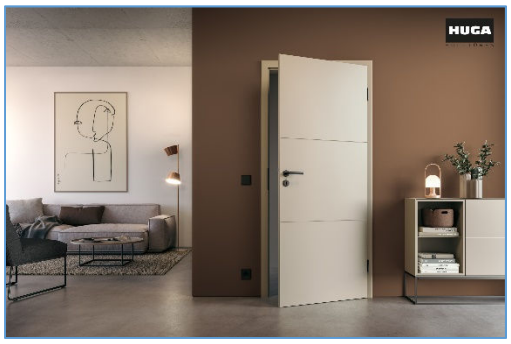
Environmental Product Declaration (EPD)

Declaration code: EPD-HHT-GB-91.0



HUGA KG

Doors

Internal doors, frame systems and functional doors made of timber

Basis:

DIN EN ISO 14025
EN 15804 + A2

Company EPD **E**nvironmental **P**roduct **D**eclaration

Publication date:
11.03.2025

Valid until:
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Testing + Calibration – EN ISO/IEC 17025
Inspection – EN ISO/IEC 17020
Product Certification – EN ISO/IEC 17065
Certification of Management Systems – EN ISO/IEC 17021

Notified Body 0757
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Environmental Product Declaration (EPD)

Declaration code: EPD-HHT-GB-91.0

Programme operator	ift Rosenheim GmbH Theodor-Gietl-Straße 7-9 83026 Rosenheim, Germany		
Practitioner of LCA	ift Rosenheim GmbH Theodor-Gietl-Straße 7-9 83026 Rosenheim, Germany		
Declaration holder	HUGA KG Osnabrücker Landstraße 139 33335 Gütersloh, Germany www.huga.de		
Declaration code	EPD-HHT-GB-91.0		
Designation of declared product	Internal doors, frame systems and functional doors made of timber		
Scope	HUGA timber doors for interior use. Room and apartment entrance doors for the commercial and private sector. Functional doors with sound insulation, wet room, burglar resistance and many other features.		
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 EN 17213 “PCR for windows and doors”, “PCR Part A” PCR-A-1.0:2023 and “Doors and gates" PCR-TT-3.0:2023.”		
Validity	Publication date: 11.03.2025	Last revision: 12.03.2025	Valid until: 11.03.2030
	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 are based on both the data compiled from the production site of HUGA KG and the generic data derived from the “LCA for Experts 10” database. LCA calculations were carried out for the “cradle to gate” life cycle with options (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.		

Christoph Seehauser Deputy Head for Sustainability	Dr. Torsten Mielecke Chairman of Expert Committee ift-EPD and PCR	Patrick Wortner External verifier

1 General product information

Product definition

The EPD relates to the product group Doors and applies to:

1 m² Internal doors and functional doors of company HUGA KG

The following products were analyzed on a representative basis for each product group:

Product group (PG):	Assessed product	Surface area of reference product	Weight per unit area
Multipurpose doors (PG1)	Tubular chip board, HPL - wood wraparound frame, HPL, wall thickness 140	1.23 x 2.18 m²	58.56 kg/m²
Standard doors (PG2)	Tubular chip board, white lacquer - wood wraparound frame, white lacquer, wall thickness 140	1.23 x 2.18 m²	36.70 kg/m²
Special doors (PG3)	Apartment entrance door 02: K3, smoke protection, sound insulation SK3, Durat - wood wraparound frame, smoke, Durat, wall thickness 140	1.23 x 2.18 m²	65.92 kg/m²
Sliding and folding elements (PG4)	Sliding door in front of the wall, Durat, with wooden box - passage lining, type C, Durat, passage lining, wall thickness 140	3.00 x 2.18 m²	30.12 kg/m²

Table 1 Product groups

The average unit is declared as follows:
Directly used material flows are determined using average sizes (1.23 m x 2.18 m or 3.00 m x 2.18 m) 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 average size is possible. The reference period is the year 2023.

The validity of the EPD is restricted to the following models:

Product group	Designation	Declared unit
PG1 Multipurpose door	• **Tubular chip board, HPL - wood wraparound frame, HPL, wall thickness 140** • Tubular chip board, Durat - wood wraparound frame, Durat, wall thickness 240 • Solid chip board, Durat - wood wraparound frame, Durat, wall thickness 140 • Tubular chip board contour, white lacquer - wood wraparound frame, white lacquer, wall thickness 140 • Solid chip board country house, white lacquer - wood wraparound frame, white lacquer, wall thickness 140 • Tubular chip board Lacuna, white lacquer - wood wraparound frame, white lacquer, wall thickness 140 • Acoustic insulation SK1, Durat - wood wraparound frame, wall thickness 140 • Acoustic insulation SK2, Durat - wood wraparound frame, wall thickness 140 • Double-action door, Durat, passage lining 140 - passage lining, Durat, wall thickness 140 • Tubular chip board, primer foil - wood wraparound frame, primer foil, wall thickness 140 • Solid chip board country house, Durat - wood wraparound frame, wall thickness 140	1 m²
PG2 Standard doors	• **Tubular chip board, white lacquer - wood wraparound frame, white lacquer, wall thickness 140** • Tubular chip board, Durat - wood wraparound frame, Durat, wall thickness 140 • Honeycomb, Durat - wood wraparound frame, Durat, wall thickness 140 • Studs, Durat - wood wraparound frame, Durat, wall thickness 140 • Tubular chip board signum, white lacquer - wood wraparound frame, white lacquer, wall thickness 140 • Tubular chip board Accura, white lacquer - wood wraparound frame, white lacquer, wall thickness 140	1 m²

PG3 Special doors	• **Apartment entrance door 02: K3, smoke protection, acoustic insulation SK3, Durat - wood wraparound frame, smoke, Durat, wall thickness 140** • Apartment entrance door 01: K3, acoustic insulation SK1, Durat - wood wraparound frame, wall thickness 140 • Apartment entrance door 02: K3, energy, Durat - wood wraparound frame, wall thickness 140 • Apartment entrance door 02: K3, acoustic insulation SK1, Durat - wood wraparound frame, wall thickness 140 • Apartment entrance door 02: K3, acoustic insulation SK2, Durat - wood wraparound frame, wall thickness 140 • Apartment entrance door 02: K3, acoustic insulation SK3, Durat - wood wraparound frame, wall thickness 140 • Apartment entrance door 02: K3, RC2, acoustic insulation SK2, Durat - wood wraparound frame, RC2, Durat, wall thickness 140 • Apartment entrance door 02: K3, RC2, acoustic insulation SK3, Durat - wood wraparound frame, RC2, Durat, wall thickness 140 • Apartment entrance door 02: K3, smoke protection, acoustic insulation SK2, Durat - wood wraparound frame, smoke, Durat, wall thickness 140 • Apartment entrance door 03: K3, RC3, acoustic insulation SK3, Durat - wood wraparound frame, RC3, Durat, wall thickness 140 • Solid chip board Sueno, Durat - wood wraparound frame, wall thickness 140 • Acoustic insulation SK3, Durat - wood wraparound frame, wall thickness 140	1 m²
PG4 Sliding and folding elements	• **Sliding door in front of the wall, Durat, with wooden box - passage lining, type C, Durat, passage lining, wall thickness 140** • Sliding door in front of the wall, Durat, type SlideCompact - passage lining, Durat, round, wall thickness 140 • Sliding door in the wall, Durat, single leaf, passage lining, wall thickness 240 • Sliding door in the wall, Durat, double leaf - passage lining, in the wall, Durat, double leaf, wall thickness 240 • Folding door, Durat, frame 140 - wood wraparound frame, Durat, wall thickness 140	1 m²

Product description

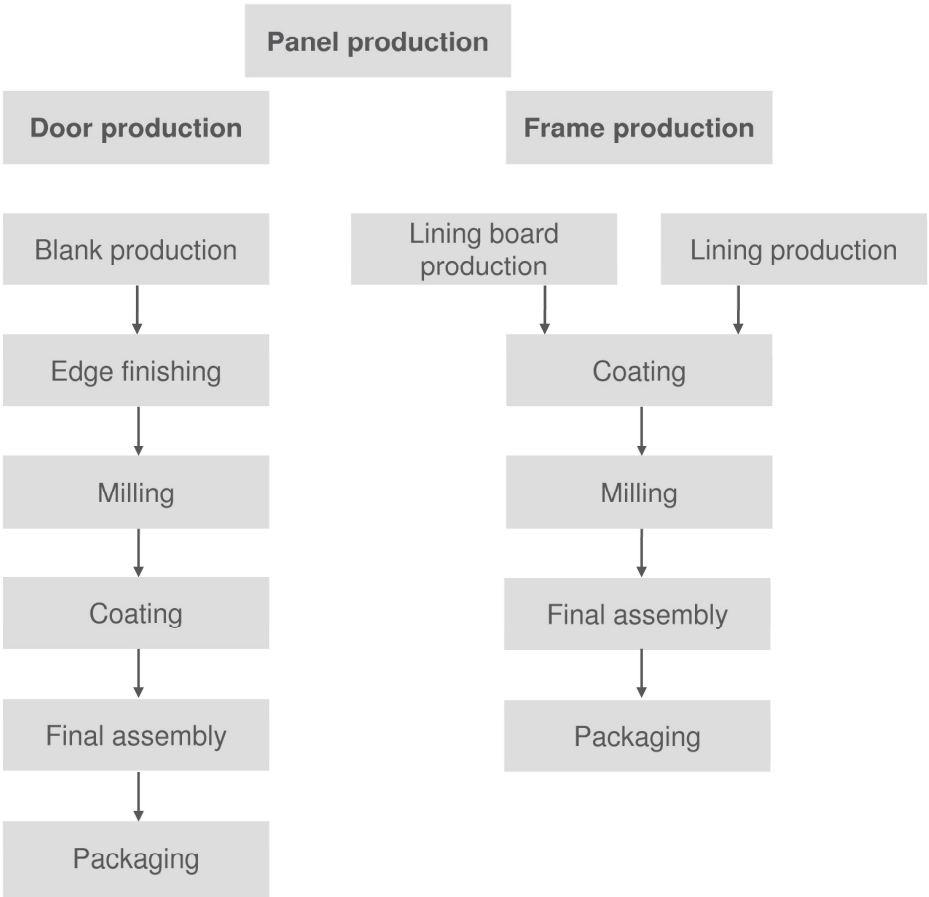
PG1: Multipurpose doors
Special standard doors with HPL, laminate, Durat or lacquered surfaces or with vision panel or with solid chipboard or sound insulation class SK1 or SK2 or suitable for damp rooms

PG2: Standard doors
All standard doors in simple designs, e.g. with tubular chipboard, honeycomb or web inserts. Both lacquered and Durat surfaces, optionally with design elements

PG3: Special doors
All apartment entrance doors, doors with burglar resistance or smoke protection, Sueno doors and doors with sound insulation class SK3

PG4: Sliding and folding elements
Sliding and folding elements with various tracks, wooden sliding doors
For a detailed product description refer to the manufacturer specifications or the product specifications of the respective offer/quotation.

Product manufacture



Scope

The high-quality wooden interior doors from HUGA are used in residential buildings, hotels and restaurants, doctor's offices, office and administration buildings, retirement homes and nursing homes, schools and educational establishments, nurseries and hospitals.
The doors are used in upmarket interior works and combine modern and classic designs.
In addition to standard doors, the HUGA range also includes double action doors, sliding doors, folding doors and apartment entrance doors. Solid wood doors and doors with vision panels are available.

The HUGA functional doors are available with acoustic insulation, humidor, burglar resistance, wet room, climate protection, radiation protection, fire protection, smoke protection and bullet resistance.
The Green-Fit frame system enables foam-free installation.

Quality assurance

The following quality assurance system are in place:

- RAL
- PEFC

See https://www.huga.de/unternehmen/downloads/

Management systems

The following management systems are held:

- Quality management system as per DIN EN ISO 9001:2015
- Energy management system as per DIN EN ISO 50001:2018

Additional information

The elements are available in the versions acoustic insulation SK1, SK2, SK3, glass door SK1, ECO climate class 2, climate class 3, burglar resistance RC2 and RC3, smoke protection, fire protection T30.

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 Life cycle inventory (Inputs).

Declarable substances

No substances according to REACH candidate list are included (declaration of February 2025).

All relevant safety data sheets can be obtained from company HUGA KG.

3 Construction process stage

Processing recommendations, installation

Observe the instructions for mounting/installation, operation, maintenance and disassembly, provided by the manufacturer. For this, see www.huga.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 internal doors, frame systems and functional doors made of wood from HUGA KG is optionally specified as 50 years for PG 1, PG 2, PG 3 and 30 years for PG 4 according to the BBSR table (344.111, 344.211, 344.313).

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

- Outdoor conditions: Weather conditions can have a negative effect on the service life.
- Indoor environment: Influences such as humidity and temperature can have a negative effect on the service life.

The reference service life is for the features, which are reported in this EPD or the relevant references for this purpose.
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 Internal doors, frame systems and functional doors made of timber 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.

This EPD shows the end-of-life modules according to the market situation.
Specific parts of metals are recycled. Plastics, wood and wood-based materials are thermally recycled.

Disposal routes

The average disposal routes were taken into account in the LCA.

All life cycle scenarios are detailed in the Annex.

6 Life Cycle Assessment (LCA)

Environmental product declarations are based on life cycle analyses (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 created for Internal doors, frame systems and functional doors made of timber . 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 and EN ISO 14025 as well as based on ISO 21930.

The LCA is representative of the products presented in the Declaration and the specified reference period.

6.1 Definition of goal and scope

Goal

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. Apart from these, no other environmental impacts have been specified.

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

The specific data originate exclusively from the 2023 fiscal year. They were collected on-site at the plant located in 33335 Gütersloh, Germany, and originate in parts from company records and partly from values directly obtained by measurement. Primary data was collected through specific measurements and from the company's own data management system for energy, water and packaging costs as well as for auxiliary materials and waste/offcuts. Secondary data from literature sources was used for waste recycling (routes). At the time of the plausibility check on 16.10.2024, data for energy, water, packaging costs, auxiliary materials and waste/scrap was available in full and was checked for validity.

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 2024. Data from before this date originate also from these databases and are not more than five 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” in version 10.9.0.20 with database version 2024.2 for the development of life cycle assessments. The LCA was evaluated using the EF3.1 impact assessment method.

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 the Internal doors, frame systems and functional doors made of timber . No additional data from pre-suppliers/subcontractors or other sites 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 used were taken into consideration as a function of 100% of the mass of the products.

In addition to the transport distances for pre-products, transport distances for waste were also taken into account. The transportation of waste generated in A3 was mapped using the following standard scenario:

- Transport to collection point with 40 t truck (Euro 0-6 Mix), diesel, 27 t payload, 50 % capacity used, 100 km. (1)

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 Life cycle inventory

Aim

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

Life cycle stages

The entire life cycle of Internal doors, frame systems and functional doors made of timber is shown in the annex. The product stage "A1 – A3", construction process stage "A4 – A5", use stage "B2 – 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

No allocations occur during production.

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 materials that enter the production process as input are calculated in module A1 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 in module A3 by HUGA KG was considered. Secondary material is not used.

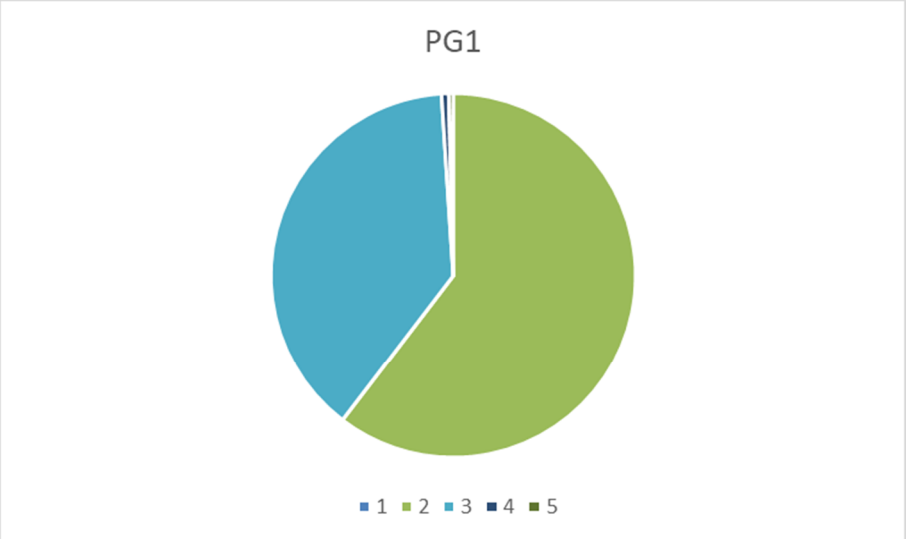
Inputs

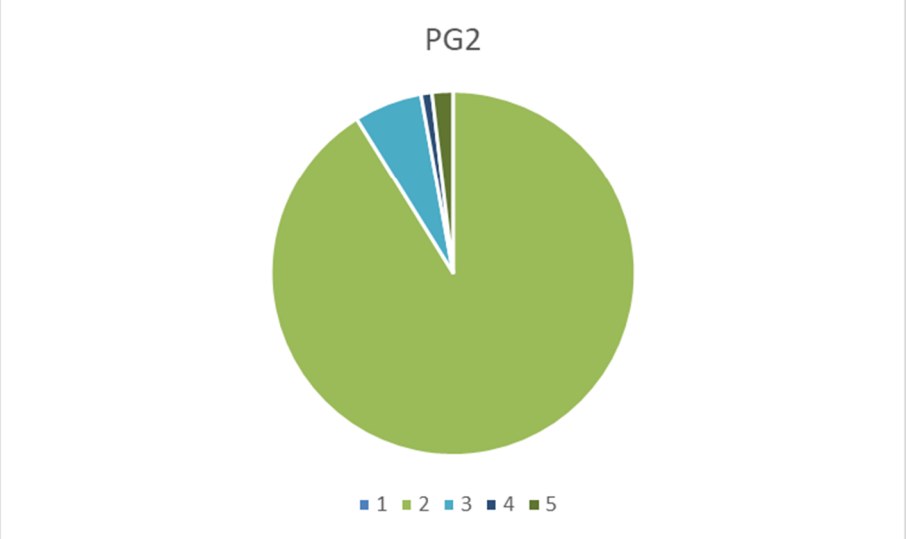
The following production-relevant inputs per 1 m² Internal doors and functional doors were recorded in the life cycle assessment:

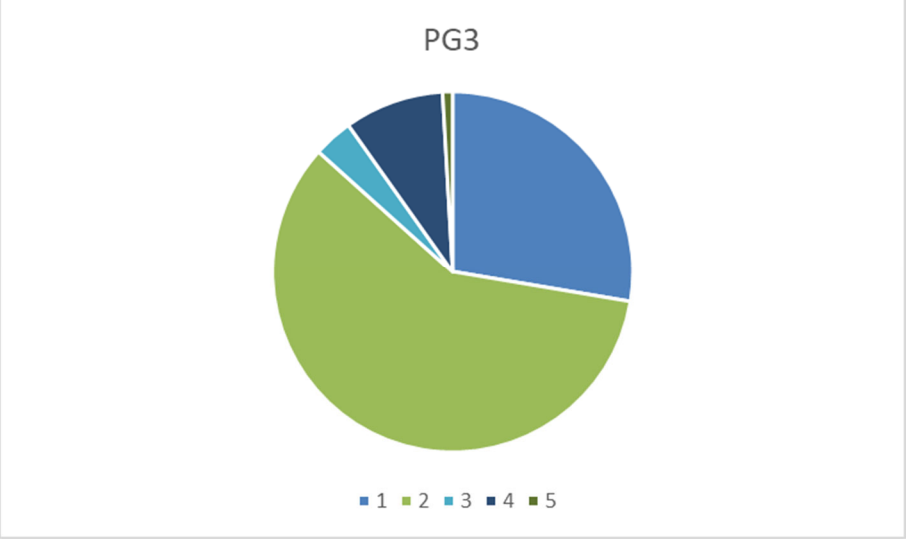
Energy
“Diesel mix ex refinery (DE)” is assumed for the input material diesel. The German electricity mix (residual mix) is used for the electricity mix at the plant.

Water
The water consumed by the individual process steps for the manufacture amounts to a total of 0.88 l per m² of the element.
The consumption of fresh water specified in Section 6.3 originates (among others) from the process chain of the pre-products and the use of water in production.

Raw material/pre-products
The chart below shows the share of raw materials/pre-products in %.







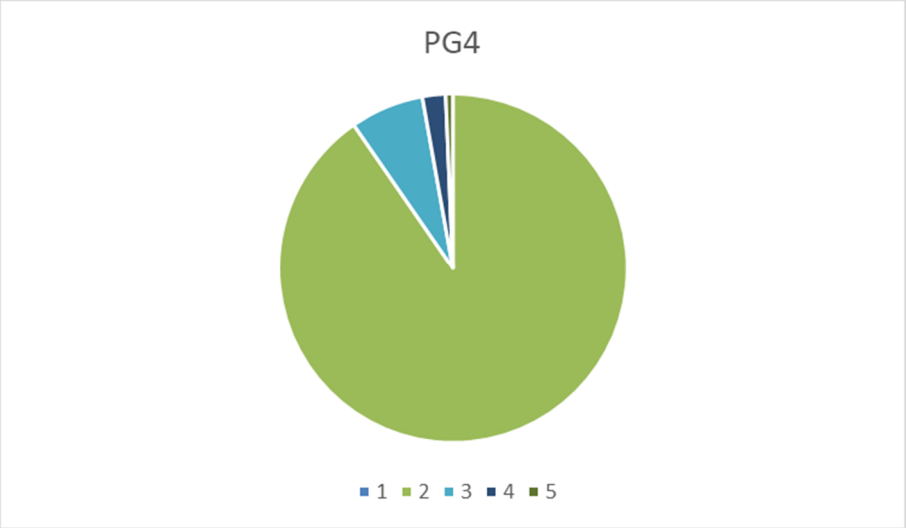


Illustration 1 Percentage of individual materials per declared unit

No.	Material	Mass in % per m²			
		PG 1	PG 2	PG 3	PG4
1	Insulation insert	0.00	0.00	27.65	0.00
2	Timber/timber based materials	60.39	91.12	58.99	90.37
3	Plastics	38.58	6.05	3.53	6.81
4	Metals	< 1	< 1	8.94	2.15
5	Others	< 1	1.86	< 1	< 1

Table 2 Percentage of individual materials per declared unit

Ancillary materials and consumables

There are 1.45E-02 g of ancillary materials and consumables.

Product packaging

The amounts used for product packaging are as follows:

No.	Material	Mass in kg per product group (PG)			
		PG 1	PG 2	PG 3	PG 4
1	Plastics	5.28E-02	5.28E-02	3.79E-02	1.55E-02
2	Paper/cardboard	1.33	1.33	1.43	1.25

Table 3 Weight in kg of packaging per declared unit

Biogenic carbon content

According to EN 16449, the following amounts of biogenic carbon are generated:

No.	Component	Content in kg C per m²			
		PG 1	PG 2	PG 3	PG4
1	In the product	15.79	14.93	17.36	12.15
2	In the associated packaging	0.48	0.48	0.51	0.45

Table 4 Biogenic carbon content in product and packaging at the factory gate

Outputs

The following manufacturing-related outputs were included in the LCA per 1 m² Internal doors and functional doors:

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

Waste water
The manufacture produces 0.72 l waste water.

6.3 Impact assessment

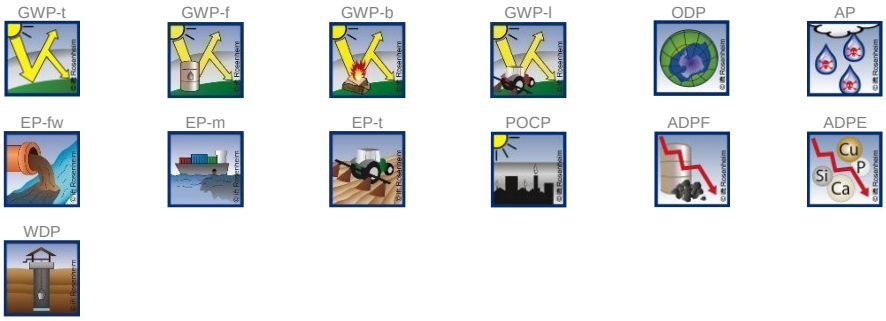
Aim

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

Core indicators

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

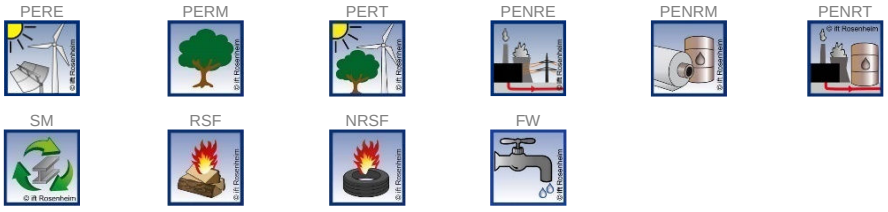
- Climate change - total (GWP-t)
- Climate change - fossil (GWP-f)
- Climate change - biogenic (GWP-b)
- Climate change - land use & land use change (GWP-l)
- Ozone depletion (ODP)
- Acidification (AP)
- Eutrophication freshwater (EP-fw)
- Eutrophication salt water (EP-m)
- Eutrophication land (EP-t)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



Use of resources

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)

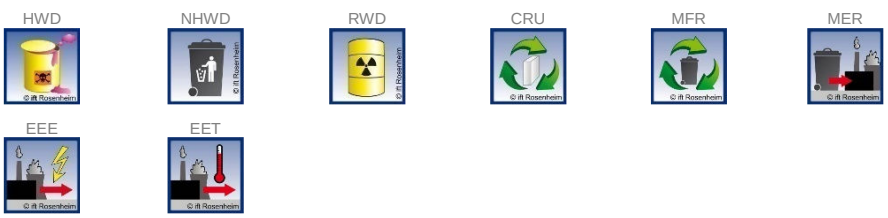


Waste

The waste generated during the production of 1 m² Internal doors and functional doors 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 waste categories and indicators for output material flows presented in the EPD are as follows:

- 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)

PM 

IRP 

ETP-fw 

HTP-c 

HTP-nc 

SQP 

Results per 1 m² Multipurpose doors (PG1)																
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Core indicators																
GWP-t	kg CO_2 eq.	-23.91	1.61	2.02	ND	2.10E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.50	109.00	4.49E-02	-43.71
GWP-f	kg CO_2 eq.	56.02	1.62	0.19	ND	2.10E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.50	66.40	4.49E-02	-43.30
GWP-b	kg CO_2 eq.	-79.96	-4.32E-02	1.83	ND	9.14E-05	0.00	0.00	0.00	0.00	0.00	0.00	-1.34E-02	42.80	-2.68E-04	-0.37
GWP-l	kg CO_2 eq.	0.12	2.97E-02	4.20E-05	ND	9.18E-06	0.00	0.00	0.00	0.00	0.00	0.00	9.20E-03	1.83E-03	2.63E-04	-5.39E-03
ODP	kg CFC-11 eq.	1.70E-09	3.61E-13	4.89E-13	ND	7.14E-14	0.00	0.00	0.00	0.00	0.00	0.00	1.12E-13	1.18E-10	1.19E-13	-5.47E-10
AP	mol H^+-eq.	0.14	1.69E-03	6.25E-04	ND	2.60E-05	0.00	0.00	0.00	0.00	0.00	0.00	5.24E-04	5.05E-02	3.11E-04	-4.22E-02
EP-fw	kg P eq.	2.27E-04	4.17E-06	1.25E-07	ND	3.62E-08	0.00	0.00	0.00	0.00	0.00	0.00	1.29E-06	2.43E-05	9.99E-08	-1.11E-04
EP-m	kg N eq.	6.28E-02	5.82E-04	2.08E-04	ND	6.04E-06	0.00	0.00	0.00	0.00	0.00	0.00	1.80E-04	1.99E-02	8.01E-05	-1.50E-02
EP-t	mol N eq.	0.60	7.04E-03	2.89E-03	ND	6.86E-05	0.00	0.00	0.00	0.00	0.00	0.00	2.18E-03	0.25	8.82E-04	-0.16
POCP	kg NMVOC-eq.	0.16	1.64E-03	5.44E-04	ND	3.18E-05	0.00	0.00	0.00	0.00	0.00	0.00	5.07E-04	5.11E-02	2.45E-04	-3.98E-02
ADPF*²	MJ	949.30	20.10	0.68	ND	0.44	0.00	0.00	0.00	0.00	0.00	0.00	6.23	74.70	0.58	-638.55
ADPE*²	kg Sb eq.	2.99E-05	2.62E-07	4.07E-09	ND	1.29E-09	0.00	0.00	0.00	0.00	0.00	0.00	8.09E-08	7.95E-07	2.80E-09	-4.14E-06
WDP*²	m^3 world eq. deprived	2.93	1.09E-02	0.24	ND	9.90E-04	0.00	0.00	0.00	0.00	0.00	0.00	3.38E-03	11.30	5.00E-03	-0.59
Use of resources																
PERE	MJ	575.46	2.19	-19.83	ND	3.58E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.68	-524.50	0.10	-262.63
PERM	MJ	631.65	0.00	20.07	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	581.00	0.00	0.00
PERT	MJ	1207.11	2.19	0.24	ND	3.58E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.68	56.50	0.10	-262.63
PENRE	MJ	928.61	20.10	-1.45	ND	0.44	0.00	0.00	0.00	0.00	0.00	0.00	6.23	57.07	0.58	-638.55
PENRM	MJ	20.69	0.00	2.13	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.63	0.00	0.00
PENRT	MJ	949.30	20.10	0.68	ND	0.44	0.00	0.00	0.00	0.00	0.00	0.00	6.23	74.70	0.58	-638.55
SM	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	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	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	m^3	0.15	2.08E-03	5.76E-03	ND	4.86E-05	0.00	0.00	0.00	0.00	0.00	0.00	6.43E-04	0.28	1.53E-04	-8.44E-02
Waste categories																
HWD	kg	3.27E-06	8.58E-10	5.48E-10	ND	3.72E-09	0.00	0.00	0.00	0.00	0.00	0.00	2.65E-10	1.30E-07	1.45E-10	-6.10E-07
NHWD	kg	0.91	3.34E-03	5.31E-02	ND	3.10E-03	0.00	0.00	0.00	0.00	0.00	0.00	1.03E-03	1.65	2.93	-0.36
RWD	kg	2.68E-02	2.72E-05	2.11E-05	ND	4.08E-06	0.00	0.00	0.00	0.00	0.00	0.00	8.41E-06	5.05E-03	5.98E-06	-2.35E-02
Output material flows																
CRU	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	kg	2.90E-02	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00
MER	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	MJ	16.20	0.00	2.60	ND	7.34E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	152.00	0.00	0.00
EET	MJ	36.31	0.00	6.06	ND	1.74E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	344.00	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

Results per 1 m² Multipurpose doors (PG1)															
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Additional environmental impact indicators																
PM	Disease incidence	8.17E-07	1.48E-08	3.63E-09	ND	2.50E-10	0.00	0.00	0.00	0.00	0.00	0.00	4.57E-09	2.21E-07	3.90E-09	-3.11E-07
IRP*[1]	kBq U235 eq.	2.06	2.77E-03	2.24E-03	ND	5.08E-04	0.00	0.00	0.00	0.00	0.00	0.00	8.58E-04	0.54	6.81E-04	-2.50
ETP-fw*[2]	CTUe	287.10	16.10	0.27	ND	0.29	0.00	0.00	0.00	0.00	0.00	0.00	4.99	29.10	0.34	-106.25
HTP-c*[2]	CTUh	4.04E-08	3.21E-10	1.76E-11	ND	6.56E-12	0.00	0.00	0.00	0.00	0.00	0.00	9.93E-11	2.33E-09	7.87E-12	-7.92E-09
HTP-nc*[2]	CTUh	4.27E-07	1.60E-08	7.49E-10	ND	2.74E-10	0.00	0.00	0.00	0.00	0.00	0.00	4.96E-09	1.18E-07	5.19E-10	-2.77E-07
SQP*[2]	dimensionless	952.90	13.50	0.24	ND	2.62E-02	0.00	0.00	0.00	0.00	0.00	0.00	4.16	40.10	0.17	-172.41

Key:
PM – particulate matter emissions potential **IRP*[1]** – ionizing radiation potential – human health **ETP-fw*[2]** - Eco-toxicity potential – freshwater **HTP-c*[2]** - Human toxicity potential – cancer effects **HTP-nc*[2]** - Human toxicity potential – non-cancer effects **SQP*[2]** – soil quality potential

Disclaimers

*1 This impact category deals mainly with the eventual impact of low-dose ionising 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 ionising radiation from the soil, from radon and from some building 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 Standard doors (PG2)															
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Core indicators																
GWP-t	kg CO_2 eq.	-7.35	1.02	2.02	ND	2.10E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.31	60.70	2.81E-02	-21.81
GWP-f	kg CO_2 eq.	36.69	1.03	0.19	ND	2.10E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.32	20.30	2.81E-02	-21.70
GWP-b	kg CO_2 eq.	-44.14	-2.74E-02	1.83	ND	9.14E-05	0.00	0.00	0.00	0.00	0.00	0.00	-8.37E-03	40.40	-1.68E-04	-0.18
GWP-l	kg CO_2 eq.	4.96E-02	1.89E-02	4.20E-05	ND	9.18E-06	0.00	0.00	0.00	0.00	0.00	0.00	5.76E-03	9.02E-04	1.65E-04	-2.81E-03
ODP	kg CFC-11-eq.	1.59E-09	2.29E-13	4.89E-13	ND	7.14E-14	0.00	0.00	0.00	0.00	0.00	0.00	7.00E-14	7.30E-11	7.49E-14	-2.70E-10
AP	mol H^+ eq.	9.74E-02	1.08E-03	6.25E-04	ND	2.60E-05	0.00	0.00	0.00	0.00	0.00	0.00	3.29E-04	3.40E-02	1.95E-04	-2.16E-02
EP-fw	kg P eq.	1.87E-04	2.65E-06	1.25E-07	ND	3.62E-08	0.00	0.00	0.00	0.00	0.00	0.00	8.08E-07	1.50E-05	6.26E-08	-5.52E-05
EP-m	kg N eq.	4.58E-02	3.70E-04	2.08E-04	ND	6.04E-06	0.00	0.00	0.00	0.00	0.00	0.00	1.13E-04	1.46E-02	5.02E-05	-7.59E-03
EP-t	mol N eq.	0.41	4.47E-03	2.89E-03	ND	6.86E-05	0.00	0.00	0.00	0.00	0.00	0.00	1.36E-03	0.18	5.53E-04	-8.07E-02
POCP	kg NMVOC-eq.	0.11	1.04E-03	5.44E-04	ND	3.18E-05	0.00	0.00	0.00	0.00	0.00	0.00	3.17E-04	3.73E-02	1.54E-04	-2.02E-02
ADPF*²	MJ	624.30	12.80	0.68	ND	0.44	0.00	0.00	0.00	0.00	0.00	0.00	3.90	46.10	0.36	-317.55
ADPE*²	kg Sb eq.	3.33E-05	1.66E-07	4.07E-09	ND	1.29E-09	0.00	0.00	0.00	0.00	0.00	0.00	5.07E-08	4.93E-07	1.76E-09	-2.07E-06
WDP*²	m^3 world eq. deprived	2.84	6.93E-03	0.24	ND	9.90E-04	0.00	0.00	0.00	0.00	0.00	0.00	2.12E-03	6.44	3.13E-03	-0.30
Use of resources																
PERE	MJ	375.72	1.39	-19.83	ND	3.58E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.42	-514.18	6.34E-02	-129.63
PERM	MJ	598.25	0.00	20.07	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	549.28	0.00	0.00
PERT	MJ	973.97	1.39	0.24	ND	3.58E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.42	35.10	6.34E-02	-129.63
PENRE	MJ	530.37	12.80	-1.45	ND	0.44	0.00	0.00	0.00	0.00	0.00	0.00	3.91	-42.06	0.36	-317.55
PENRM	MJ	94.93	0.00	2.13	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	88.16	0.00	0.00
PENRT	MJ	625.30	12.80	0.68	ND	0.44	0.00	0.00	0.00	0.00	0.00	0.00	3.91	46.10	0.36	-317.55
SM	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	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	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	m^3	0.14	1.32E-03	5.76E-03	ND	4.86E-05	0.00	0.00	0.00	0.00	0.00	0.00	4.03E-04	0.16	9.58E-05	-4.21E-02
Waste categories																
HWD	kg	2.03E-06	5.45E-10	5.48E-10	ND	3.72E-09	0.00	0.00	0.00	0.00	0.00	0.00	1.66E-10	8.08E-08	9.09E-11	-3.01E-07
NHWD	kg	0.93	2.12E-03	5.31E-02	ND	3.10E-03	0.00	0.00	0.00	0.00	0.00	0.00	6.47E-04	0.70	1.84	-0.17
RWD	kg	2.18E-02	1.73E-05	2.11E-05	ND	4.08E-06	0.00	0.00	0.00	0.00	0.00	0.00	5.27E-06	3.13E-03	3.75E-06	-1.16E-02
Output material flows																
CRU	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	kg	2.90E-02	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.00
MER	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	MJ	16.90	0.00	2.60	ND	7.34E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.70	0.00	0.00
EET	MJ	37.91	0.00	6.06	ND	1.74E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	165.00	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

Results per 1 m² Standard doors (PG2)															
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Additional environmental impact indicators																
PM	Disease incidence	5.80E-07	9.38E-09	3.63E-09	ND	2.50E-10	0.00	0.00	0.00	0.00	0.00	0.00	2.86E-09	1.31E-07	2.45E-09	-1.64E-07
IRP*[1]	kBq U235 eq.	1.51	1.76E-03	2.24E-03	ND	5.08E-04	0.00	0.00	0.00	0.00	0.00	0.00	5.38E-04	0.33	4.27E-04	-1.24
ETP-fw*[2]	CTUe	203.50	10.20	0.27	ND	0.29	0.00	0.00	0.00	0.00	0.00	0.00	3.13	17.90	0.21	-53.05
HTP-c*[2]	CTUh	3.72E-08	2.04E-10	1.76E-11	ND	6.56E-12	0.00	0.00	0.00	0.00	0.00	0.00	6.22E-11	1.47E-09	4.93E-12	-4.40E-09
HTP-nc*[2]	CTUh	2.69E-07	1.02E-08	7.49E-10	ND	2.74E-10	0.00	0.00	0.00	0.00	0.00	0.00	3.11E-09	7.97E-08	3.25E-10	-1.39E-07
SQP*[2]	dimensionless	891.30	8.55	0.24	ND	2.62E-02	0.00	0.00	0.00	0.00	0.00	0.00	2.61	24.70	0.10	-85.11

Key:
PM – particulate matter emissions potential **IRP*[1]** – ionizing radiation potential – human health **ETP-fw*[2]** - Eco-toxicity potential – freshwater **HTP-c*[2]** - Human toxicity potential – cancer effects **HTP-nc*[2]** - Human toxicity potential – non-cancer effects **SQP*[2]** – soil quality potential

Disclaimers

*1 This impact category deals mainly with the eventual impact of low-dose ionising 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 ionising radiation from the soil, from radon and from some building 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 Special doors (PG3)																
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Core indicators																
GWP-t	kg CO_2 eq.	98.73	1.81	2.13	ND	2.10E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.56	110.00	5.06E-02	-62.61
GWP-f	kg CO_2 eq.	157.28	1.83	0.15	ND	2.10E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.57	62.90	5.06E-02	-62.20
GWP-b	kg CO_2 eq.	-58.86	-4.85E-02	1.98	ND	9.14E-05	0.00	0.00	0.00	0.00	0.00	0.00	-1.50E-02	47.00	-3.02E-04	-0.38
GWP-l	kg CO_2 eq.	9.88E-02	3.34E-02	4.22E-05	ND	9.18E-06	0.00	0.00	0.00	0.00	0.00	0.00	1.04E-02	1.35E-03	2.96E-04	-1.08E-02
ODP	kg CFC-11-eq.	1.18E-09	4.06E-13	5.09E-13	ND	7.14E-14	0.00	0.00	0.00	0.00	0.00	0.00	1.26E-13	1.29E-10	1.34E-13	-5.97E-10
AP	mol H^+-eq.	0.34	1.91E-03	6.65E-04	ND	2.60E-05	0.00	0.00	0.00	0.00	0.00	0.00	5.90E-04	6.69E-02	3.50E-04	-0.11
EP-fw	kg P eq.	6.82E-04	4.69E-06	1.30E-07	ND	3.62E-08	0.00	0.00	0.00	0.00	0.00	0.00	1.45E-06	2.64E-05	1.12E-07	-1.25E-04
EP-m	kg N-eq.	0.11	6.55E-04	2.22E-04	ND	6.04E-06	0.00	0.00	0.00	0.00	0.00	0.00	2.03E-04	2.93E-02	9.02E-05	-3.15E-02
EP-t	mol N eq.	1.11	7.91E-03	3.07E-03	ND	6.86E-05	0.00	0.00	0.00	0.00	0.00	0.00	2.45E-03	0.35	9.93E-04	-0.34
POCP	kg NMVOC-eq.	0.34	1.84E-03	5.81E-04	ND	3.18E-05	0.00	0.00	0.00	0.00	0.00	0.00	5.70E-04	7.47E-02	2.76E-04	-8.87E-02
ADPF*²	MJ	2936.70	22.60	0.71	ND	0.44	0.00	0.00	0.00	0.00	0.00	0.00	7.01	81.70	0.65	-824.55
ADPE*²	kg Sb eq.	2.58E-04	2.94E-07	4.23E-09	ND	1.29E-09	0.00	0.00	0.00	0.00	0.00	0.00	9.11E-08	8.71E-07	3.15E-09	-5.31E-06
WDP*²	m^3 world eq. deprived	7.72	1.23E-02	0.26	ND	9.90E-04	0.00	0.00	0.00	0.00	0.00	0.00	3.80E-03	11.20	5.63E-03	-3.06
Use of resources																
PERE	MJ	902.95	2.46	-21.36	ND	3.58E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.76	-576.68	0.11	-348.63
PERM	MJ	694.02	0.00	21.61	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	638.78	0.00	0.00
PERT	MJ	1596.97	2.46	0.25	ND	3.58E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.76	62.10	0.11	-348.63
PENRE	MJ	2397.79	22.60	-0.73	ND	0.44	0.00	0.00	0.00	0.00	0.00	0.00	7.02	-428.89	0.65	-825.55
PENRM	MJ	538.91	0.00	1.44	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	510.59	0.00	0.00
PENRT	MJ	2936.70	22.60	0.71	ND	0.44	0.00	0.00	0.00	0.00	0.00	0.00	7.02	81.70	0.65	-825.55
SM	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	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	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	m^3	0.68	2.34E-03	6.09E-03	ND	4.86E-05	0.00	0.00	0.00	0.00	0.00	0.00	7.24E-04	0.28	1.72E-04	-0.16
Waste categories																
HWD	kg	6.09E-06	9.65E-10	5.70E-10	ND	3.72E-09	0.00	0.00	0.00	0.00	0.00	0.00	2.99E-10	1.43E-07	1.63E-10	-6.70E-07
NHWD	kg	11.05	3.75E-03	5.24E-02	ND	3.10E-03	0.00	0.00	0.00	0.00	0.00	0.00	1.16E-03	0.96	3.30	-6.91
RWD	kg	6.41E-02	3.06E-05	2.19E-05	ND	4.08E-06	0.00	0.00	0.00	0.00	0.00	0.00	9.47E-06	5.54E-03	6.73E-06	-3.24E-02
Output material flows																
CRU	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	kg	0.56	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.60	0.00	0.00
MER	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	MJ	16.70	0.00	2.73	ND	7.34E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	142.00	0.00	0.00
EET	MJ	37.61	0.00	6.35	ND	1.74E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	314.00	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

Results per 1 m² Special doors (PG3)															
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Additional environmental impact indicators																
PM	Disease incidence	3.43E-06	1.66E-08	3.82E-09	ND	2.50E-10	0.00	0.00	0.00	0.00	0.00	0.00	5.14E-09	2.42E-07	4.40E-09	-1.66E-06
IRP*[1]	kBq U235 eq.	5.54	3.12E-03	2.33E-03	ND	5.08E-04	0.00	0.00	0.00	0.00	0.00	0.00	9.66E-04	0.59	7.67E-04	-3.39
ETP-fw*[2]	CTUe	999.40	18.10	0.28	ND	0.29	0.00	0.00	0.00	0.00	0.00	0.00	5.62	31.30	0.38	-199.25
HTP-c*[2]	CTUh	6.74E-08	3.61E-10	1.82E-11	ND	6.56E-12	0.00	0.00	0.00	0.00	0.00	0.00	1.12E-10	2.35E-09	8.86E-12	-2.83E-08
HTP-nc*[2]	CTUh	1.65E-06	1.80E-08	7.41E-10	ND	2.74E-10	0.00	0.00	0.00	0.00	0.00	0.00	5.58E-09	1.09E-07	5.84E-10	-4.49E-07
SQP*[2]	dimensionless	984.60	15.10	0.25	ND	2.62E-02	0.00	0.00	0.00	0.00	0.00	0.00	4.69	43.50	0.19	-191.41

Key:
PM – particulate matter emissions potential **IRP*[1]** – ionizing radiation potential – human health **ETP-fw*[2]** - Eco-toxicity potential – freshwater **HTP-c*[2]** - Human toxicity potential – cancer effects **HTP-nc*[2]** - Human toxicity potential – non-cancer effects **SQP*[2]** – soil quality potential

Disclaimers

*1 This impact category deals mainly with the eventual impact of low-dose ionising 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 ionising radiation from the soil, from radon and from some building 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 Sliding and folding elements (PG4)															
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Core indicators																
GWP-t	kg CO_2 eq.	-4.00E-02	0.84	1.82	ND	6.80E-03	0.00	0.65	0.00	0.00	0.00	0.00	0.26	49.80	2.31E-02	-20.10
GWP-f	kg CO_2 eq.	34.26	0.85	8.86E-02	ND	6.77E-03	0.00	0.65	0.00	0.00	0.00	0.00	0.26	16.90	2.31E-02	-19.90
GWP-b	kg CO_2 eq.	-34.33	-2.26E-02	1.73	ND	3.57E-05	0.00	2.27E-03	0.00	0.00	0.00	0.00	-6.87E-03	32.90	-1.38E-04	-0.16
GWP-l	kg CO_2 eq.	4.34E-02	1.56E-02	3.40E-05	ND	9.07E-07	0.00	1.23E-03	0.00	0.00	0.00	0.00	4.73E-03	6.42E-04	1.35E-04	-2.75E-03
ODP	kg CFC-11 eq.	4.22E-10	1.89E-13	4.29E-13	ND	1.26E-14	0.00	4.95E-12	0.00	0.00	0.00	0.00	5.74E-14	5.96E-11	6.14E-14	-2.35E-10
AP	mol H^+ eq.	9.25E-02	8.87E-04	5.73E-04	ND	1.47E-05	0.00	1.93E-03	0.00	0.00	0.00	0.00	2.70E-04	2.78E-02	1.60E-04	-2.57E-02
EP-fw	kg P eq.	1.73E-04	2.18E-06	1.10E-07	ND	1.69E-08	0.00	2.80E-06	0.00	0.00	0.00	0.00	6.63E-07	1.22E-05	5.14E-08	-4.79E-05
EP-m	kg N eq.	4.09E-02	3.05E-04	1.93E-04	ND	2.42E-06	0.00	9.07E-04	0.00	0.00	0.00	0.00	9.27E-05	1.19E-02	4.12E-05	-8.09E-03
EP-t	mol N eq.	0.37	3.68E-03	2.65E-03	ND	2.67E-05	0.00	8.76E-03	0.00	0.00	0.00	0.00	1.12E-03	0.15	4.54E-04	-8.64E-02
POCP	kg NMVOC-eq.	9.90E-02	8.57E-04	5.03E-04	ND	1.20E-05	0.00	2.18E-03	0.00	0.00	0.00	0.00	2.61E-04	3.04E-02	1.26E-04	-2.19E-02
ADPF*²	MJ	557.20	10.50	0.60	ND	0.26	0.00	6.48	0.00	0.00	0.00	0.00	3.20	37.40	0.30	-285.00
ADPE*²	kg Sb eq.	3.41E-05	1.37E-07	3.56E-09	ND	6.23E-10	0.00	6.56E-07	0.00	0.00	0.00	0.00	4.16E-08	4.01E-07	1.44E-09	-1.86E-06
WDP*²	m^3 world eq. deprived	3.09	5.71E-03	0.22	ND	4.93E-05	0.00	0.16	0.00	0.00	0.00	0.00	1.74E-03	5.25	2.57E-03	-0.55
Use of resources																
PERE	MJ	347.13	1.14	-18.67	ND	6.27E-03	0.00	-4.17	0.00	0.00	0.00	0.00	0.35	-418.44	5.20E-02	-120.00
PERM	MJ	489.45	0.00	18.88	ND	0.00	0.00	19.11	0.00	0.00	0.00	0.00	0.00	447.04	0.00	0.00
PERT	MJ	836.58	1.14	0.21	ND	6.27E-03	0.00	14.94	0.00	0.00	0.00	0.00	0.35	28.60	5.20E-02	-120.00
PENRE	MJ	472.59	10.50	6.82E-03	ND	0.26	0.00	3.18	0.00	0.00	0.00	0.00	3.20	-42.42	0.30	-285.00
PENRM	MJ	84.61	0.00	0.59	ND	0.00	0.00	3.30	0.00	0.00	0.00	0.00	0.00	79.82	0.00	0.00
PENRT	MJ	557.20	10.50	0.60	ND	0.26	0.00	6.48	0.00	0.00	0.00	0.00	3.20	37.40	0.30	-285.00
SM	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	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	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	m^3	0.14	1.09E-03	5.23E-03	ND	3.07E-06	0.00	4.65E-03	0.00	0.00	0.00	0.00	3.31E-04	0.13	7.86E-05	-4.40E-02
Waste categories																
HWD	kg	2.96E-06	4.49E-10	4.81E-10	ND	2.07E-11	0.00	5.54E-08	0.00	0.00	0.00	0.00	1.37E-10	6.59E-08	7.46E-11	-2.62E-07
NHWD	kg	1.82	1.75E-03	4.13E-02	ND	3.47E-05	0.00	5.75E-02	0.00	0.00	0.00	0.00	5.31E-04	0.47	1.51	-0.97
RWD	kg	2.13E-02	1.42E-05	1.85E-05	ND	6.37E-07	0.00	2.60E-04	0.00	0.00	0.00	0.00	4.33E-06	2.55E-03	3.07E-06	-1.09E-02
Output material flows																
CRU	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	kg	2.90E-02	0.00	0.00	ND	0.00	0.00	1.29E-02	0.00	0.00	0.00	0.00	0.00	0.62	0.00	0.00
MER	kg	0.00	0.00	0.00	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	MJ	16.70	0.00	2.31	ND	0.00	0.00	1.59	0.00	0.00	0.00	0.00	0.00	60.70	0.00	0.00
EET	MJ	37.51	0.00	5.40	ND	0.00	0.00	3.58	0.00	0.00	0.00	0.00	0.00	136.00	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

Results per 1 m² Sliding and folding elements (PG4)															
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Additional environmental impact indicators																
PM	Disease incidence	6.93E-07	7.73E-09	3.25E-09	ND	1.20E-10	0.00	1.06E-08	0.00	0.00	0.00	0.00	2.35E-09	1.05E-07	2.01E-09	-2.85E-07
IRP*[1]	kBq U235 eq.	1.64	1.45E-03	1.96E-03	ND	6.50E-05	0.00	1.53E-02	0.00	0.00	0.00	0.00	4.41E-04	0.27	3.50E-04	-1.15
ETP-fw*[2]	CTUe	193.50	8.45	0.24	ND	0.20	0.00	3.28	0.00	0.00	0.00	0.00	2.57	14.50	0.17	-55.20
HTP-c*[2]	CTUh	3.65E-08	1.68E-10	1.52E-11	ND	3.83E-12	0.00	6.54E-10	0.00	0.00	0.00	0.00	5.11E-11	1.20E-09	4.05E-12	-5.29E-09
HTP-nc*[2]	CTUh	2.63E-07	8.39E-09	5.87E-10	ND	1.61E-10	0.00	4.11E-09	0.00	0.00	0.00	0.00	2.55E-09	6.45E-08	2.67E-10	-1.34E-07
SQP*[2]	dimensionless	811.01	7.05	0.21	ND	4.27E-03	0.00	15.33	0.00	0.00	0.00	0.00	2.14	20.10	8.47E-02	-74.10

Key:
PM – particulate matter emissions potential **IRP*[1]** – ionizing radiation potential – human health **ETP-fw*[2]** - Eco-toxicity potential – freshwater **HTP-c*[2]** - Human toxicity potential – cancer effects **HTP-nc*[2]** - Human toxicity potential – non-cancer effects **SQP*[2]** – soil quality potential

Disclaimers

*1 This impact category deals mainly with the eventual impact of low-dose ionising 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 ionising radiation from the soil, from radon and from some building 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 impacts of

- Multipurpose doors (PG1)
- Standard doors (PG2)
- Special doors (PG3)
- Sliding and folding elements (PG4)

differ strongly/significantly from each other. The differences lie in the different pre-products and raw materials used and in the mass of the pre-products and raw materials used in each case. Above all, the use of the insulation insert (worst-case assumption PU) in PG 3 and the HPL in PG 1, which are used, led us to expect this. The product groups also differ in their product and transport weight per m², especially PG 1 and PG 3 compared to PG 2 and PG 4.

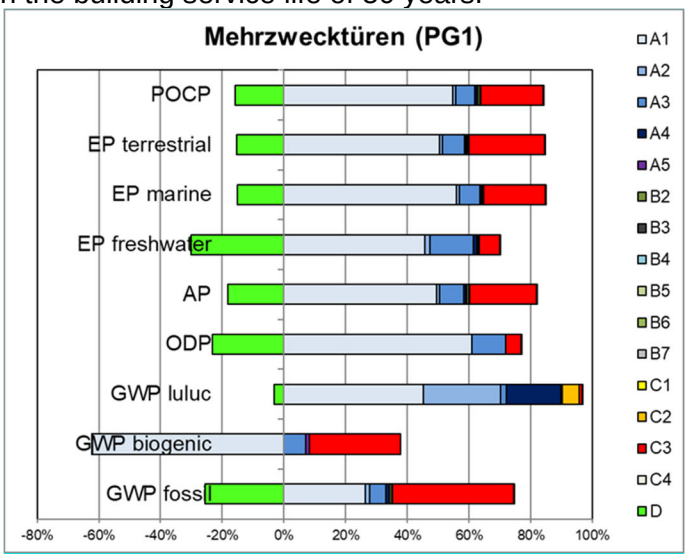
In the area of production, the environmental impacts of PG 1 arise primarily from the use of MDF, HDF and HPL in module A1 and their upstream chains. Furthermore, the use of particle board in module A1, the use of electricity in module A1 and module C3 as well as the thermal utilization of plastics in module C3 and the thermal utilization of wood/wood-based materials in module A3 play an important role in terms of environmental impact.
In PG 2, the environmental impacts are primarily caused by the use of MDF and its respective upstream chains. Furthermore, the thermal utilization of wood/wood-based materials in module C3 is a major driver of environmental impacts. In addition, the use of particle board and melamine film in module A1, the use of electricity in module A1 and the thermal utilization of wood/wood-based materials in module A3 play a decisive role in terms of environmental impact.
In the case of PG 3, the environmental impacts mainly result from the use of aluminum, the insulating insert (polyurethane-bonded board) and MDF in module A1 or their upstream chains. The thermal utilization of wood/wood-based materials in module C3 also has a major influence on the environmental impact. The use of steel and HDF in module A1, the use of electricity in module A1 and the thermal utilization of the insulation insert in module C3 also play an important role in terms of environmental impact.
In PG 4, the environmental impacts are primarily caused by the use of MDF and its respective upstream chains. The thermal utilization of wood/wood-based materials in module C3 and the use of electricity in module A1 are also major drivers of environmental impacts. In addition, the use of aluminum, chipboard and melamine film in module A1 and the thermal utilization of wood/wood-based materials in module A3 play a decisive role in terms of environmental impact.

When products are recycled, around 9% (PG 1), 6% (PG 2 and PG 4), 4% (PG 3) for thermal energy and around 17% (PG 1), 11% (PG 2), 9% (PG 3), 13% (PG 4) for electrical energy of the environmental impacts of the core indicators (without WDP, as not supported by the software) occurring in the life cycle can be credited in scenario D. When recycling products, around 6% (PG 3) and 3% (PG 4) for aluminum and around 2% (PG 3) for steel of the life cycle environmental impacts of the core indicators (excluding WDP, as not supported by the software) can be credited in scenario D.

The breakdown of the major environmental impacts is shown in the diagram below.

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

Diagrams
The diagrams below show the B modules with reference to the specified RSL within the building service life of 50 years.



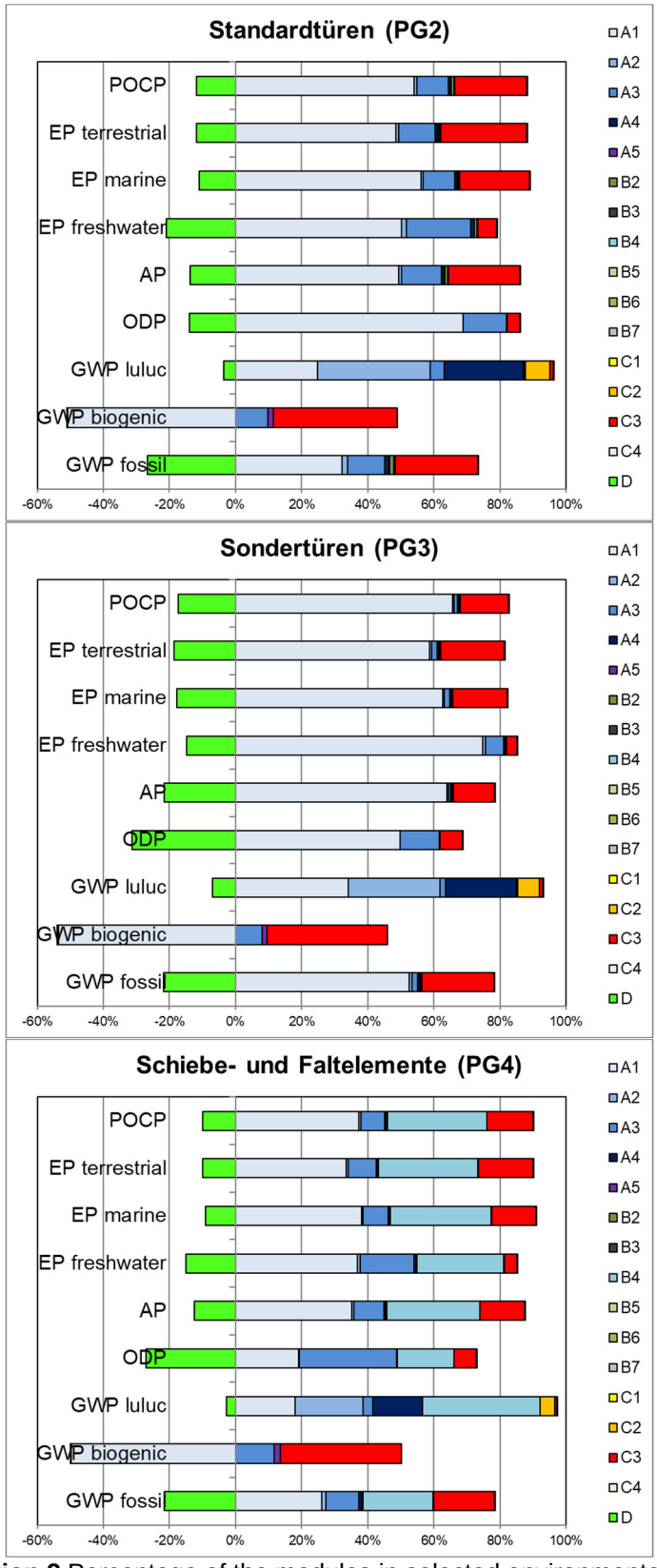


Illustration 2 Percentage of the modules in selected environmental impact indicators

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 LCA and of the report took place in the course of verification of the EPD and was carried out by the external auditor Patrick Wortner.

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 reference products recognised in the balance sheet were identified using the worst-case approach and considered representative of the product group. The results of individual products within the product group differ from the results of the reference products. 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 EN 17213 “PCR for windows and doors”, “PCR Part A” PCR-A-1.0:2023 and “Doors and gates" PCR-TT-3.0:2023.”

The European standard EN 15804 serves as the core PCR [a)]
Independent external verification of the Declaration and statement according to EN ISO 14025:2010
Independent third party verifier: [b)] Patrick Wortner
[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	Verifier
1	11.03.2025	External Verification	L. Ludwig	P. Wortner
2	12.03.2025	Editorial Changes	L. Ludwig	-

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9 Annex

Description of life cycle scenarios for Internal doors, frame systems and functional doors made of timber

Product stage			Con-struction process stage		Use stage*							End-of-life stage				Benefits and loads beyond the system boundaries
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw material supply	Transport	Manufacture	Transport	Construction/installation process	Use	Maintenance	Repair	Replacement	Modification/refurbishment	Operational energy use	Operational water use	Deconstruction/demolition	Transport	Waste processing	Disposal	Re-use 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 5 Overview of applied life cycle stages

The scenarios were calculated taking into account the defined RSL (see Point 4Use stage).

The scenarios were based on information provided by the manufacturer. The scenarios were furthermore based on the research project “EPDs for transparent building components. (1)

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

No.	Scenario	Description
A4	Small series - direct marketing	**EN 17213: 40 t truck (Euro 0-6 mix), diesel, 27 t payload, fully loaded[1], approx. 150 km there and 150 km back empty. A total of 300 km.**

[1] Capacity used: utilized loading capacity of the truck

A4 Transport to construction site	Transport weight [kg/m²]	Density [kg/m³]	Capacity load factor[2]
PG1	59.94	Door leaf: approx. 453 Frame: approx. 114 (average values)	< 1
PG2	38.01		< 1
PG3	67.40		< 1
PG4	31.38		< 1

[2] Volume utilization factor:
= 1 Product fills the packaging completely (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 process

No.	Scenario	Description
A5	Manual	**According to the manufacturer, the products are installed without additional lifting and auxiliary devices**

In case of deviating consumption during installation/assembly of the products which forms part of the site management, they are 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 A5 is sent to waste handling. Waste is only thermally recycled in line with the conservative approach: Films/casings and carton in incineration plants. Benefits from A5 are specified in module D. Benefits from incineration plant: Electricity replaces electricity mix (DE) (residual mix); Thermal energy replaces thermal energy from natural gas (DE).
Transport to the recycling plants is not taken into account.

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

B1 Use (not declared)

Refer to Section 4 Use stage - Emissions to the environment. Emissions cannot be quantified.

B2 Cleaning, maintenance and repair

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

B2.1 Cleaning

No.	Scenario	Description
B2.1.1	**No cleaning**	**According to the manufacturer, no cleaning is required.**

Ancillary materials, consumables, use of energy and water, 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 and repair

No.	Scenario	Description
B2.2	**Normal use**	**According to EN 17213: Annual functional check, visual inspection, lubrication/greasing and, if necessary, repair. 0.25 kg lubricants per 50 yrs (1)**

For updated information refer to the respective instructions for assembly/installation, operation and maintenance from HUGA KG.

The service life of Internal doors, frame systems and functional doors made of timber from HUGA KG is specified as 50 years (PG 1 - PG 3) and 30 years (PG 4). For scenario B2.2, the respective components of the building elements whose useful life is less than the specified RSL are accounted for. The results were based on one year, taking into account the RSL.

It is assumed that the replaced components will be recycled in the module maintenance and repair. Metals into the melt (material recycling), plastics to incineration plants. Benefits from B2.2 are specified in module D. Benefits from incineration plant: Electricity replaces electricity mix (DE) (residual mix); Thermal energy replaces thermal energy from natural gas (DE).
Transport to the recycling plants is not taken into account.

The following table lists the dimensions for the hardware and sealants per product group that must be replaced in accordance with the BBSR table. According to the BBSR table, simple hardware (344.611) such as those used for PG 1-PG 3 must be replaced after ≥50 years. Hardware for sliding door (344.612), as used for PG 4, must be replaced after 30 years. This means that hardware do not need to be replaced for all product groups. Sealants (344.621) must be replaced after 30 years. For PG 1-PG 3, this means that the internal doors, frame systems and functional doors made of timber are replaced once during the product life cycle. No replacement of sealants is necessary with PG 4.

Material	Number of replacements*	PG1		PG2		PG3		Number of replacements*	PG4	
		Mass	Mass / RSL	Mass	Mass / RSL	Mass	Mass / RSL		Mass	Mass / RSL
Gasket/seal	1	0.167	0.167	0.167	0.167	0.167	0.167	0	0.00	0.00
hardware	0	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00

Ancillary materials, consumables, use of energy and water, waste, material losses and transport distances during repair are negligible.

Since only one scenario is used, the results are shown in the relevant summary table.

B3 Repair (not relevant)

No.	Scenario	Description
B3	**Normal use and heavy use**	**According to EN 17213: The repair of accidental damage (e.g. broken windows or damaged building hardware) may only be taken into account if the installation site is known and reasons are given as to why this accidental damage is to be expected (e.g. schools).**

Ancillary materials, consumables, use of energy and water, waste, material losses and transport distances during repair are negligible.

Since only one scenario is used, the results are shown in the relevant summary table.

B4 Replacement

No.	Scenario	Description
B4.1	**No replacement**	**For PG 1 - PG 3: No replacement is planned according to the BBSR table***
B4.2	**Normal use and heavy use**	**For PG 4: One replacement over a 30-year period (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 no replacement will be necessary during the 50-year reference service life and the 50-year building service life for PG 1 - PG 3 according to the BBSR table. It is assumed that one replacement will be necessary during the 30-year reference service life and the 50-year building service life for PG 4 according to the BBSR table.
The results were based on one year, taking into account the RSL.

For updated information refer to the respective instructions for assembly/installation, operation and maintenance from HUGA KG.

<u>B4.2 - Replacement:</u>
The environmental impacts of the selected scenario originate from the product, construction and disposal phases.

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

PG1			
B4 Exchange / Replacement	**Unit**	**B4.1**	B4.2
Core indicators			
GWP-t	kg CO_2 equivalent	**0.00**	0.91
GWP-f	kg CO_2 equivalent	**0.00**	1.63
GWP-b	kg CO_2 equivalent	**0.00**	-0.72
GWP-l	kg CO_2 equivalent	**0.00**	3.14E-03
ODP	kg CFC-11-eq.	**0.00**	2.54E-11
AP	mol H^+-eq.	**0.00**	2.95E-03
EP-fw	kg P-eq.	**0.00**	2.92E-06
EP-m	kg N-eq.	**0.00**	1.38E-03
EP-t	mol N-eq.	**0.00**	1.42E-02
POCP	kg NMVOC-eq.	**0.00**	3.39E-03
ADPF	MJ	**0.00**	8.29
ADPE	kg Sb equivalent	**0.00**	5.38E-07
WDP	m^3 world-eq. deprived	**0.00**	0.28
Use of resources			
PERE	MJ	**0.00**	-4.56
PERM	MJ	**0.00**	24.65
PERT	MJ	**0.00**	20.10
PENRE	MJ	**0.00**	-8.00
PENRM	MJ	**0.00**	16.30
PENRT	MJ	**0.00**	8.29
SM	kg	**0.00**	0.00
RSF	MJ	**0.00**	0.00
NRSF	MJ	**0.00**	0.00
FW	m^3	**0.00**	7.13E-03
Waste categories			
HWD	kg	**0.00**	5.58E-08
NHWD	kg	**0.00**	0.10
RWD	kg	**0.00**	1.71E-04
Output material flows			
CRU	kg	**0.00**	0.00
MFR	kg	**0.00**	7.62E-03
MER	kg	**0.00**	0.00
EEE	MJ	**0.00**	3.42
EET	MJ	**0.00**	7.73
Additional environmental impact indicators			
PM	Disease incidence	**0.00**	1.51E-08
IRP	kBq U235-eq.	**0.00**	2.25E-03
ETP-fw	CTUe	**0.00**	4.64
HTP-c	CTUh	**0.00**	7.05E-10
HTP-nc	CTUh	**0.00**	5.83E-09
SQP	dimensionless	**0.00**	16.78

PG2			
B4 Exchange / Replacement	**Unit**	**B4.1**	B4.2
Core indicators			
GWP-t	kg CO_2 equivalent	**0.00**	0.70
GWP-f	kg CO_2 equivalent	**0.00**	0.74
GWP-b	kg CO_2 equivalent	**0.00**	-4.25E-02
GWP-l	kg CO_2 equivalent	**0.00**	1.45E-03
ODP	kg CFC-11-eq.	**0.00**	2.78E-11
AP	mol H^+-eq.	**0.00**	2.24E-03
EP-fw	kg P-eq.	**0.00**	3.02E-06
EP-m	kg N-eq.	**0.00**	1.07E-03
EP-t	mol N-eq.	**0.00**	1.03E-02
POCP	kg NMVOC-eq.	**0.00**	2.59E-03
ADPF	MJ	**0.00**	7.44
ADPE	kg Sb equivalent	**0.00**	6.40E-07
WDP	m^3 world-eq. deprived	**0.00**	0.18
Use of resources			
PERE	MJ	**0.00**	-5.71
PERM	MJ	**0.00**	23.35
PERT	MJ	**0.00**	17.64
PENRE	MJ	**0.00**	3.76
PENRM	MJ	**0.00**	3.70
PENRT	MJ	**0.00**	7.46
SM	kg	**0.00**	0.00
RSF	MJ	**0.00**	0.00
NRSF	MJ	**0.00**	0.00
FW	m^3	**0.00**	5.23E-03
Waste categories			
HWD	kg	**0.00**	3.63E-08
NHWD	kg	**0.00**	6.71E-02
RWD	kg	**0.00**	2.70E-04
Output material flows			
CRU	kg	**0.00**	0.00
MFR	kg	**0.00**	7.34E-03
MER	kg	**0.00**	0.00
EEE	MJ	**0.00**	1.86
EET	MJ	**0.00**	4.18
Additional environmental impact indicators			
PM	Disease incidence	**0.00**	1.13E-08
IRP	kBq U235-eq.	**0.00**	1.24E-02
ETP-fw	CTUe	**0.00**	3.65
HTP-c	CTUh	**0.00**	6.92E-10
HTP-nc	CTUh	**0.00**	4.50E-09
SQP	dimensionless	**0.00**	16.86

PG3			
B4 Exchange / Replacement	**Unit**	**B4.1**	B4.2
Core indicators			
GWP-t	kg CO_2 equivalent	**0.00**	3.02
GWP-f	kg CO_2 equivalent	**0.00**	3.21
GWP-b	kg CO_2 equivalent	**0.00**	-0.21
GWP-l	kg CO_2 equivalent	**0.00**	2.67E-03
ODP	kg CFC-11-eq.	**0.00**	1.42E-11
AP	mol H^+-eq.	**0.00**	6.01E-03
EP-fw	kg P-eq.	**0.00**	1.18E-05
EP-m	kg N-eq.	**0.00**	2.27E-03
EP-t	mol N-eq.	**0.00**	2.28E-02
POCP	kg NMVOC-eq.	**0.00**	6.64E-03
ADPF	MJ	**0.00**	44.53
ADPE	kg Sb equivalent	**0.00**	5.07E-06
WDP	m^3 world-eq. deprived	**0.00**	0.32
Use of resources			
PERE	MJ	**0.00**	-0.80
PERM	MJ	**0.00**	27.09
PERT	MJ	**0.00**	26.29
PENRE	MJ	**0.00**	23.49
PENRM	MJ	**0.00**	21.02
PENRT	MJ	**0.00**	44.51
SM	kg	**0.00**	0.00
RSF	MJ	**0.00**	0.00
NRSF	MJ	**0.00**	0.00
FW	m^3	**0.00**	1.62E-02
Waste categories			
HWD	kg	**0.00**	1.11E-07
NHWD	kg	**0.00**	0.17
RWD	kg	**0.00**	7.48E-04
Output material flows			
CRU	kg	**0.00**	0.00
MFR	kg	**0.00**	0.12
MER	kg	**0.00**	0.00
EEE	MJ	**0.00**	3.23
EET	MJ	**0.00**	7.16
Additional environmental impact indicators			
PM	Disease incidence	**0.00**	4.09E-08
IRP	kBq U235-eq.	**0.00**	5.52E-02
ETP-fw	CTUe	**0.00**	17.12
HTP-c	CTUh	**0.00**	8.39E-10
HTP-nc	CTUh	**0.00**	2.67E-08
SQP	dimensionless	**0.00**	17.15

B5 Modification/refurbishment (not relevant)

According to the manufacturer, the elements are not included in the improvement / modernisation activities for buildings.

For updated information refer to the respective instructions for assembly/installation, operation and maintenance from HUGA KG.

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

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

B6 Operational energy use

No.	Scenario	Description
B6	**manual**	**No energy consumed when used**

There is no energy used during normal use. The products are opened by manual control.
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, demolition

No.	Scenario	Description
C1	Deconstruction	As per EN 17213: Deconstruction 95%, Residues (landfill) 5%

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 the 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 0-6 Mix), diesel, 27 t payload, 50 % capacity used, 100 km. (1)

Since only one scenario is used, the results are shown in the relevant summary table.

C3 Waste management

No.	Scenario	Description
C3	Current market situation	As per EN 17213: Share for recirculation of materials: • 100% metals in melt (recycling) • Plastics 100% thermal recycling in incineration plant • Timber and timber based materials 100% thermal recycling in incineration plant • Remainder to landfill

Electricity consumption of recycling plant: 0.5 MJ/kg.

As the products in the main scenario are sold throughout Germany, the disposal scenario was based on average data sets for Germany. If no German data records were available, global data records were used.

The table below describes 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	PG1	PG2	PG3	PG4
Collection process, collected separately	kg	55.63	34.86	62.63	28.61
Collection process, collected as mixed construction waste	kg	2.93	1.83	3.30	1.51
Recovery system, for re-use	kg	0.00	0.00	0.00	0.00
Recovery system, for recycling	kg	0.35	0.34	5.60	0.62
Recovery system, for energy recovery	kg	55.28	34.52	57.03	28.00
Disposal	kg	2.93	1.83	3.30	1.51

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" (DE).**

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[1]
D	**Recycling potential**	**Steel scrap from C3 excluding the scrap used in A3 replaces 70.2% of steel; Aluminium scrap from C3 excluding the scrap used in A3 replaces 70.2% of aluminium; Brass recyclate from C3 excluding the brass used in A3 replaces 60% of brass. Benefits from incineration plant: Electricity replaces electricity mix (DE) (residual mix); Thermal energy replaces thermal energy from natural gas (DE).**

[1] Applied value correction factor of 70.2% according to metal-specific data set, 60% according to standard data set for other materials.

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.

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