# ENVIRONMENTAL PRODUCT DECLARATION

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

| | |
|---|---|
| Owner of the Declaration | ASSA ABLOY Entrance Systems |
| Publisher | Institut Bauen und Umwelt e.V. (IBU) |
| Programme holder | Institut Bauen und Umwelt e.V. (IBU) |
| Declaration number | EPD-ASA-20240090-IBA1-EN |
| Issue date | 28/01/2025 |
| Valid to | 27/01/2030 |

## ASSA ABLOY LH6080L load house

## ASSA ABLOY Entrance Systems

Institut Bauen und Umwelt e.V.

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# 1. General Information

## ASSA ABLOY Entrance Systems

**Programme holder**

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

**Declaration number**

EPD-ASA-20240090-IBA1-EN

**This declaration is based on the product category rules:**

Loading dock and loading dock equipment, 01/08/2021
(PCR checked and approved by the SVR)

**Issue date**

28/01/2025

**Valid to**

27/01/2030

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

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

## ASSA ABLOY LH6080L load house

**Owner of the declaration**

ASSA ABLOY Entrance Systems
Lodjursgatan 10
26144 Landskrona
Sweden

**Declared product / declared unit**

This declaration represents 1 load house with the following configuration:
Total height 3630 mm (dock height 1200 mm), nominal length 2000 mm, nominal width 3300 mm, galvanized steel frame, insulated wall and roof panels in RAL 9002, drainpipe and gutter, snow load 2 kN/m².

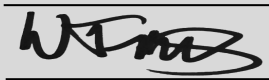
**Scope:**

This declaration and its LCA study are relevant to the ASSA ABLOY LH6080L load house. The production location is Hunedoara, Romania and components are sourced from international tier one suppliers. ASSA ABLOY LH6080L load house size vary according to project requirements; a standard load house total height 3630 mm (dock height 1200 mm), nominal length 2000 mm, nominal width 3300 mm, galvanized steel frame, insulated wall and roof panels in RAL 9002, drain pipe and gutter, snow load 2 kN/m² is used in this declaration.
The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

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

**Verification**

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



Dr.-Ing. Wolfram Trinius,
(Independent verifier)

## 2. Product

### 2.1 Product description/Product definition

**Product name:** ASSA ABLOY LH6080L load house.
**Product characteristic:** Load house The ASSA ABLOY LH6080L load house is the heavy duty version of load houses, especially developed to meet all requirements of architects, builders and operators. It is suitable for all geographical areas with snow load up to 2kN/m2.

The ASSA ABLOY LH6080L load house is an independent loading system, designed to move the actual loading and unloading area outside the building and thereby releasing the corresponding floor area inside. It also forms a protective barrier between building and vehicle, contributing to energy savings and an improved working environment.
Dock levelers and shelters can be integrated with the load house, together forming a complete Autodock system. Due to the thermal separation between building and docking unit, the load house can be used in temperature controlled applications.

The load house consists of four main components:
1) Frame
2) Insulated wall panels and roof panels
3) Cover plates and connection profiles
4) Drain pipe and gutter

The steel frame construction with the wall and roof panels is the housing that is connected to the building on top of the platform with the dock leveler. The cover plates and connection profiles finish off the housing and closes all the gaps to the outside. The drain pipe and gutter of the load house secures controlled water drainage from the roof. The design of the frame to the front side of the load house facilitates the installation of a dock shelter.

The ASSA ABLOY load house LH6080L has been designed to meet all operational and safety requirements in the European Directives and the standards issued by the European Standardization Committee (CEN).

**Harmonized European standards, which have been applied:**

- *DIN EN 1991:2015* Load assumptions
- *DIN EN 1993:2018 (Eurocode 3)* Design of steel structures
- *EN1991-1* Actions on structures
- *EN 1090-1:2009+A1:20111* Execution of steel structures and aluminium structures
- *EN 1090-:2018* Technical requirements for the execution of steel structures

For the application and use, the respective national provisions apply.

### 2.2 Application

The ASSA ABLOY load house is part of the total docking solution on the outside of building. It seals off the vehicle, giving weather protection during the loading and unloading process when the sectional door of the loading bay is opened.

### 2.3 Technical Data

The table presents the technical properties of the ASSA ABLOY LH6080L load house:

| Name | Value | Unit |
|---|---|---|
| Length (normal) (Loadhouse) | 2 | m |
| Width (normal) (Loadhouse) | 3.3 | m |
| Weight (Loadhouse) | 0.73 | t |
| Material (Loadhouse) | - | - |
| Insulation thickness (Loadhouse) | 40 | mm |
| Material | Steel | |
| Surface treatment material | Galvanized steel | |
| Roof option | Drain pipe and gutter | |
| Surface treatment (Loadhouse) | - | - |
| Wind load (basic) (Loadhouse) | 0.84 | $kN/m^2$ |
| Snow load (basic) (Loadhouse) | 2 | $kN/m^2$ |
| Snow load (accumulated) (Loadhouse) | 3.5 | $kN/m^2$ |

1) Other sizes available
2) In accordance with DIN EN 1991-1

**Product not harmonised in accordance with the CPR but in accordance with other provisions for harmonisation of the EU:**

- *DIN EN 1991:2015* Load assumptions
- *DIN EN 1993:2018* (Eurocode 3) Design of steel structures
- *EN1991-1* Actions on structures
- *EN 1090-1:2009+A1:20111* Execution of steel structures and aluminium structures
- *EN 1090-:2018* Technical requirements for the execution of steel structures

### 2.4 Delivery status

The load house is delivered in individual parts ready for completion and installation on site.

### 2.5 Base materials/Ancillary materials

The average composition for The ASSA ABLOY LH6080L load house is as following:

| Name | Value | Unit |
|---|---|---|
| Plastics | 9.43 | % |
| Steel | 90.41 | % |
| Paper | 0.16 | % |
| Total | 100 | % |

### 2.6 Manufacture

The final manufacturing processes occur in the factory Hunedoara, Romania. The main parts of the components are delivered fully processed by local Romanian suppliers, a few of the steel frame profiles are cut on length. No plastic waste occurs during the manufacturing stage since all plastic parts are delivered completely by supplier. No processing of the parts takes place in the assembly factory.

The factory in Hunedoara has a Quality Management system certified according to ISO 9001:2015.

Offcuts and scraps during the manufacturing process are directed to a recycling unit. Waste is sent for disposal. Waste codes according to European Waste Catalogue and Hazardous Waste List -Valid from 1 July 2015.
*EWC 12 01 01* Ferrous metal filings and turnings
*EWC 08 02 01* Waste coating powders

### 2.7 Environment and health during manufacturing

ASSA ABLOY Entrance Systems is committed to producing and distributing door opening solutions with minimal environmental impact, where health & safety is the primary focus for all employees and associates. • Environmental operations, Greenhouse gases, energy, water, waste, Volatile Organic Compound (VOC), surface treatment and Health & Safety are being routinely monitored. Inspections, audits, and reviews are conducted periodically to ensure that applicable standards are met, and environment management program effectiveness is evaluated.
• Code of Conduct covers human rights, labor practices and decent work. Management of ASSA ABLOY Entrance Systems is aware of their roles and responsibilities, providing appropriate training, supporting accountability and recognizing outstanding performance.
• Any waste metals during machining are separated and recycled.
• The factory of Hunedoara, Romania has an Environmental Management system certified according to ISO 14001:2015

### 2.8 Product processing/Installation

The load house is delivered in individual parts ready for completion and installation on site.

The first step is to install the steel frame construction of the housing. The wall sections of the steel frame construction are screwed together and then put in place on the side platforms of the dock levelers and connected to the facade of the building. Then the steel frame construction of the roof is mounted to the wall frames.

The second step is to mount the panels to the outside of the steel frame, beginning with the roof and then the side walls. The wall panels are cut on length to follow the roof inclination.

The last step is to mount the cover plates as well as the drain pipe and gutter system. The cover plates seal off the outside edges between the wall and roof as well as the connection of the housing to the building on the three sides wall left, roof, and wall right.

The installation is performed by qualified installation technicians using a drilling machine, angle grinder and other hand tools.

### 2.9 Packaging

Packaging exists for the purpose of protection during transportation. The steel frame, the cover plates, and the connection profiles are packed horizontally on one pallet secured with ordinary straps. The wall and roof panels are stacked horizontally on two pallets secured with transport straps and protected by a plastic foil. Fixing material like screws and nuts are packed in a cardboard box that is stacked on the pallet with the steel parts.

The standard total transport volume of one piece is three pallets with the following sizes:
1) 4000x1200x600 mm;
2) 4000x1100x750 mm;3) 4000x1100x1000 mm.

The packaging includes cardboard/paper (4.35%), wood (94.18%), steel (0.35%), plastics (1.12%).

All materials incurred during installation are sent to a recycling unit (e.g. steel) and waste incineration plant (wood paper and plastic) for its energy recovery.

Waste codes according to European Waste Catalogue and Hazardous Waste List -Valid from 1 July 2015.
*EWC 15 01 01* paper and cardboard packaging
*EWC 15 01 02* plastic packaging
*EWC 15 01 03* wooden packaging

### 2.10 Condition of use

Regular inspections by a trained qualified person are recommended at a minimum of one visit per year. The load house must be inspected for wear and tear and the general functionality.

### 2.11 Environment and health during use

There is no harmful emissive potential. No damage to health or impairment is expected under normal use corresponding to the intended use of the product.

### 2.12 Reference service life

ASSA ABLOY load houses are rated for 15 years of standard daily use. This reference life is based on
ASSA ABLOY´s experience over the last 50 years and is valid for the 10 main competitor's products in the docking industry. For this EPD a lifetime of 15 years of the product was considered.

### 2.13 Extraordinary effects

**Fire**
The load house itself is not fireproof and is not suitable to use in a fireproof system.
**Water**
Contains no substances that impact water in case of a flood.

**Mechanical destruction**
No danger to the environment can be anticipated during mechanical destruction.

### 2.14 Re-use phase

The product is possible to re-use during the reference service life and be moved from one docking station to another. All recyclable materials are directed to a recycling unit where they are recycled (steel).

On the other hand, the plastic components are sent to the waste incineration plant for its energy recovery.

Waste codes according to European Waste Catalogue and Hazardous Waste List -Valid from 1 July 2015.
*EWC 17 02 03* plastic
*EWC 17 04 05* iron and steel

### 2.15 Disposal

The product can be mechanically dissembled to separate the different materials. The majority, of components are steel which will be recycled. The plastic components are used for energy recovery in an incineration plant. No disposal is foreseen for the product nor for the corresponding packaging.

### 2.16 Further information

ASSA ABLOY Entrance Systems AB
Lodjursgatan 10
SE-261 44 Landskrona
Sweden
www.assaabloyentrance.com

## 3. LCA: Calculation rules

### 3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of ASSA ABLOY LH6080L load house as specified in Part B requirements on the *EPD IBU: PCR Loading dock and loading dock equipment*). Functional unit for module B6: Use of 1 piece of ASSA ABLOYLH6080L load house for 15 years.

**Declared unit**

| Name | Value | Unit |
|---|---|---|
| Declared unit (load house) | 1 | pce. |
| Mass (without packaging) | 661.23 | kg |
| Mass packaging (paper wood, and plastics) | 51.18 | kg |
| Mass reference | 661.23 | kg/pce |
| Dimension (length x Width) | 2000 x 3300 | mm |

### 3.2 System boundary

Type of the EPD: cradle to gate - with options
The following life cycle stages were considered:
Production stage:

- A1 – Raw material extraction and processing
- A2 – Transport to the manufacturer and
- A3 – Manufacturing

Construction stage:

- A4 - Transport from the gate to the site
- A5 – Packaging waste processing

End-of-life stage:

- C1 – De-construction/demolition
- C2 – Transport to waste processing,
- C3 – Waste processing for recycling and
- C4 – Disposal (landfill, waste for incineration).

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

- Benefits and loads beyond the system boundaries: D – Declaration of all benefits and loads.

### 3.3 Estimates and assumptions

Transportation: Data on the mode of transport and distances, as reported by suppliers were used for those materials and parts contributing more than 2 % of the total product mass.

EoL:
In the End-of-Life stage, for all the materials from the product which can be recycled ), a recycling scenario with 100 % collection rate was assumed. The plastic components are sent for energy recovery within a waste incineration process.

EoL is assumed to happen within EU-28. Furthermore, a transport distance by truck of 100 km has been assumed in the model.

### 3.4 Cut-off criteria

In the assessment, all available data from the production process are considered, i.e. all raw materials used, auxiliary materials (e.g. lubricants), and electric power consumption - including material and energy flows contributing less than 1 % of mass or energy (if available). In case a specific flow contributing less than 1 % in mass or energy is not available, worst case assumption proxies are selected to represent the respective environmental impacts.

Impacts relating to the production of machines and facilities required during production are out of the scope of this assessment.

### 3.5 Background data

For life cycle modelling of the considered product, Sphera's Life Cycle Assessment for Expert (LCA FE) software is used. Sphera Managed Lifecycle Content (MLC) modelling database is used as the background database of the study.

### 3.6 Data quality

The requirements for data quality and background data correspond to the specifications of the *IBU PCR Part A*.
Sphera performed a variety of tests and checks during the entire project to ensure a high quality of the completed project. This obviously includes an extensive review of project-specific LCA models as well as the background data used.
The technological background of the collected data reflects the physical reality of the declared products.
The datasets are complete and conform to the system boundaries and the criteria for the exclusion of inputs and outputs.
All relevant background datasets are taken from the *Sphera MLC database.*

### 3.7 Period under review

The period under review is 2023 (12-month average).

### 3.8 Geographic Representativeness

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

### 3.9 Allocation

Regarding incineration, the software model for the waste incineration plant (WIP) is adapted according to the material composition and heating value of the combusted material. In this EPD, the following specific life cycle inventories for the WIP are considered for:

- Waste incineration of paper
- Waste incineration of Plastic
- Waste incineration of Wood

Regarding the recycling material of metals, the metal parts in the EoL are declared as end-of-waste status. Thus, these materials are considered in module D. Specific information on allocation within the background data is given in the *Sphera MLC dataset* documentation.

### 3.10 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. *Sphera's Managed LCA Content* CUP (version) 2020.1 ( former GaBi) serves as background database for the calculation.

## 4. LCA: Scenarios and additional technical information

**Characteristic product properties of biogenic carbon**

Packaging material containing biogenic carbon includes wood (48.20 kg) and paper (2.22 kg).

**Information on describing the biogenic carbon content at factory gate**

| Name | Value | Unit |
|---|---|---|
| Biogenic carbon content in product | - | kg C |
| Biogenic carbon content in accompanying packaging | 25.06 | kg C |

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

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment if modules are not declared (MND).

**Transport to the building site (A4)**

| Name | Value | Unit |
|---|---|---|
| Kg of fuel diesel with maximum load (27t payload) | 27.505 | kg/100km |
| Transport distance truck (primary target market is EU 27) | 2647 | km |
| Capacity utilization (incl. empty runs) of truck | 61 | % |
| Transport by ship | 21 | km |

**Installation into the building (A5)**

| Name | Value | Unit |
|---|---|---|
| Output substances following waste treatment on site (paper/cardboard packaging) | 2.22 | kg |
| Output substances following waste treatment on site (steel packaging) | 0.18 | kg |
| Output substances following waste treatment on site (wood packaging) | 48.20 | kg |
| Output substances following waste treatment on site (plastic packaging) | 0.57 | kg |

**Reference service life**

| Name | Value | Unit |
|---|---|---|
| Reference service life | 15 | |

**End of life (C1-C4)**

| Name | Value | Unit |
|---|---|---|
| Collected separately aluminium, steel, brass, plastics, stainless steel, copper, electronic, electromechanics etc. | 661.23 | kg |
| Transport to EoL (C2) | 100 | km |
| Incineration of plastic parts | 62.37 | kg |
| Incineration of paper | 1.06 | kg |
| Recycling aluminium, steel, copper, electronic, electro-mechanics, stainless steel and brass | 597.8 | kg |
| Landfill | 0 | kg |

**Reuse, recovery and/or recycling potentials (D), relevant scenario information**

| Name | Value | Unit |
|---|---|---|
| Collected separately waste type (including packaging) | 712.41 | kg |
| Recycling aluminium | 0.00 | % |
| Recycling brass | 0.00 | % |
| Recycling copper | 0.00 | % |
| Recycling stainless steel | 0.00 | % |
| Recycling steel | 83.94 | % |
| Recycling electronic | 0.00 | % |
| Recycling electro mechanics | 0.00 | % |
| Incineration of plastic parts | 8.83 | % |
| Incineration of paper | 0.461 | % |
| Incineration of packaging (paper, wood and plastic) (from A5) | 7.16 | % |
| Recycling of steel packaging | 0.025 | % |

## 5. LCA: Results

Results shown are calculated according to EN 15804+A2.

Note:
EP-freshwater: This indicator has been calculated as 'kg P eq' as required in the characterization model (EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe; http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml).

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

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

**RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: One piece LH6080L Load house**

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| GWP-total | kg $CO_2$ eq | 1.54E+03 | 2.69E+01 | 9.27E+01 | 0 | 3.98E+00 | 1.59E+02 | 0 | -1.12E+03 |
| GWP-fossil | kg $CO_2$ eq | 1.64E+03 | 2.69E+01 | 6.06E-01 | 0 | 3.96E+00 | 1.58E+02 | 0 | -1.12E+03 |
| GWP-biogenic | kg $CO_2$ eq | -9.47E+01 | 3.24E-02 | 9.21E+01 | 0 | 0 | 1.46E+00 | 0 | 3.72E-01 |
| GWP-luluc | kg $CO_2$ eq | 7.25E-01 | 7.81E-03 | 2.01E-04 | 0 | 3.21E-02 | 5.56E-03 | 0 | -1.02E-01 |
| ODP | kg CFC11 eq | 3.85E-11 | 2.56E-15 | 1.75E-15 | 0 | 4.77E-16 | 4.61E-14 | 0 | 3.02E-12 |
| AP | mol $H^+$ eq | 6.16E+00 | 9.97E-01 | 1.06E-01 | 0 | 4.07E-03 | 2.13E-02 | 0 | -2.93E+00 |
| EP-freshwater | kg P eq | 1.38E-03 | 8.59E-06 | 3.57E-07 | 0 | 1.21E-05 | 7.78E-06 | 0 | -3.35E-04 |
| EP-marine | kg N eq | 1.05E+00 | 2.53E-01 | 2.61E-02 | 0 | 1.19E-03 | 5.81E-03 | 0 | -6.24E-01 |
| EP-terrestrial | mol N eq | 1.13E+01 | 2.78E+00 | 2.89E-01 | 0 | 1.43E-02 | 9.54E-02 | 0 | -6.75E+00 |
| POCP | kg NMVOC eq | 3.6E+00 | 7.11E-01 | 8.49E-02 | 0 | 3.29E-03 | 1.66E-02 | 0 | -2.06E+00 |
| ADPE | kg Sb eq | 1.83E+04 | 3.27E+02 | 2.73E+00 | 0 | 5.28E+01 | 6.17E+01 | 0 | -9.56E+03 |
| ADPF | MJ | 1.77E-02 | 7.33E-07 | 2.9E-08 | 0 | 2.85E-07 | 6.8E-07 | 0 | -3.48E-07 |
| WDP | $m^3$ world eq deprived | -2.77E+01 | 5.48E-02 | 3.39E+00 | 0 | 3.55E-02 | 1.66E+01 | 0 | 4.53E+00 |

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

**RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: One piece LH6080L Load house**

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| PERE | MJ | 9.9E+02 | 1.71E+00 | 9.62E+02 | 0 | 2.97E+00 | 3.05E+01 | 0 | 3.2E+02 |
| PERM | MJ | 9.8E+02 | 0 | -9.62E+02 | 0 | 0 | -1.8E+01 | 0 | 0 |
| PERT | MJ | 1.97E+03 | 1.71E+00 | 4.67E-01 | 0 | 2.97E+00 | 1.25E+01 | 0 | 3.2E+02 |
| PENRE | MJ | 1.59E+04 | 3.27E+02 | 1.71E+01 | 0 | 5.29E+01 | 2.54E+03 | 0 | -9.64E+03 |
| PENRM | MJ | 2.49E+03 | 0 | -1.44E+01 | 0 | 0 | -2.48E+03 | 0 | 0 |
| PENRT | MJ | 1.84E+04 | 3.27E+02 | 2.73E+00 | 0 | 5.29E+01 | 6.17E+01 | 0 | -9.64E+03 |
| SM | kg | 1.16E+02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NRSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FW | $m^3$ | 2.16E+00 | 2.66E-03 | 7.85E-02 | 0 | 3.44E-03 | 3.94E-01 | 0 | -1.27E+00 |

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

**RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: One piece LH6080L Load house**

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| HWD | kg | 2.08E-05 | 5.88E-07 | 6.28E-09 | 0 | 2.46E-06 | 2.08E-07 | 0 | -7.15E-06 |
| NHWD | kg | 1.73E+01 | 3.41E-02 | 5.57E-01 | 0 | 8.1E-03 | 1.52E+01 | 0 | -1.51E+01 |
| RWD | kg | 1.82E-01 | 3.66E-04 | 9.51E-05 | 0 | 6.55E-05 | 2.54E-03 | 0 | -4.41E-02 |
| CRU | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| MFR | kg | 0 | 0 | 0 | 0 | 0 | 5.99E+02 | 0 | 0 |
| MER | kg | 0 | 0 | 5.04E+01 | 0 | 0 | 0 | 0 | 0 |
| EEE | MJ | 0 | 0 | 2.44E+02 | 0 | 0 | 3.51E+02 | 0 | 0 |
| EET | MJ | 0 | 0 | 3.46E+02 | 0 | 0 | 6.33E+02 | 0 | 0 |

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

**RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: One piece LH6080L Load house**

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| PM | Disease incidence | 6.82E-05 | 1.66E-05 | 4.55E-07 | 0 | 2.42E-08 | 2.94E-07 | 0 | -3.75E-05 |
| IR | kBq U235 eq | 1.66E+01 | 5.27E-02 | 1.25E-02 | 0 | 9.47E-03 | 3.28E-01 | 0 | -1.68E+01 |
| ETP-fw | CTUe | 7.51E+03 | 2.31E+02 | 2.66E+00 | 0 | 3.73E+01 | 4.45E+01 | 0 | -1.92E+03 |
| HTP-c | CTUh | 1.91E-06 | 4.37E-09 | 6.29E-09 | 0 | 7.82E-10 | 2.39E-09 | 0 | -1.61E-06 |
| HTP-nc | CTUh | 1.9E-05 | 2.09E-07 | 5.42E-07 | 0 | 4.04E-08 | 2.56E-07 | 0 | -6.69E-06 |
| SQP | SQP | 9.84E+03 | 5.03E+00 | 5.58E-01 | 0 | 1.85E+01 | 1.54E+01 | 0 | 2.51E+02 |

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

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

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

## 6. LCA: Interpretation

This chapter contains an interpretation of the Life Cycle Impact Assessment categories. Stated percentages in the whole interpretation are related to the overall life cycle, excluding credits (module D).

The production stage (modules A1-A3) contributes between 78 % and 89% to the overall results for all the environmental impact assessment categories hereby considered, except for the abiotic depletion potential (ADPE), for which the contribution from the production stage accounts for approx. 98.8 % - this impact category describes the reduction of the global amount of non-renewable raw materials, therefore, as expected, it is mainly related to the extraction of raw materials (A1). The ozone depletion potential (ODP), for which the contribution from the production stage accounts for approx. 99.87 %. Water (user) deprivation potential has a negative impact in production stage due to cooling water added to the natural water bodies (sea) during the production of sub-components.
Within the production stage, the main contribution for all the impact categories is the production of steel, approximately 84% of the total mass of the product, mainly due to the energy consumption of these processes. The impacts are in line with the mass composition of the product. The environmental impacts for the transport (A2) have a negligible impact within this stage. In the end-of-life stage, there are loads and benefits (module D, negative values) considered. The benefits are considered beyond the system boundaries and are declared for the recycling potential of the metals and for the credits from the incineration process (energy substitution).

## 7. Requisite evidence

Not applicable in this EPD.

## 8. References

Standards

**DIN EN ISO 14025**
DIN EN ISO 14025:2010, Environmental labels and declarations - Type III environmental declarations - Principles and procedures

**EN ISO 10140-2**
EN ISO 10140-2:2010, Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation (ISO 10140-2:2010); German version EN ISO 10140-2:2010

**EN 15804+A2**
EN 15804:2014+A2:2020, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

**ISO 9001**
ISO 9001:2015, Quality management systems - Requirements with guidance for us

**ISO 14001:2015**
Environmental management systems - Requirements with guidance for use (ISO 14001:2004 + Cor. 1:2009)

**DIN EN 1993**
DIN EN 1993:2018 (Eurocode 3) Design of steel structures

**EN 1090-1**
EN 1090-1:2009+A1:20111 Execution of steel structures and aluminium structures

**EN 1090-:2**
EN 1090-2:2018 Technical requirements for the execution of steel structures

**EN 1991-1**
EN 1991-1 (Eurocode 1) Actions on structures

**DIN EN 1991**
DIN EN 1991:2015 Load assumptions

**EWC**
European Waste Catalogue established by Commission Decision 2000/532/EC

**Sphera Managed Lifecycle Content (MLC)**
Sphera Solutions, Managed LCA content dataset documentation, Sphera Solutions, Chicago, US, 2023. Retrieved from https://sphera.com/product-sustainability-gabi-data-search/

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**IBU PCR Part B**
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**IBU 2021**
General Instructions for the EPD programme of Institut Bauen und Umwelt e.V. Version 2.0, Berlin: Institut
Bauen und Umwelt e.V., 2021.
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**TRACI Methodology**
Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI), EPA/600/R-12/554 2012

**Publisher**

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