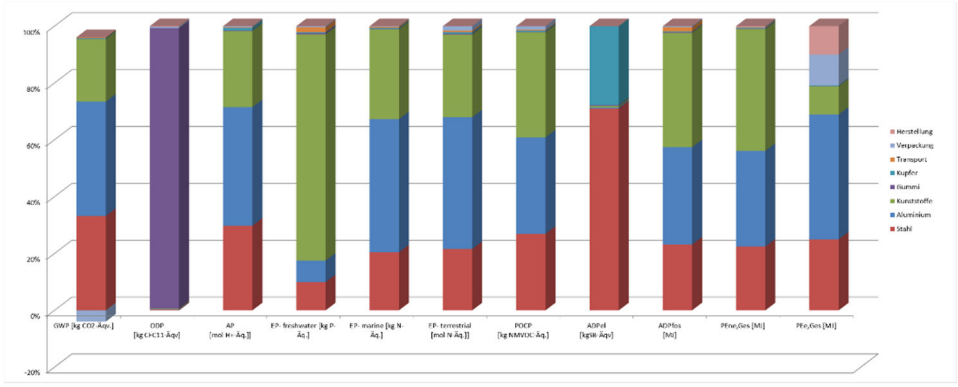


Illustration 7 Percentages of selected components, manufacturing and transport at the production stage based on selected environmental impact categories (loading house)

The environmental impact per kg of dock seal is primarily dominated by the manufacturing costs of the aluminium, steel and plastics used and only secondarily by the manufacturing costs and packaging. The rubber used is the main driver in the environmental impact category of ozone depletion (ODP). The environmental impact of transportation is very low.

Illustration 8 Percentage shares of selected components, production and



transportation in the production stage based on selected environmental impact categories (dock seal)

The environmental impact per kg accessories is influenced in almost all categories by the manufacturing costs of the steel used. The manufacturing costs of the plastic used play a subordinate role. As in the case of the front floodgate and the gate sealing, transportation plays virtually no role in the environmental impact.

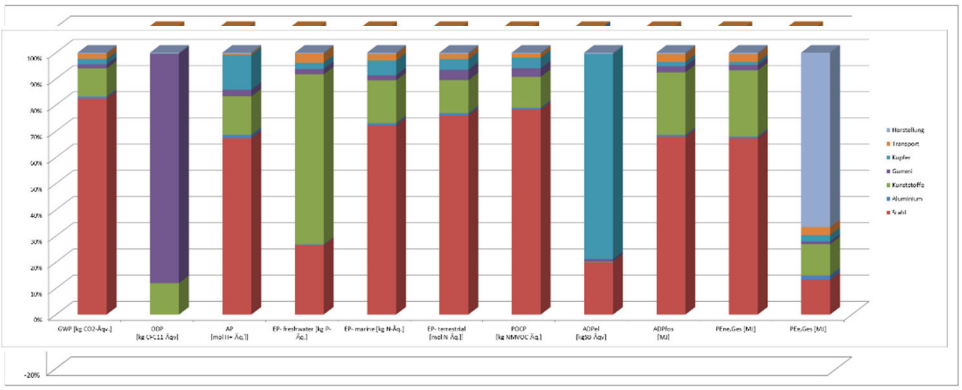


Illustration 9 Percentages of selected components, manufacturing and transport at the production stage based on selected environmental impact categories (accessories)

All impact categories per kg of pedestal are mainly determined by the manufacturing costs of steel and sheet steel. A secondary role is played by the manufacturing costs of the polyamide used. Packaging, transport and production only have a very marginal impact on the environment.

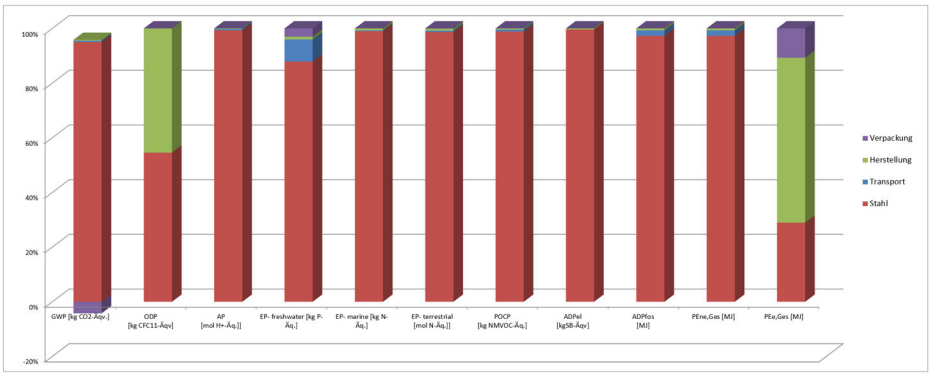


Illustration 10 Percentages of selected components, manufacturing and transport at the production stage based on selected environmental impact categories (pedestal)

The environmental impact per kg of dock leveller is primarily dominated by the manufacturing costs of the steel, sheet steel and polyurethane as well as the manufacturing process. Transport and packaging can be virtually neglected.

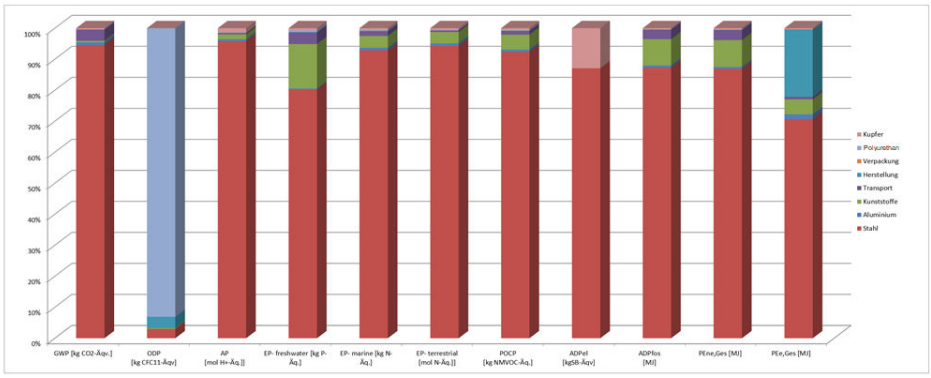


Illustration 11 Percentages of selected components, manufacturing and transport at the production stage based on selected environmental impact categories (dock leveller)

Compared to the EPD from 2017, the LCA results have decreased in some environmental categories and increased in others. The reasons for this are that other, more suitable data sets were used, the background data in the database has changed and a new data collection was carried out by the declaration holder.

In principle, the results of the previous EPD are not directly comparable with the updated, current version. The reason for this is the change in the course of updating the underlying methodology according to EN 15804+A2.

The values obtained from the LCA calculation are suitable for the certification of buildings.

Report

The LCA report underlying this EPD was developed according to the requirements of DIN EN ISO 14040 and DIN EN ISO 14044 as well as DIN EN 15804 and DIN EN ISO 14025. It is deposited with ift Rosenheim. The results and conclusions reported to the target group are complete, correct, without bias and transparent. The results of the study are not designed to be used for comparative statements intended for publication.

Critical review

The critical review of the life cycle assessment was carried out by the independent ift auditor Benedikt Dellawalle, M.Sc.

7 General information regarding the EPD

Comparability

This EPD was prepared in accordance with DIN EN 15804 and is therefore only comparable to those EPDs that also comply with the requirements set out in DIN EN 15804.
Any comparison must refer to the building context and the same boundary conditions of the various life cycle stages.

For comparing EPDs of construction products, the rules set out in DIN EN 15804, Clause 5.3, apply.

The detailed individual results of the products were summarised on the basis of conservative assumptions and differ from the average results. Identification of the product groups and the resulting variations are documented in the background report.

Communication

The communications format of this EPD meets the requirements of EN 15942:2012 and is therefore the basis for B2B communication. Only the nomenclature has been changed according to DIN EN 15804.

Verification

Verification of the Environmental Product Declaration is documented in accordance with the ift "Richtlinie zur Erstellung von Typ III Umweltproduktdeklarationen" (Guidance on preparing Type III Environmental Product Declarations) in accordance with the requirements set out in DIN EN ISO 14025.

The declaration is based on the PCR documents "PCR Part A" PCR-A-0.3:2018 and "Loading systems" PCR-VS-3.0: 2023

The European standard EN 15804 serves as the core PCR [a)]
Independent verification of the declaration and statement according to EN ISO 14025:2010
Independent third party verifier: [b)] [no external audit]
[a)] Product category rules [b)] Optional for business-to-business communication Mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4).

Revisions of this document

No.	Date	Note	Person in charge	Testing personnel
1	31.10.2023	Initial internal review and approval	F. Brechleiter	B. Dellawalle
2	27.11.2023	editorial changes	F. Brechleiter	B. Dellawalle

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9 Annex

Description of life cycle scenarios for Loading technology

Product stage			Con-struction process stage		Use stage*							End-of-life stage				Benefits and loads beyond system boundaries
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw material supply	Transport	production	Transport	Construction/installation process	Use	maintenance	Repair	replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/demolition	Transport	Waste processing	Disposal	Reuse Recovery Recycling potential
✓	✓	✓	✓	✓	—	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓

* For declared B-modules, the calculation of the results is performed taking into account the specified RSL related to one year

Table 12 Overview of applied life cycle stages

The scenarios were calculated taking into account the defined building service life of 50 years (according to RSL at 4 Use stage).

The service life of the loading system components from Hörman Alkmaar B.V. is specified as 25 years (loading house, dock leveller, pedestal, accessories) and dock seals as 20 years according to the BBSR table.

The scenarios were furthermore based on the research project “EPDs for transparent building components”.

Note: The standard scenarios selected are presented in bold type. They were also used for calculating the indicators in the summary table.

- ✓ Included in the LCA
- — Not included in the LCA

A4 Transport to construction site

No.	Scenario	Description
A4	Direct delivery to construction site/branch domestic	40 t truck (Euro 6 mix), diesel, 27 t payload, 80 % capacity utilization, approx. 890 km to construction site abroad and back with 75 % capacity utilization

A4 Transport to construction site	Transport weight [kg/kg]	Density [kg/m³]	Capacity load factor[2]
Accessories	1.02	37.6	< 1
Pedestal	1.09	426.9	< 1
Loading house	50.58 (Transport weight [kg/m²])	497.1	< 1
Dock seal	1.11	159.3	< 1
Dock leveller	1.00	284.4	< 1

[2] Capacity load factor:
= 1 Product completely fills the packaging (without air inclusion)
< 1 Packaging contains unused volume (e.g.: air, filling material)
> 1 Product is packed in compressed form

Since this is a single scenario, the results are shown in the relevant summary table.

A5 Construction/Installation

No.	Scenario	Description
A5	Small lifting trolley / lifting platform	A small lifting trolley / lift truck is required for the installation of the units.

In case of deviating consumption the installation of the products forms part of site management and is covered at the building level.

Ancillary materials, consumables, use of energy and water, other resource use, material losses, direct emissions as well as waste during construction / installation are negligible.

It is assumed that the packaging material in the Module construction / installation is sent to waste handling. Waste is only thermally recycled in line with the conservative approach: Films/casings, wood and carton in incineration plants. Benefits from A5 are specified in module D. Benefits from waste incineration: Benefits from waste incineration: electricity replaces electricity mix (RER); thermal energy replaces thermal energy from European natural gas (RER). Transport to the recycling plants is not taken into account.

Since this is a single scenario, the results are shown in the summary table.

B2 Inspection, maintenance, cleaning

B2.1 Cleaning

No.	Scenario	Description
B2.1	normal manual	Manual using suitable cleaning agents, semi-annually (approx. 2.5 l/m²)

Ancillary materials, consumables, use of energy, material losses and waste as well as transport distances during cleaning are negligible.

Since this is a single scenario, the results are shown in the relevant summary table.

B2.2 Maintenance

No.	Scenario	Description
B2.2	**Normal use**	**Daily operability test**

Use of energy and water, material losses and waste as well as transport distances during maintenance are negligible.

Since this is a single scenario, the results are shown in the relevant summary table.

B3 Repair

No.	Scenario	Description
B3	**Normal use**	**According to EN 15804: The "Repair" module covers the combination of all planned technical and related administrative activities [...].**

* Assumptions for evaluation of possible environmental impacts; statements made do not constitute any guaranty or warranty of performance.

For updated information refer to the relevant instructions for assembly/installation, operation and maintenance issued by Hörmann Alkmaar B.V..

Since this is a single scenario, the results are shown in the relevant summary table.

B4 Exchange / Replacement

No.	Scenario	Description
B4.1	No replacement	A replacement is not planned.
B4.2	**Normal use**	**Loading house, dock leveller, pedestal, accessories once in 25 years (RSL) Dock seals: Replacement once in 20 years (RSL)**

* Assumptions for evaluation of possible environmental impacts; statements made do not constitute any guaranty or warranty of performance.

The statements made in this EPD are only informative to allow evaluation at the building level.

It is assumed that a one-time replacement will be necessary during the 25-year reference service life for the components loading house, dock leveller, pedestal, accessories and platforms during the 50-year building service life. It is assumed that a 2-time replacement will be necessary during the 20-year reference service life for the component dock seal and the 50-year building service life.

The results were based on one year, taking into account the RSL.
Ancillary materials, consumables, use of energy and water, waste, material losses and transport distances during repair are negligible.

PG1 loading house			
B4 Exchange / Replacement	**Unit**	B4.1	**B4.2**
Core indicators			
GWP-t	kg CO_2 equivalent	0.00	**2.47**
GWP-f	kg CO_2 equivalent	0.00	**2.41**
GWP-b	kg CO_2 equivalent	0.00	**5.77E-02**
GWP-l	kg CO_2 equivalent	0.00	**1.53E-03**
ODP	kg CFC-11-eq.	0.00	**-2.48E-11**
AP	mol H^+-eq.	0.00	**5.59E-03**
EP-fw	kg P-eq.	0.00	**3.86E-06**
EP-m	kg N-eq.	0.00	**1.38E-03**
EP-t	mol N-eq.	0.00	**1.53E-02**
POCP	kg NMVOC-eq.	0.00	**4.29E-03**
ADPF	MJ	0.00	**28.64**
ADPE	kg Sb equivalent	0.00	**1.16E-05**
WDP	m^3 world-eq. deprived	0.00	**0.71**
Resource management			
PERE	MJ	0.00	**9.94**
PERM	MJ	0.00	**0.00**
PERT	MJ	0.00	**9.94**
PENRE	MJ	0.00	**30.74**
PENRM	MJ	0.00	**0.11**
PENRT	MJ	0.00	**30.96**
SM	kg	0.00	**-0.11**
RSF	MJ	0.00	**0.00**
NRSF	MJ	0.00	**0.00**
FW	m^3	0.00	**1.12E-02**
Categories of waste			
HWD	kg	0.00	**7.15E-10**
NHWD	kg	0.00	**0.24**
RWD	kg	0.00	**2.55E-04**
Output material flows			
CRU	kg	0.00	**0.00**
MFR	kg	0.00	**1.73**
MER	kg	0.00	**0.00**
EEE	MJ	0.00	**0.00**
EET	MJ	0.00	**0.00**
Additional environmental impact indicators			
PM	Disease incidence	0.00	**1.10E-07**
IRP	kBq U235-eq.	0.00	**4.28E-02**
ETPfw	CTUe	0.00	**0.67**
HTPc	CTUh	0.00	**1.90E-09**
HTPnc	CTUh	0.00	**4.30E-08**
SQP	dimensionless	0.00	**0.17**

PG2 dock seal			
B4 Exchange / Replacement	**Unit**	B4.1	**B4.2**
Core indicators			
GWP-t	kg CO_2 equivalent	0.00	**9.06E-02**
GWP-f	kg CO_2 equivalent	0.00	**8.68E-02**
GWP-b	kg CO_2 equivalent	0.00	**3.33E-03**
GWP-l	kg CO_2 equivalent	0.00	**6.40E-05**
ODP	kg CFC-11-eq.	0.00	**4.98E-10**

AP	mol H^+-eq.	0.00	**2.33E-04**
EP-fw	kg P-eq.	0.00	**9.34E-08**
EP-m	kg N-eq.	0.00	**5.06E-05**
EP-t	mol N-eq.	0.00	**5.29E-04**
POCP	kg NMVOC-eq.	0.00	**2.79E-04**
ADPF	MJ	0.00	**1.48**
ADPE	kg Sb equivalent	0.00	**-1.46E-07**
WDP	m^3 world-eq. deprived	0.00	**2.21E-02**
Resource management			
PERE	MJ	0.00	**0.51**
PERM	MJ	0.00	**0.00**
PERT	MJ	0.00	**0.51**
PENRE	MJ	0.00	**1.97**
PENRM	MJ	0.00	**-0.14**
PENRT	MJ	0.00	**1.84**
SM	kg	0.00	**0.00**
RSF	MJ	0.00	**0.00**
NRSF	MJ	0.00	**0.00**
FW	m^3	0.00	**2.56E-03**
Categories of waste			
HWD	kg	0.00	**8.40E-06**
NHWD	kg	0.00	**1.56E-02**
RWD	kg	0.00	**3.87E-05**
Output material flows			
CRU	kg	0.00	**0.00**
MFR	kg	0.00	**4.60E-02**
MER	kg	0.00	**0.00**
EEE	MJ	0.00	**1.45E-02**
EET	MJ	0.00	**2.60E-02**
Additional environmental impact indicators			
PM	Disease incidence	0.00	**4.75E-09**
IRP	kBq U235-eq.	0.00	**7.29E-03**
ETPfw	CTUe	0.00	**14.68**
HTPc	CTUh	0.00	**7.49E-11**
HTPnc	CTUh	0.00	**2.52E-09**
SQP	dimensionless	0.00	**2.01**

PG3 Accessories			
B4 Exchange / Replacement	**Unit**	B4.1	**B4.2**
Core indicators			
GWP-t	kg CO_2 equivalent	0.00	**8.70E-02**
GWP-f	kg CO_2 equivalent	0.00	**8.66E-02**
GWP-b	kg CO_2 equivalent	0.00	**4.48E-04**
GWP-l	kg CO_2 equivalent	0.00	**5.92E-05**
ODP	kg CFC-11-eq.	0.00	**3.80E-10**
AP	mol H^+-eq.	0.00	**1.84E-04**
EP-fw	kg P-eq.	0.00	**1.50E-07**
EP-m	kg N-eq.	0.00	**4.69E-05**
EP-t	mol N-eq.	0.00	**4.80E-04**
POCP	kg NMVOC-eq.	0.00	**1.79E-04**
ADPF	MJ	0.00	**1.45**
ADPE	kg Sb equivalent	0.00	**2.02E-07**
WDP	m^3 world-eq. deprived	0.00	**3.64E-03**

Resource management			
PERE	MJ	0.00	**0.43**
PERM	MJ	0.00	**1.36E-03**
PERT	MJ	0.00	**0.43**
PENRE	MJ	0.00	**1.82**
PENRM	MJ	0.00	**0.00**
PENRT	MJ	0.00	**1.82**
SM	kg	0.00	**0.00**
RSF	MJ	0.00	**0.00**
NRSF	MJ	0.00	**0.00**
FW	m^3	0.00	**3.69E-04**
Categories of waste			
HWD	kg	0.00	**1.92E-08**
NHWD	kg	0.00	**7.53E-03**
RWD	kg	0.00	**3.38E-05**
Output material flows			
CRU	kg	0.00	**0.00**
MFR	kg	0.00	**6.40E-03**
MER	kg	0.00	**0.00**
EEE	MJ	0.00	**5.16E-03**
EET	MJ	0.00	**9.20E-03**
Additional environmental impact indicators			
PM	Disease incidence	0.00	**1.97E-09**
IRP	kBq U235-eq.	0.00	**4.89E-03**
ETPfw	CTUe	0.00	**1.22**
HTPc	CTUh	0.00	**6.02E-11**
HTPnc	CTUh	0.00	**1.13E-09**
SQP	dimensionless	0.00	**0.17**

PG4 Pedestal			
B4 Exchange / Replacement	**Unit**	B4.1	**B4.2**
Core indicators			
GWP-t	kg CO_2 equivalent	0.00	**6.04E-02**
GWP-f	kg CO_2 equivalent	0.00	**5.95E-02**
GWP-b	kg CO_2 equivalent	0.00	**7.70E-04**
GWP-l	kg CO_2 equivalent	0.00	**4.57E-05**
ODP	kg CFC-11-eq.	0.00	**2.53E-13**
AP	mol H^+-eq.	0.00	**2.50E-04**
EP-fw	kg P-eq.	0.00	**6.06E-08**
EP-m	kg N-eq.	0.00	**3.57E-05**
EP-t	mol N-eq.	0.00	**3.94E-04**
POCP	kg NMVOC-eq.	0.00	**1.17E-04**
ADPF	MJ	0.00	**0.70**
ADPE	kg Sb equivalent	0.00	**9.61E-07**
WDP	m^3 world-eq. deprived	0.00	**1.48E-02**
Resource management			
PERE	MJ	0.00	**0.58**
PERM	MJ	0.00	**0.00**
PERT	MJ	0.00	**0.58**
PENRE	MJ	0.00	**0.70**
PENRM	MJ	0.00	**-3.29E-04**
PENRT	MJ	0.00	**0.70**
SM	kg	0.00	**0.00**
RSF	MJ	0.00	**0.00**

NRSF	MJ	0.00	**0.00**
FW	m^3	0.00	**1.33E-03**
Categories of waste			
HWD	kg	0.00	**7.54E-09**
NHWD	kg	0.00	**8.48E-03**
RWD	kg	0.00	**1.67E-05**
Output material flows			
CRU	kg	0.00	**0.00**
MFR	kg	0.00	**7.40E-04**
MER	kg	0.00	**0.00**
EEE	MJ	0.00	**0.01**
EET	MJ	0.00	**0.02**
Additional environmental impact indicators			
PM	Disease incidence	0.00	**4.06E-09**
IRP	kBq U235-eq.	0.00	**4.25E-03**
ETPfw	CTUe	0.00	**-53.30**
HTPc	CTUh	0.00	**1.07E-08**
HTPnc	CTUh	0.00	**9.52E-10**
SQP	dimensionless	0.00	**1.15**

PG5 dock leveller			
B4 Exchange / Replacement	**Unit**	B4.1	**B4.2**
Core indicators			
GWP-t	kg CO_2 equivalent	0.00	**5.64E-02**
GWP-f	kg CO_2 equivalent	0.00	**5.63E-02**
GWP-b	kg CO_2 equivalent	0.00	**8.09E-05**
GWP-l	kg CO_2 equivalent	0.00	**4.71E-05**
ODP	kg CFC-11-eq.	0.00	**1.03E-11**
AP	mol H^+-eq.	0.00	**9.54E-05**
EP-fw	kg P-eq.	0.00	**6.45E-08**
EP-m	kg N-eq.	0.00	**3.37E-05**
EP-t	mol N-eq.	0.00	**3.65E-04**
POCP	kg NMVOC-eq.	0.00	**1.12E-04**
ADPF	MJ	0.00	**0.54**
ADPE	kg Sb equivalent	0.00	**1.77E-07**
WDP	m^3 world-eq. deprived	0.00	**-1.56E-03**
Resource management			
PERE	MJ	0.00	**0.16**
PERM	MJ	0.00	**0.00**
PERT	MJ	0.00	**0.16**
PENRE	MJ	0.00	**0.55**
PENRM	MJ	0.00	**0.28**
PENRT	MJ	0.00	**0.82**
SM	kg	0.00	**0.00**
RSF	MJ	0.00	**0.00**
NRSF	MJ	0.00	**0.00**
FW	m^3	0.00	**2.28E-03**
Categories of waste			
HWD	kg	0.00	**1.68E-07**
NHWD	kg	0.00	**3.95E-03**
RWD	kg	0.00	**4.05E-06**
Output material flows			
CRU	kg	0.00	**0.00**
MFR	kg	0.00	**1.60E-03**

MER	kg	0.00	**0.00**
EEE	MJ	0.00	**1.54E-04**
EET	MJ	0.00	**2.74E-04**
Additional environmental impact indicators			
PM	Disease incidence	0.00	**1.05E-09**
IRP	kBq U235-eq.	0.00	**5.36E-04**
ETPfw	CTUe	0.00	**11.17**
HTPc	CTUh	0.00	**-5.49E-09**
HTPnc	CTUh	0.00	**1.54E-09**
SQP	dimensionless	0.00	**0.04**

B6 Operational energy use

No.	Scenario	Description	
B6	**power-operated**	**Electrical energy demand per year:**	
		PG1: Loading house	**0 kWh/a**
		PG2: Dock seal	**760 kWh/a**
		PG3: Accessories	**0 kWh/a**
		PG4: Pedestal	**0 kWh/a**
		PG5: Dock leveller	**189 kWh/a**

* Frequencies, usage times, number of users, cycles, etc.

There is no transport consumption for energy use in buildings. Ancillary materials, consumables and water, waste materials and other scenarios are negligible.

Since this is a single scenario, the results are shown in the relevant summary table.

B7 Operational water use
No water consumption when used as intended. Water consumption for cleaning is specified in Module B2.1.

There is no transport consumption for water use in buildings. Ancillary materials, consumables, waste materials and other scenarios are negligible.

Since this is a single scenario, the results are shown in the relevant summary table.

C1 Deconstruction

No.	Scenario	Description
C1	**Deconstruction**	**All product groups (based on EN 17213):** **95 % deconstruction** **5 % residues to landfill.** **Further deconstruction rates are possible, give adequate reasons.**

No relevant inputs or outputs apply to the scenario selected. The energy consumed for deconstruction is negligible. Any arising consumption is marginal.

Since this is a single scenario, the results are shown in the relevant summary table.

In case of deviating consumption the removal of the products forms part of site management and is covered at the building level.

C2 Transport

No.	Scenario	Description
C2	Transport	Transport to collection point with 40 t truck (Euro 6 Mix), diesel, 27 t payload, 85 %, approx. 50 km

Since this is a single scenario, the results are shown in the relevant summary table.

C3 Waste management

No.	Scenario	Description
C3	Current market situation	based on EN 17213 (glass-free materials) Metals 100 % in melt Plastics 100% thermal recycling in incineration plants

Electricity consumption of recycling plant: 0.5 MJ/kg.

As the products are placed on the European market, the disposal scenario is based on average European data sets.
The below table presents the disposal processes and their percentage by mass/weight. The calculation is based on the above mentioned shares in percent related to the declared unit of the product system.

C3 Disposal	Unit	Accessories	Pedestal	Dock seal	Dock leveller	Loading house
		1 kg	1 kg	1 kg	1 kg	1 m²
Collection process, collected separately	kg	0.95	0.95	0.95	0.95	42.28
Collection process, collected as mixed construction waste	kg	0.05	0.05	0.05	0.05	2.22
Recovery system, for re-use	kg	0.00	0.00	0.00	0.00	0.00
Recovery system, for recycling	kg	0.83	0.95	0.64	0.90	40.03
Recovery system, for energy recovery	kg	0.12	3.00-E03	0.31	0.05	2.24
Disposal	kg	0.05	0.05	0.05	0.05	2.23

Since this is a single scenario, the results are shown in the summary table.

C4 Disposal

No.	Scenario	Description
C4	Disposal	The non-recordable amounts and losses within the re-use/recycling chain (C1 and C3) are modelled as "disposed" (RER).

The consumption in scenario C4 results from physical pre-treatment, waste recycling and management of the disposal site. The benefits obtained here from the substitution of primary material production are allocated to Module D, e.g. electricity and heat from waste incineration.

Since this is a single scenario, the results are shown in the summary table.

D Benefits and loads from beyond the system boundaries

No.	Scenario	Description
D	Recycling potential (current market situation)	Share for recirculation of materials: • Benefits as a result of recycling of recyclable primary materials • Benefits as a result of thermal recycling of plastic components • Benefits as a result of thermal recycling of packaging materials (from module A5) Benefits from incineration plant: Benefits from waste incineration: electricity replaces electricity mix (RER); thermal energy replaces thermal energy from European natural gas (RER).

The values in Module D result from recycling of the packaging material in Module A5 and from deconstruction at the end of service life.

Since this is a single scenario, the results are shown in the summary table.

Imprint

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Notes
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