

# Environmental Product Declaration



In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

## Warehouse signs

from

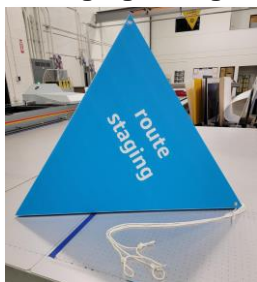
**Specialty Sign Co.**



Programme:	The International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a>
Programme operator:	EPD International AB
EPD registration number:	S-P-04672
Publication date:	2022-03-02
Valid until:	2027-03-02

*An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at [www.environdec.com](http://www.environdec.com)*

**Hanging Triangle**



**Stop Sign**



**Office Sign**



**Rivet Sign**



## General information

### Programme information

<b>Programme:</b>	The International EPD® System
<b>Address:</b>	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
<b>Website:</b>	<a href="http://www.environdec.com">www.environdec.com</a>
<b>E-mail:</b>	<a href="mailto:info@environdec.com">info@environdec.com</a>

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): Product Category Rules (PCR) 2019:14, v1.1 – Construction products
PCR review was conducted by: The Technical Committee of the International EPD® System. Chair: Claudia A. Peña. Contact via <a href="mailto:info@environdec.com">info@environdec.com</a>
Geographical scope: United States and China
Independent third-party verification of the declaration and data, according to ISO 14025:2006:  <input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification
Third party verifier: Terrie Boguski Harmony Environmental, LLC 16362 W Briarwood Ct, Olathe, KS 66062 913-780-3328 <a href="http://www.harmonyenviro.com">www.harmonyenviro.com</a> Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier:  <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

## Company information

### Owner of the EPD

Specialty Sign Co.  
2002 E Watkins St  
Phoenix, AZ 85034  
USA

### Contact

Tim Nedin  
Director of Operations  
Specialty Sign Company  
Direct: 602-570-2171  
Office: 866-418-6189 ext. 106

### Description of the organisation

Specialty Sign Co. is a Phoenix printing company and leading commercial printer in Arizona. We are print professionals with a highly experienced sales, support, and production team. Along with our industry leading production team, Specialty Sign Co. can offer you state-of-the-art machinery, inks, and materials to produce some of the highest quality work found anywhere in Arizona, the southwest, and across the continental United States.

### Name and location of production site(s)

All Specialty Sign Co. products assessed in this EPD are manufactured at their sole plant located in Phoenix, Arizona, USA.

## Product information

### Product names

- Hanging Triangle Sign
- Office Sign
- Rivet Sign
- Stop Sign

### Product identification

The signs are manufactured using various blends of plastics and/or metals.

### Product description

The signs are designed for interior and exterior decoration of large-scale modernized constructions and/or warehouses. In some cases, the signs are manufactured using plastic to metal sandwiching using a continuous co-extrusion process. In other cases, the signs are manufactured using sheet to air-bubble co-extruded polypropylene board. And lastly, some signs are manufactured using solely polypropylene or polyvinyl chloride. The blend of plastics and metals for each sign depend on the

function of the sign. For example, aluminium is used in the Rivet Sign as both as a reinforcing material as well as a mounting mechanism. All signs also contain various amounts of printing ink to display their respective message.

#### **UN CPC code**

The UN CPC code for Specialty Sign Co. products covered by this EPD is 38961.

### **LCA information**

#### **Functional unit / declared unit**

The functional unit is one sign. Therefore, there are four iterations of the functional unit represented by each product: the hanging triangle sign, the office sign, the rivet sign, and the stop sign. The rivet sign is manufactured using plastic to metal sandwiching using a continuous co-extrusion process and measures 12 ft<sup>2</sup>. The Hanging Triangle sign is manufactured using sheet to air-bubble co-extruded polypropylene board and measures 21.27 ft<sup>2</sup>. The Stop Sign is manufactured with solely polypropylene and measures 2.77 ft<sup>2</sup>. And lastly, the Office Sign is manufactured with solely polyvinyl chloride and measures 1.5 ft<sup>2</sup>. This size of each sign was selected based on the most commonly manufactured variation for each particular sign.

#### **Time representativeness**

Primary data for raw materials, electricity consumption, and transport were provided by Specialty Sign Co., and were representative of calendar year 2020.

#### **Database(s) and LCA software used**

Inventory data were inputted into OpenLCA version 1.10.3. Inventory processes were provided by Ecoinvent version 3.7.1.

#### **Description of system boundaries**

The LCA scope of this EPD is Cradle to Gate with Module C1-C3, Module D and Optional Modules , including modules A1-A4,C1-C4 and D.

**Table 1: Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation**

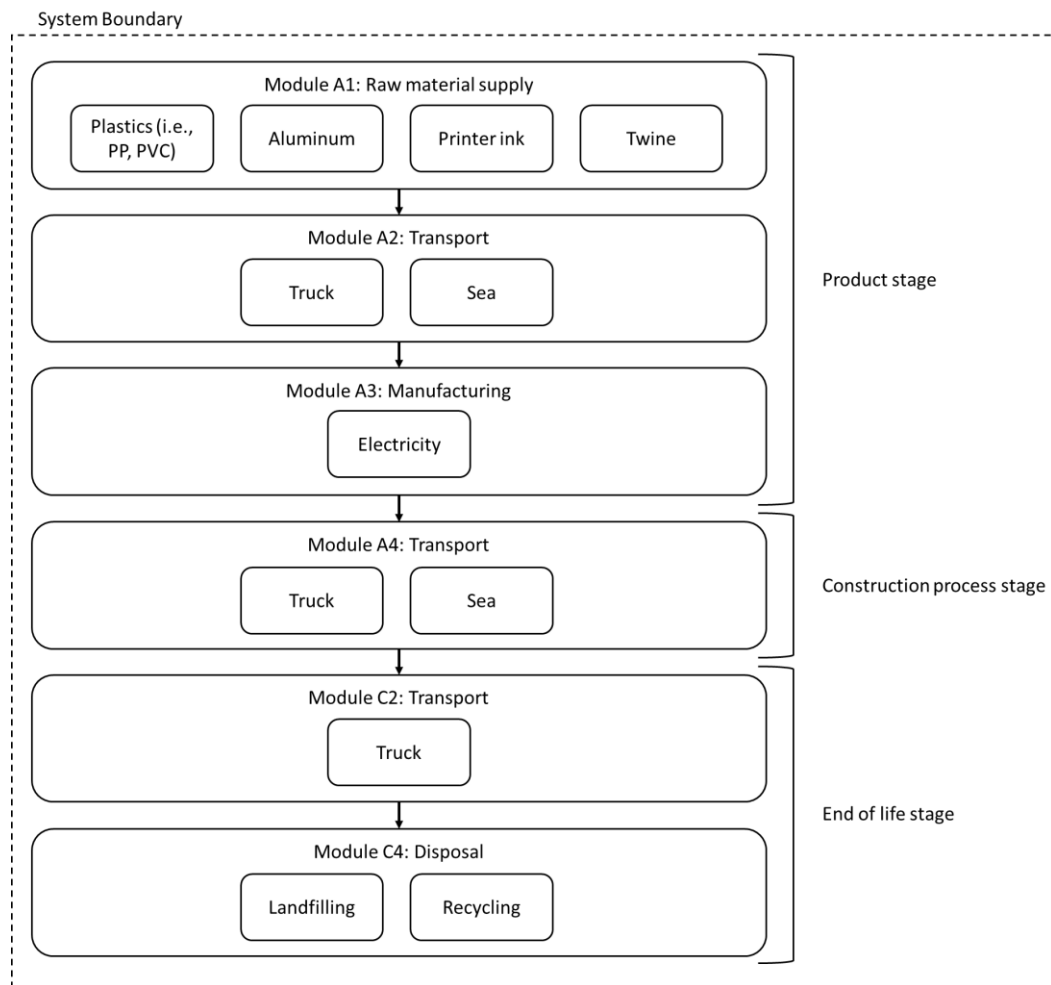
	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X
Geography	China	China/USA	USA	USA	-	-	-	-	-	-	-	-	USA	USA	USA	USA	USA
Specific data used	>90%					-	-	-	-	-	-	-	>90%				>90%
Variation – products	<10%					-	-	-	-	-	-	-	<10%				<10%
Variation – sites	N/A					-	-	-	-	-	-	-	N/A				N/A

MND: Module not declared (and is therefore associated with a zero result)

The following life cycle modules were not included because they are not applicable to the signs: Construction Installation (A5), Use (B1), Maintenance (B2), Repair (B3), Replacement (B4), Refurbishment (B5), Operational energy use (B6), Operational water use (B7), De-construction demolition (C1), and Waste processing (C3).

Module D calculates the potential environmental benefits of the recycling or reuse of materials. Although it is assumed that a portion of the signs are recycled at end-of-life, no significant benefits due to recycling or/and reuse are anticipated.

**Figure 1: Specialty Sign Co. system diagram**



**Product stage: Module A1 (Raw material supply), A2 (Transport), and A3 (Manufacturing)**

- Extraction, transport, and manufacturing of raw materials.
- Electricity generation from primary and secondary energy resources, includes their extraction, refining and transport for Modules A1 and A3.
- External transportation of materials to the core processes and internal transport.
- Manufacturing of the Specialty Sign Co. products.
- Packaging materials

**Construction Process Stage: Module A4 (Transport)**

- Transportation from the production gate to the construction site.

**Downstream Processes: C2 (Transport) and C4 (Disposal)**

- Transport of waste generated at the end of life.
- Treatment of waste generated at the end of life.

## System boundaries for manufacturing of equipment and for employees

In accordance with PCR 2019:14, the following system boundaries are applied to manufacturing equipment and employees:

- Inventory flows from infrastructure, construction, production equipment, and tools that are not directly consumed in the production process can be excluded from the LCI, if it is not known to have the potential to cause significant impact (see EN 15804 Section 6.3.6).
- Inventory flows from personnel-related processes, such as transportation to and from work, shall also not be accounted for in the LCI. However, transport that is part of the work shall always be accounted for in the LCI.

## Transport to the building site (adapted from EN 15804, Table 10)

Scenario information	Unit (expressed per functional unit or per declared unit)
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat etc.	>32 ton lorry, diesel, long-haul truck
Distance	2,000 km
Capacity utilisation (including empty returns)	49.9%
Bulk density of transported products	194.6 kg/m <sup>3</sup>
Volume capacity utilisation factor (factor: =1 or < 1 or ≥ 1 for compressed or nested packaged products)	Not applicable

## Materials contents for each sign

Product	Material Type	Weight (kg)	Recycling Rate	Weight Recycled (kg)	Weight Landfilled (kg)
Hanging Triangle	Plastic	2.62E+00	8.37%	2.19E-01	2.40E+00
	Paperboard	2.34E-02	65.92%	1.54E-02	7.98E-03
	Aluminum	3.03E-03	16.19%	4.91E-04	2.54E-03
Office Sign	Plastic	1.97E+00	8.37%	1.65E-01	1.81E+00
	Paperboard	1.65E-03	65.92%	1.09E-03	5.63E-04
	Aluminum	1.23E-01	16.19%	1.99E-02	1.03E-01
Rivet Sign	Plastic	6.22E+00	8.37%	5.20E-01	5.70E+00
	Paperboard	1.32E-02	65.92%	8.71E-03	4.50E-03
	Aluminum	1.00E-01	16.19%	1.62E-02	8.38E-02
Stop Sign	Plastic	2.88E-02	8.37%	2.41E-03	2.64E-02
	Paperboard	3.05E-03	65.92%	2.01E-03	1.04E-03
	Aluminum	0.00E+00	16.19%	0.00E+00	0.00E+00

## Cut-off rules

It is common for LCA protocols to include exclusion limits for inputs and outputs falling outside the threshold percentage of the total. According to PCR 2019:14, Life cycle inventory data shall according to EN 15804 include a minimum of 95% of total inflows (mass and energy) per module. In addition, if less than 100% of the inflows are accounted for, proxy data or extrapolation should be used to achieve 100% completeness. Inflows not included in the LCA shall be documented in the EPD. All known inflows were included, or no inflows were knowingly excluded.

## Allocation

According to the PCR 2019:14, in a process step where more than one type of product is generated, environmental stressors (inputs and outputs) from the process must be allocated to the outputs to get product-based inventory data rather than of process-based data. PCR 2019:14 states that the following stepwise procedure shall be applied for co-product allocation processes:

1. Allocation shall be avoided, if possible, by dividing the unit process into two or more sub-processes and collecting the environmental data related to these sub-processes. A sub-process system's boundary appears
  - a. each time a product is generated and leaves the specific analysed product system,
  - b. each time a waste flow appears and leaves the specific analysed product system,
  - c. when product flows are treated in various ways in a process, or
  - d. when a material recycling loop occurs outside the own process step.
2. Allocation shall be based on physical properties (e.g. mass, volume) when the difference in revenue from the co-products is low. An allocation can now be performed for each sub-system where the inputs and outputs of the system shall be partitioned between its different products or functions in a way that reflects the underlying physical relationships between them; i.e. they should reflect the way in which the inputs and outputs are changed by quantitative changes in the products or functions delivered by the system.
3. In all other cases, including joint co-production processes, where no relevant underlying physical relationships between the products and co-products can be identified, the inventory of the remaining parts of process should be allocated between the products and co-products in a way that reflects the economic value of the co-products when they leave the unit process. The economic value of the co-products may be assessed by considering the proportion of revenue generated by each coproduct. The revenue is the price multiplied by the output. For both price and output, representative values should be identified (e.g., rolling annual averages).

Consistent allocation procedures shall be uniformly applied to similar inputs and outputs of the system under consideration. Nevertheless, a conservative approach may be used for the assessment of the primary product by not allocating any environmental flows to a co-product. However, if the co-products are part of the system under study it shall be attributed to the environmental impact from that process, in order to not underestimate the impact from the co-product under study. Impacts from allocated co-products shall not be included in module D.

There are no co-products from Specialty Sign Co. products, and therefore no allocation protocols were necessary for this analysis. All Specialty Sign Co. products assessed in this EPD are manufactured in one plant located in Phoenix, Arizona, USA. Mass and energy data have been sourced from the manufacturing plant by Specialty Sign Co.. The quantities of materials and electricity required for producing each Specialty Sign Co. product were calculated on basis of the weight (kg) of a particular product manufactured in calendar year 2020 on the site.

## Data quality and validation

The primary data used for the study (core module) was based on direct measurements and weights of raw materials, as well as electricity consumption specifications of manufacturing equipment. Primary data were carefully reviewed to ensure completeness, accuracy and representativeness of the data supplied. According to EN15804 A2, the data quality ranking were as follows:

- Geographical representativeness – very good
- Technical representativeness – very good
- Time representativeness – very good

## Compliance with standards

The LCA and EPD were developed to comply with:



1. ISO 14040:2006 and ISO14044:2006+A1:2018 which describe the principles, framework, requirements and provides guidelines for life cycle assessment (LCA) (ISO, 2006; ISO, 2018).
2. ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations - Principles and procedures, which establishes the principles and specifies the procedures for developing Type III environmental declaration programmes and Type III environmental declarations (ISO, 2006).
3. EN 15804+A2:2019: Sustainability of construction works – Environmental product declarations - Core rules for the product category of construction products (here after referred to as EN15804+A2).
4. Product Category Rules (PCR) 2019:14, v1.1 – Construction products – Hereafter referred to as PCR 2019:14.
5. General Programme Instructions (GPI) for the International EPD System V3.01 – containing instructions regarding methodology and the content that must be included in EPDs registered under the International EPD System.

### Assumptions

1. All products were assumed to require three minutes of electricity consumption from their respective manufacturing equipment based on the equipment's wattage specifications.
2. Manufacturing waste was assumed to be 1% of the product weight.
3. Packaging for one item was assumed to be sufficient for 12 ft<sup>2</sup>, where packaging requirements were then subsequently weighted based on a single item's packaging needs.
4. All raw materials were assumed to be transported from Shanghai, China to Phoenix, Arizona, USA.
5. Upon being manufactured, finished products were assumed to be transported 2,000 km to their site of use.
6. After use, the signs were assumed to be landfilled or recycled based on the USEPA recycling rates (USEPA, 2020).
7. Primary data for waste material transportation was calculated using a default value of 32 kilometers (20 miles) since primary data were not available.

## Content information: Hanging Triangle Sign

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Grommet (Aluminium)	0.00303	0%	0%
Ink	0.00150	0%	0%
Prime Bubble-X (Polypropylene)	2.57792	0%	0%
Twine	0.00255	0%	0%
TOTAL	2.58500	0%	0%
Packaging materials	Weight, kg	Weight-% (versus the product)	
Cardboard	0.00268	0%	
Shrink Wrap	0.04149	0%	
Kraft Paper	0.02075	0%	
TOTAL	0.06492		

## Content information: Office Sign

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Ink	0.00011	0%	0%
Mount (Aluminium)	0.12322	0%	0%
Sintra Polyvinyl Chloride	1.97047	0%	0%
TOTAL	2.09380	0%	0%
Packaging materials	Weight, kg	Weight-% (versus the product)	
Cardboard	0.00019	0%	
Shrink Wrap	0.00293	0%	
Kraft Paper	0.00146	0%	
TOTAL	0.00458		

## Content information: Rivet Sign

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Aluminium Composite	6.19292	0%	0%
Ink	0.00084	0%	0%
Rivet (Aluminum)	0.09999	0%	0%
TOTAL	6.29376	0%	0%
Packaging materials	Weight, kg	Weight-% (versus the product)	
Cardboard	0.00151	0%	
Shrink Wrap	0.02341	0%	
Kraft Paper	0.01170	0%	
TOTAL	0.03662		

## Content information: Stop Sign

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
GF 213 Polypropylene	0.02339	0%	0%
Ink	0.00019	0%	0%
Vinyl Adhesive	0.00020	0%	0%
TOTAL	0.02378	0%	0%
Packaging materials	Weight, kg	Weight-% (versus the product)	
Cardboard	0.00035	0%	
Shrink Wrap	0.00540	0%	
Kraft Paper	0.00270	0%	
TOTAL	0.00845		

## Environmental Information: Hanging Triangle Sign

For construction services, the total value of A1-A3 shall be replaced with the total value of A1-A5.

### Potential environmental impact – mandatory indicators according to EN 15804

Results per functional or declared unit																			
Indicator	Unit	A1	A2	A3	Tot.A 1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq.	7.98E+00	1.34E+00	2.14E-01	9.53E+00	3.96E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	3.55E-02	0	1.90E+00	ND
GWP-biogenic	kg CO2 eq.	2.98E-02	- 8.90E-04	1.90E-03	3.08E-02	- 1.48E-02	ND	ND	ND	ND	ND	ND	ND	ND	0	6.65E-05	0	2.61E-04	ND
GWP-luluc	kg CO2 eq.	8.38E-03	9.75E-04	1.66E-05	9.37E-03	2.70E-04	ND	ND	ND	ND	ND	ND	ND	ND	0	1.33E-05	0	5.75E-05	ND
GWP-total	kg CO2 eq.	8.02E+00	1.34E+00	2.16E-01	9.57E+00	3.82E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	3.56E-02	0	1.90E+00	ND
ODP	kg CFC 11 eq.	1.94E-07	2.55E-07	1.16E-08	4.61E-07	7.46E-08	ND	ND	ND	ND	ND	ND	ND	ND	0	8.07E-09	0	2.02E-08	ND
AP	mol H+ eq.	3.34E-02	4.04E-02	5.40E-04	7.43E-02	2.01E-03	ND	ND	ND	ND	ND	ND	ND	ND	0	1.80E-04	0	1.32E-03	ND
EP-freshwater	kg P eq.	5.37E-03	1.82E-04	6.30E-04	6.18E-03	1.96E-04	ND	ND	ND	ND	ND	ND	ND	ND	0	7.76E-06	0	2.93E-05	ND
EP-freshwater	kg PO4 eq.	1.75E-03	5.92E-05	2.05E-04	2.01E-03	6.39E-05	ND	ND	ND	ND	ND	ND	ND	ND	0	2.53E-06	0	9.56E-06	ND
EP-marine	kg N eq.	6.62E-03	9.95E-03	1.50E-04	1.67E-02	6.40E-04	ND	ND	ND	ND	ND	ND	ND	ND	0	6.13E-05	0	1.24E-03	ND
EP-terrestrial	mol N eq.	6.63E-02	1.11E-01	1.22E-03	1.78E-01	6.94E-03	ND	ND	ND	ND	ND	ND	ND	ND	0	6.70E-04	0	5.94E-03	ND
POCP	kg NMVOC eq.	2.57E-02	2.88E-02	3.40E-04	5.48E-02	2.14E-03	ND	ND	ND	ND	ND	ND	ND	ND	0	2.00E-04	0	2.57E-03	ND
ADP-minerals & metals*	kg Sb eq.	3.94E-05	2.14E-06	4.12E-07	4.19E-05	1.16E-06	ND	ND	ND	ND	ND	ND	ND	ND	0	8.16E-08	0	3.29E-07	ND
ADP-fossil*	MJ	2.17E+02	1.81E+01	3.01E+00	2.38E+02	6.81E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	5.47E-01	0	1.46E+00	ND

WDP	m3	2.81E+00	8.88E-02	5.16E-02	2.95E+00	8.33E-02	ND	ND	ND	ND	ND	ND	ND	ND	0	2.82E-03	0	1.01E-02	ND
Human toxicity, cancer	CTUh	2.78E-09	7.61E-10	4.64E-11	3.59E-09	1.41E-10	ND	ND	ND	ND	ND	ND	ND	ND	0	1.17E-11	0	3.60E-09	ND
Human toxicity, non-cancer	CTUh	6.28E-08	7.27E-09	1.47E-09	7.15E-08	4.97E-09	ND	ND	ND	ND	ND	ND	ND	ND	0	4.73E-10	0	1.95E-08	ND
Ecotoxicity, freshwater	CTUe	9.50E+01	1.06E+01	2.68E+00	1.08E+02	5.06E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	4.40E-01	0	2.41E+01	ND
Land use	Pt.	1.14E+01	3.12E+00	5.52E-01	1.51E+01	9.59E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	5.57E-01	0	3.31E-01	ND
Particulate matter	disease inc.	3.27E-07	4.35E-08	3.78E-09	3.74E-07	3.26E-08	ND	ND	ND	ND	ND	ND	ND	ND	0	3.25E-09	0	6.85E-07	ND
GWP-GHG	kg CO2 eq.	7.73E+00	1.33E+00	2.12E-01	9.27E+00	3.92E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	3.52E-02	0	1.81E+00	ND
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption																		

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Disclaimers shall be added, if required by EN 15804.

## Use of resources

Results per functional or declared unit																			
Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	3.52E+00	1.13E-01	6.44E-01	4.27E+00	8.81E-02	ND	ND	ND	ND	ND	ND	ND	ND	0	4.45E-03	0	1.70E-02	ND
PERM	MJ	1.83E+01	6.93E-01	8.11E-01	1.98E+01	1.36E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	2.48E-02	0	9.59E-02	ND
PERT	MJ	2.18E+01	8.06E-01	1.46E+00	2.40E+01	1.45E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	2.92E-02	0	1.13E-01	ND
PENRE	MJ	1.24E-02	1.41E-03	2.10E-05	1.38E-02	5.20E-04	ND	ND	ND	ND	ND	ND	ND	ND	0	2.75E-05	0	1.20E-04	ND
PENRM	MJ	1.65E+02	1.84E+01	2.00E+00	1.86E+02	6.52E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	5.65E-01	0	1.46E+00	ND
PENRT	MJ	1.65E+02	1.84E+01	2.00E+00	1.86E+02	6.52E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	5.65E-01	0	1.46E+00	ND
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	0.00E+00	0	0.00E+00	ND
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	0.00E+00	0	0.00E+00	ND

NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	0.00E+00	0	0.00E+00	ND
FW	m <sup>3</sup>	6.77E-02	2.15E-03	1.72E-03	7.15E-02	2.00E-03	ND	ND	ND	ND	ND	ND	ND	ND	0	6.88E-05	0	2.42E-04	ND
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water																		

## Waste production and output flows

### Waste production

Results per functional or declared unit																			
Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
Non-hazardous waste disposed	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2.41E+00	0E+00
Radioactive waste disposed	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00

### Output flows

Results per functional or declared unit																			
Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
Material for recycling	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2.35E-01	0E+00
Materials for energy recovery	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
Exported energy, electricity	MJ	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00



Exported energy, thermal	MJ	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00
--------------------------	----	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------

The result tables shall only contain values or the letters “ND” (Not Declared). It is not possible to specify ND for mandatory indicators. ND shall only be used for voluntary parameters that are not quantified because no data is available.

### Information on biogenic carbon content

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	0E+00
Biogenic carbon content in packaging	kg C	4.43E-03

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>. Source: Suchowska-Kisielewicz, M., Jędrzak, A., & Myszograj, S. (2012).

## Environmental Information: Office Sign

For construction services, the total value of A1-A3 shall be replaced with the total value of A1-A5.

### Potential environmental impact – mandatory indicators according to EN 15804

Results per functional or declared unit																			
Indicator	Unit	A1	A2	A3	Tot.A 1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq.	1.73E+01	1.02E+00	2.14E-01	1.86E+01	2.56E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	5.35E-03	0	9.94E-01	ND
GWP-biogenic	kg CO2 eq.	1.20E-01	1.65E-04	1.90E-03	1.22E-01	- 6.10E-04	ND	ND	ND	ND	ND	ND	ND	ND	0	1.00E-05	0	1.27E-03	ND
GWP-luluc	kg CO2 eq.	2.40E-02	7.25E-04	1.66E-05	2.47E-02	1.04E-04	ND	ND	ND	ND	ND	ND	ND	ND	0	2.01E-06	0	7.27E-05	ND
GWP-total	kg CO2 eq.	1.75E+01	1.03E+00	2.16E-01	1.87E+01	2.55E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	5.36E-03	0	9.95E-01	ND
ODP	kg CFC 11 eq.	3.10E-06	2.03E-07	1.16E-08	3.31E-06	5.70E-08	ND	ND	ND	ND	ND	ND	ND	ND	0	1.22E-09	0	1.69E-08	ND
AP	mol H+ eq.	7.81E-02	3.23E-02	5.40E-04	1.11E-01	1.30E-03	ND	ND	ND	ND	ND	ND	ND	ND	0	2.72E-05	0	8.61E-04	ND
EP-freshwater	kg P eq.	1.88E-02	1.07E-04	6.30E-04	1.96E-02	6.36E-05	ND	ND	ND	ND	ND	ND	ND	ND	0	1.17E-06	0	6.54E-05	ND
EP-freshwater	kg PO4 eq.	6.14E-03	3.49E-05	2.05E-04	6.38E-03	2.07E-05	ND	ND	ND	ND	ND	ND	ND	ND	0	3.80E-07	0	2.13E-05	ND
EP-marine	kg N eq.	1.91E-02	7.95E-03	1.50E-04	2.72E-02	4.37E-04	ND	ND	ND	ND	ND	ND	ND	ND	0	9.23E-06	0	8.11E-04	ND
EP-terrestrial	mol N eq.	1.51E-01	8.84E-02	1.22E-03	2.40E-01	4.78E-03	ND	ND	ND	ND	ND	ND	ND	ND	0	1.00E-04	0	3.24E-03	ND
POCP	kg NMVOC eq.	7.44E-02	2.29E-02	3.40E-04	9.77E-02	1.43E-03	ND	ND	ND	ND	ND	ND	ND	ND	0	3.01E-05	0	1.59E-03	ND
ADP-minerals & metals*	kg Sb eq.	9.65E-05	1.46E-06	4.12E-07	9.83E-05	6.05E-07	ND	ND	ND	ND	ND	ND	ND	ND	0	1.23E-08	0	5.00E-07	ND
ADP-fossil*	MJ	2.71E+02	1.33E+01	3.01E+00	2.88E+02	3.99E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	8.24E-02	0	9.18E-01	ND

WDP	m3	8.93E+00	3.56E-02	5.16E-02	9.01E+00	2.39E-02	ND	ND	ND	ND	ND	ND	ND	ND	0	4.20E-04	0	8.47E-01	ND
Human toxicity, cancer	CTUh	7.90E-09	5.93E-10	4.64E-11	8.54E-09	8.52E-11	ND	ND	ND	ND	ND	ND	ND	ND	0	1.77E-12	0	3.01E-07	ND
Human toxicity, non-cancer	CTUh	2.40E-07	5.44E-09	1.47E-09	2.47E-07	3.38E-09	ND	ND	ND	ND	ND	ND	ND	ND	0	7.12E-11	0	5.86E-08	ND
Ecotoxicity, freshwater	CTUe	3.51E+02	7.93E+00	2.68E+00	3.61E+02	3.18E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	6.63E-02	0	1.22E+02	ND
Land use	Pt.	3.80E+01	2.28E+00	5.52E-01	4.08E+01	4.24E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	8.38E-02	0	-8.60E-04	ND
Particulate matter	disease inc.	6.26E-07	3.31E-08	3.78E-09	6.63E-07	2.31E-08	ND	ND	ND	ND	ND	ND	ND	ND	0	4.89E-10	0	1.15E-05	ND
Ionising radiation	kBq U-235 eq.	1.75E+00	5.97E-02	3.69E-02	1.84E+00	1.85E-02	ND	ND	ND	ND	ND	ND	ND	ND	0	3.90E-04	0	5.85E-03	ND
GWP-GHG	kg CO2 eq.	1.70E+01	1.02E+00	2.12E-01	1.82E+01	2.54E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	5.31E-03	0	9.46E-01	ND
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-land use = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption																		

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Disclaimers shall be added, if required by EN 15804.

## Use of resources

Results per functional or declared unit																			
Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1.51E+01	6.21E-02	6.44E-01	1.58E+01	3.47E-02	ND	ND	ND	ND	ND	ND	ND	ND	0	6.73E-04	0	4.60E-02	ND
PERM	MJ	7.62E+01	3.47E-01	8.11E-01	7.74E+01	2.55E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	3.73E-03	0	1.17E+00	ND
PERT	MJ	9.13E+01	4.10E-01	1.46E+00	9.32E+01	2.89E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	4.40E-03	0	1.22E+00	ND
PENRE	MJ	1.62E-02	1.02E-03	2.10E-05	1.72E-02	2.10E-04	ND	ND	ND	ND	ND	ND	ND	ND	0	4.14E-06	0	1.80E-04	ND
PENRM	MJ	1.97E+02	1.37E+01	2.00E+00	2.13E+02	4.08E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	8.51E-02	0	8.62E-01	ND

PENRT	MJ	1.97E+02	1.37E+01	2.00E+00	2.13E+02	4.08E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	8.51E-02	0	8.62E-01	ND
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	0.00E+00	0	0.00E+00	ND
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	0.00E+00	0	0.00E+00	ND
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	0.00E+00	0	0.00E+00	ND
FW	m³	2.19E-01	8.82E-04	1.72E-03	2.21E-01	5.78E-04	ND	ND	ND	ND	ND	ND	ND	ND	0	1.04E-05	0	1.98E-02	ND
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water																		

## Waste production and output flows

### Waste production

Results per functional or declared unit																			
Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
Non-hazardous waste disposed	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1.91E+00	0E+00
Radioactive waste disposed	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00

### Output flows

Results per functional or declared unit																			
Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
Material for recycling	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1.86E-01	0E+00
Materials for energy recovery	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00

Exported energy, electricity	MJ	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00
Exported energy, thermal	MJ	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00

The result tables shall only contain values or the letters “ND” (Not Declared). It is not possible to specify ND for mandatory indicators. ND shall only be used for voluntary parameters that are not quantified because no data is available.

## Information on biogenic carbon content

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	0E+00
Biogenic carbon content in packaging	kg C	3.12E-04

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>. Source: Suchowska-Kisielewicz, M., Jędrzak, A., & Myszograj, S. (2012).

## Environmental Information: Rivet Sign

For construction services, the total value of A1-A3 shall be replaced with the total value of A1-A5.

### Potential environmental impact – mandatory indicators according to EN 15804

Results per functional or declared unit																			
Indicator	Unit	A1	A2	A3	Tot.A 1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq.	1.48E+02	3.11E+00	2.14E-01	1.51E+02	7.99E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	2.72E-02	0	4.03E+00	ND
GWP-biogenic	kg CO2 eq.	1.02E+00	8.00E-05	1.90E-03	1.02E+00	- 7.24E-03	ND	ND	ND	ND	ND	ND	ND	ND	0	5.10E-05	0	1.69E-03	ND
GWP-luluc	kg CO2 eq.	3.13E-01	2.22E-03	1.66E-05	3.15E-01	3.62E-04	ND	ND	ND	ND	ND	ND	ND	ND	0	1.02E-05	0	1.00E-04	ND
GWP-total	kg CO2 eq.	1.49E+02	3.11E+00	2.16E-01	1.52E+02	7.93E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	2.73E-02	0	4.03E+00	ND
ODP	kg CFC 11 eq.	9.47E-06	6.13E-07	1.16E-08	1.01E-05	1.73E-07	ND	ND	ND	ND	ND	ND	ND	ND	0	6.19E-09	0	1.35E-08	ND
AP	mol H+ eq.	6.58E-01	9.72E-02	5.40E-04	7.56E-01	4.07E-03	ND	ND	ND	ND	ND	ND	ND	ND	0	1.40E-04	0	1.82E-03	ND
EP-freshwater	kg P eq.	1.67E-01	3.30E-04	6.30E-04	1.68E-01	2.37E-04	ND	ND	ND	ND	ND	ND	ND	ND	0	5.95E-06	0	5.91E-05	ND
EP-freshwater	kg PO4 eq.	5.44E-02	1.07E-04	2.05E-04	5.47E-02	7.70E-05	ND	ND	ND	ND	ND	ND	ND	ND	0	1.94E-06	0	1.93E-05	ND
EP-marine	kg N eq.	1.70E-01	2.40E-02	1.50E-04	1.94E-01	1.36E-03	ND	ND	ND	ND	ND	ND	ND	ND	0	4.70E-05	0	2.47E-03	ND
EP-terrestrial	mol N eq.	1.27E+00	2.66E-01	1.22E-03	1.54E+00	1.48E-02	ND	ND	ND	ND	ND	ND	ND	ND	0	5.10E-04	0	8.79E-03	ND
POCP	kg NMVOC eq.	7.04E-01	6.91E-02	3.40E-04	7.73E-01	4.45E-03	ND	ND	ND	ND	ND	ND	ND	ND	0	1.50E-04	0	4.15E-03	ND
ADP-minerals & metals*	kg Sb eq.	3.30E-04	4.52E-06	4.12E-07	3.35E-04	1.98E-06	ND	ND	ND	ND	ND	ND	ND	ND	0	6.26E-08	0	2.41E-07	ND
ADP-fossil*	MJ	2.18E+03	4.05E+01	3.01E+00	2.22E+03	1.27E+01	ND	ND	ND	ND	ND	ND	ND	ND	0	4.20E-01	0	1.34E+00	ND

WDP	m3	7.31E+01	1.24E-01	5.16E-02	7.33E+01	9.27E-02	ND	ND	ND	ND	ND	ND	ND	ND	0	2.16E-03	0	3.41E-02	ND
Human toxicity, cancer	CTUh	5.67E-08	1.79E-09	4.64E-11	5.85E-08	2.70E-10	ND	ND	ND	ND	ND	ND	ND	ND	0	9.00E-12	0	7.14E-09	ND
Human toxicity, non-cancer	CTUh	1.83E-06	1.66E-08	1.47E-09	1.85E-06	1.05E-08	ND	ND	ND	ND	ND	ND	ND	ND	0	3.63E-10	0	3.94E-08	ND
Ecotoxicity, freshwater	CTUe	2.93E+03	2.42E+01	2.68E+00	2.96E+03	1.00E+01	ND	ND	ND	ND	ND	ND	ND	ND	0	3.38E-01	0	8.77E+02	ND
Land use	Pt.	2.87E+02	6.96E+00	5.52E-01	2.94E+02	1.44E+01	ND	ND	ND	ND	ND	ND	ND	ND	0	4.27E-01	0	-3.56E-01	ND
Particulate matter	disease inc.	5.23E-06	1.00E-07	3.78E-09	5.34E-06	7.11E-08	ND	ND	ND	ND	ND	ND	ND	ND	0	2.49E-09	0	1.52E-06	ND
Ionising radiation	kBq U-235 eq.	1.59E+01	1.82E-01	3.69E-02	1.62E+01	5.81E-02	ND	ND	ND	ND	ND	ND	ND	ND	0	1.98E-03	0	6.78E-03	ND
GWP-GHG	kg CO2 eq.	1.45E+02	3.09E+00	2.12E-01	1.49E+02	7.93E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	2.70E-02	0	3.85E+00	ND
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption																		

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Disclaimers shall be added, if required by EN 15804.

## Use of resources

Results per functional or declared unit																			
Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1.39E+02	2.01E-01	6.44E-01	1.40E+02	1.22E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	3.42E-03	0	3.78E-02	ND
PERM	MJ	6.39E+02	1.15E+00	8.11E-01	6.41E+02	1.17E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	1.90E-02	0	2.08E-01	ND
PERT	MJ	7.78E+02	1.35E+00	1.46E+00	7.81E+02	1.29E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	2.24E-02	0	2.46E-01	ND
PENRE	MJ	2.17E-01	3.12E-03	2.10E-05	2.20E-01	7.40E-04	ND	ND	ND	ND	ND	ND	ND	ND	0	2.11E-05	0	3.00E-04	ND
PENRM	MJ	1.61E+03	4.18E+01	2.00E+00	1.65E+03	1.28E+01	ND	ND	ND	ND	ND	ND	ND	ND	0	4.33E-01	0	1.20E+00	ND

PENRT	MJ	1.61E+03	4.18E+01	2.00E+00	1.65E+03	1.28E+01	ND	ND	ND	ND	ND	ND	ND	ND	0	4.33E-01	0	1.20E+00	ND
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	0.00E+00	0	0.00E+00	ND
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	0.00E+00	0	0.00E+00	ND
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	0.00E+00	0	0.00E+00	ND
FW	m <sup>3</sup>	1.80E+00	3.04E-03	1.72E-03	1.81E+00	2.25E-03	ND	ND	ND	ND	ND	ND	ND	ND	0	5.28E-05	0	8.21E-04	ND
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water																		

## Waste production and output flows

### Waste production

Results per functional or declared unit																			
Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
Non-hazardous waste disposed	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	5.78E+00	0E+00
Radioactive waste disposed	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00

### Output flows

Results per functional or declared unit																			
Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
Material for recycling	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	5.45E-01	0E+00



Materials for energy recovery	kg	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00
Exported energy, electricity	MJ	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00
Exported energy, thermal	MJ	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00

The result tables shall only contain values or the letters "ND" (Not Declared). It is not possible to specify ND for mandatory indicators. ND shall only be used for voluntary parameters that are not quantified because no data is available.

## Information on biogenic carbon content

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	0E+00
Biogenic carbon content in packaging	kg C	2.50E-03

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>. Source: Suchowska-Kisielewicz, M., Jędrzak, A., & Myszograj, S. (2012).

## Environmental Information: Stop Sign

For construction services, the total value of A1-A3 shall be replaced with the total value of A1-A5.

### Potential environmental impact – mandatory indicators according to EN 15804

Results per functional or declared unit																			
Indicator	Unit	A1	A2	A3	Tot.A 1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq.	7.05E-02	2.18E-02	5.36E-02	1.46E-01	1.43E-02	ND	ND	ND	ND	ND	ND	ND	ND	0	4.16E-03	0	2.14E-02	ND
GWP-biogenic	kg CO2 eq.	8.64E-05	- 1.57E-04	4.70E-04	4.00E-04	- 1.99E-03	ND	ND	ND	ND	ND	ND	ND	ND	0	7.79E-06	0	2.49E-06	ND
GWP-luluc	kg CO2 eq.	3.50E-04	1.89E-05	4.16E-06	3.73E-04	2.03E-05	ND	ND	ND	ND	ND	ND	ND	ND	0	1.56E-06	0	5.45E-07	ND
GWP-total	kg CO2 eq.	7.10E-02	2.16E-02	5.41E-02	1.47E-01	1.24E-02	ND	ND	ND	ND	ND	ND	ND	ND	0	4.17E-03	0	2.14E-02	ND
ODP	kg CFC 11 eq.	2.08E-09	2.86E-09	2.89E-09	7.83E-09	1.24E-09	ND	ND	ND	ND	ND	ND	ND	ND	0	9.45E-10	0	1.93E-10	ND
AP	mol H+ eq.	3.00E-04	4.49E-04	1.40E-04	8.89E-04	7.28E-05	ND	ND	ND	ND	ND	ND	ND	ND	0	2.12E-05	0	1.36E-05	ND
EP-freshwater	kg P eq.	9.77E-05	1.46E-04	4.56E-05	2.89E-04	2.37E-05	ND	ND	ND	ND	ND	ND	ND	ND	0	6.90E-06	0	4.43E-06	ND
EP-freshwater	kg PO4 eq.	4.63E-05	8.24E-06	1.58E-04	2.13E-04	1.74E-05	ND	ND	ND	ND	ND	ND	ND	ND	0	9.08E-07	0	2.81E-07	ND
EP-marine	kg N eq.	5.85E-05	1.08E-04	3.80E-05	2.05E-04	1.96E-05	ND	ND	ND	ND	ND	ND	ND	ND	0	7.18E-06	0	1.38E-05	ND
EP-terrestrial	mol N eq.	5.90E-04	1.20E-03	3.10E-04	2.10E-03	2.06E-04	ND	ND	ND	ND	ND	ND	ND	ND	0	7.85E-05	0	6.25E-05	ND
POCP	kg NMVOC eq.	2.20E-04	3.25E-04	8.48E-05	6.30E-04	6.95E-05	ND	ND	ND	ND	ND	ND	ND	ND	0	2.34E-05	0	2.75E-05	ND
ADP-minerals & metals*	kg Sb eq.	3.63E-07	6.38E-08	1.03E-07	5.29E-07	6.54E-08	ND	ND	ND	ND	ND	ND	ND	ND	0	9.56E-09	0	3.13E-09	ND
ADP-fossil*	MJ	1.95E+00	4.02E-01	7.52E-01	3.10E+00	3.13E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	6.41E-02	0	1.40E-02	ND

WDP	m3	2.47E-02	6.77E-03	1.29E-02	4.43E-02	7.90E-03	ND	ND	ND	ND	ND	ND	ND	ND	0	3.30E-04	0	1.03E-04	ND
Human toxicity, cancer	CTUh	2.47E-11	1.08E-11	1.16E-11	4.71E-11	6.02E-12	ND	ND	ND	ND	ND	ND	ND	ND	0	1.38E-12	0	4.03E-11	ND
Human toxicity, non-cancer	CTUh	5.49E-10	1.40E-10	3.67E-10	1.06E-09	1.51E-10	ND	ND	ND	ND	ND	ND	ND	ND	0	5.54E-11	0	2.18E-10	ND
Ecotoxicity, freshwater	CTUe	8.28E-01	2.11E-01	6.69E-01	1.71E+00	1.97E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	5.16E-02	0	2.52E-01	ND
Land use	Pt.	1.44E-01	7.03E-02	1.38E-01	3.52E-01	6.65E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	6.52E-02	0	2.12E-03	ND
Particulate matter	disease inc.	2.92E-09	7.51E-10	9.44E-10	4.61E-09	8.43E-10	ND	ND	ND	ND	ND	ND	ND	ND	0	3.80E-10	0	7.83E-09	ND
Ionising radiation	kBq U-235 eq.	3.12E-03	1.42E-03	9.23E-03	1.38E-02	1.05E-03	ND	ND	ND	ND	ND	ND	ND	ND	0	3.00E-04	0	6.51E-05	ND
GWP-GHG	kg CO2 eq.	6.86E-02	2.15E-02	5.29E-02	1.43E-01	1.41E-02	ND	ND	ND	ND	ND	ND	ND	ND	0	4.13E-03	0	2.05E-02	ND
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption																		

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Disclaimers shall be added, if required by EN 15804.

## Use of resources

Results per functional or declared unit																			
Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2.96E-02	5.85E-03	1.61E-01	1.97E-01	6.79E-03	ND	ND	ND	ND	ND	ND	ND	ND	0	5.20E-04	0	1.57E-04	ND
PERM	MJ	1.60E-01	4.14E-02	2.03E-01	4.04E-01	1.51E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	2.91E-03	0	9.40E-04	ND
PERT	MJ	1.90E-01	4.73E-02	3.64E-01	6.01E-01	1.58E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	3.43E-03	0	1.10E-03	ND
PENRE	MJ	4.60E-04	3.18E-05	5.25E-06	4.97E-04	3.96E-05	ND	ND	ND	ND	ND	ND	ND	ND	0	3.22E-06	0	1.14E-06	ND
PENRM	MJ	1.49E+00	3.53E-01	5.00E-01	2.34E+00	2.56E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	6.61E-02	0	1.39E-02	ND
PENRT	MJ	1.49E+00	3.53E-01	5.00E-01	2.34E+00	2.56E-01	ND	ND	ND	ND	ND	ND	ND	ND	0	6.61E-02	0	1.39E-02	ND

SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	0.00E+00	0	0.00E+00	ND
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	0.00E+00	0	0.00E+00	ND
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0	0.00E+00	0	0.00E+00	ND
FW	m <sup>3</sup>	5.90E-04	1.60E-04	4.30E-04	1.18E-03	1.87E-04	ND	ND	ND	ND	ND	ND	ND	ND	0	8.06E-06	0	2.52E-06	ND
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water																		

## Waste production and output flows

### Waste production

Results per functional or declared unit																			
Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
Non-hazardous waste disposed	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2.74E-02	0E+00
Radioactive waste disposed	kg	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00

### Output flows

Results per functional or declared unit																			
Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00
Material for recycling	kg	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	4.42E-03	0 E+00
Materials for energy recovery	kg	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00	0 E+00
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

		E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00	E+00

The result tables shall only contain values or the letters “ND” (Not Declared). It is not possible to specify ND for mandatory indicators. ND shall only be used for voluntary parameters that are not quantified because no data is available.

## Information on biogenic carbon content

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	0E+00
Biogenic carbon content in packaging	kg C	5.77E-04

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>. Source: Suchowska-Kisielewicz, M., Jędrzak, A., & Myszograj, S. (2012).

## References

1. BSI standards publications. Sustainability of construction works – Environmental product declarations - Core rules for the product category of construction products EN 15804+A2:2019. (2020)
2. Ecoinvent Centre. Ecoinvent v3.7 database. (2019)
3. International Organization for Standardization. ISO 14040:2006. Environmental management – Life cycle assessment – Principles and framework.
4. International Organization for Standardization. ISO 14025:2006 Environmental labels and declarations — Type III environmental declarations — Principles and procedures.
5. International Organization for Standardization. ISO 14044:2006. Environmental management – Life cycle assessment – Requirements and guidelines.
6. USEPA. Office of Land and Emergency Management. Advancing Sustainable Materials Management: 2018 Fact Sheet Assessing Trends in Materials Generation and Management in the United States. (2020)
7. Suchowska-Kisielewicz, M., Jędrzak, A., & Myszograj, S. (2012). Kinetic constants of decomposition of the municipal solid waste prior to and after mechanical-biological processing. Field scale. Archives of Environmental Protection, 38(4), 71-86.
8. The International EPD System. General Programme Instructions of the International EPD® System. Version 3.01.
9. The International EPD System. Product Category Rules (PCR) 2019:14, v1.1 – Construction products. (2020)

