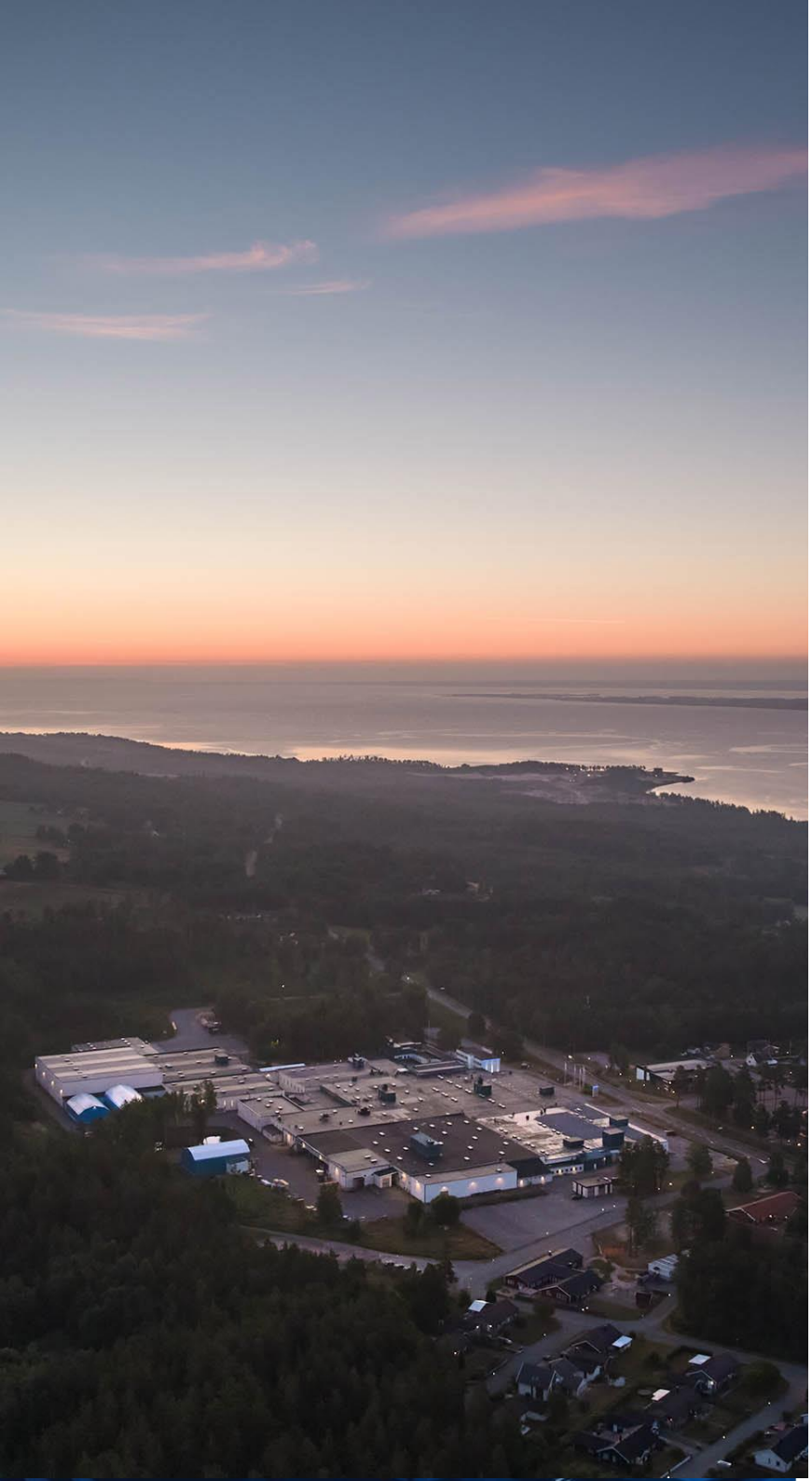

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Induflex (1500 mm)

Fagerhults Belysning AB

EPD HUB, HUB-0605

Publishing date 20 July 2023, last updated on 20 July 2023, valid until 20 July 2028

Created with One Click LCA

FAGERHULT

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Fagerhults Belysning AB
Address	Åvägen 1, 566 80 Habo, Sweden
Contact details	info@fagerhult.se
Website	www.fagerhult.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to grave, A1-C4 and D
EPD author	Josefin Carlsson
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Induflex (1500 mm)
Additional labels	-
Product reference	-
Place of production	Habo, Sweden
Period for data	2022
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	-11 % / +7 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit of Induflex **(**1500 mm)
Declared unit mass	4,3 kg
GWP-fossil, A1-A3 (kgCO2e)	41,8
GWP-total, A1-A3 (kgCO2e)	41,6
Secondary material, inputs (%)	21,4
Secondary material, outputs (%)	95,4
Total energy use, A1-A3 (kWh)	236,0
Total water use, A1-A3 (m3e)	1,13

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Fagerhult creates premium lighting solutions that enhance human well-being in professional and public environments. With sustainability and connectivity at heart, we focus on office, education, healthcare, retail and outdoor applications. We work closely with customers and partners in the European market and provide lighting solutions globally – with tailor-made solutions for our customers. The Fagerhult brand includes both the product company Fagerhults Belysning AB (based in Fagerhult, Sweden) and 13 sales companies located around Europe.

PRODUCT DESCRIPTION

Induflex is an excellent solution for industries, warehouses or supermarkets. With a long service life, excellent lighting performance, and an energy efficacy of more than 170 lm/W it is optimal for areas where access to maintenance and service of luminaires is difficult and/or involves costly interruptions to daily operations.

Induflex in is available in two different lengths, 1200 mm (see separate EPD) and 1500 mm (covered in this EPD), various lumen outputs (8.700–21.000 lm) and three different light distributions (narrow, medium and wide beam) to meet the various lighting requirements in, for example, high bay warehouses, storage aisles, workshop environments or DYI-stores. The luminaire can be controlled with DALI or e-sense Move Highbay, a lighting control system adapted to the challenges and conditions of industrial applications.

By focusing on the installation and the installer, the installation is simple and reduce installation time significantly, thereby the investment costs as well.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	84	Global, mainly EU
Minerals	-	
Fossil materials	16	Global, mainly EU
Bio-based materials	-	

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate.

Biogenic carbon content in product, kg C	-
Biogenic carbon content in packaging, kg C	0,3371

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 unit of Induflex (1500 mm)
Mass per declared unit	4,3 kg
Functional unit	-
Reference service life	20 years

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	MNR	MNR	MNR	MNR	MNR	x	MNR	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The product contains components made of metals, plastics and electronics. All materials and components are transported to Fagerhults production facility in Habo, Sweden, where the product is being assembled and packaged. Production losses of components that are either designed inhouse or contributes to a significant share of the product's mass are considered in the study. Electricity and district heating is needed for the manufacturing and assembling processes. The energy supply at Fagerhults facility in Habo is 100 % renewable. Ancillary materials needed within the manufacturing and assembly process are considered neglected. The product is packaged in a cardboard box. The product is being sent to the installation site on a wooden pallet wrapped in plastic film.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The transportation distance from production facility in Habo to the installation site is assumed as an average distance to existing markets based on market share. The calculated average transportation distance is 300 km for road transportation and 4 km for sea transportation based on the sales per market. Vehicle capacity utilization factor may vary in reality, but as the emissions caused by transports are relatively small in relation to the total results, the variety in load is assumed to be neglected and full load is assumed. Return trip is assumed to be used by the transportation company to serve the needs of other clients, therefore are empty returns not taken into account. Transportation impacts that occur from delivery of the product cover direct exhaust emissions of fuel, environmental impacts of fuel production, as well as related infrastructure emissions. Environmental impacts from installation include waste packaging materials from wood pallet, cardboard box and plastic film. The impacts of energy consumption during installation are included, however used ancillary materials during installation are considered negligible.

PRODUCT USE AND MAINTENANCE (B1-B7)

The product consume electricity during use phase and the scenario in this study is based on the Swedish electricity grid mix in module B6. Impacts due to electricity production include direct emissions to air, transformation and transmission losses. The product is most often used

in industrial applications with an annual operating of 4000 hours according to the European standard EN 15193-1. The reference service life is assumed to be 20 years.

PRODUCT END OF LIFE (C1-C4, D)

Consumption of energy are considered in the deconstruction process, but consumption of natural resources are assumed to be negligible. It is assumed that the waste is collected separately and transported to a waste treatment centre. Distance and transportation method to waste treatment is assumed to be 50 km with lorry in module C2. According to EN 50693:2019, the sequence of treatment operations occurring to the product shall include de-pollution, fractions separation and preparation (dismantling, crushing, shredding, sorting), recycling, other material recovery, energy recovery and disposal. Module C3 accounts for energy and resource inputs for sorting and treating these waste streams for recycling and incineration with energy recovery.

Due to the material and energy recovery potential of parts in the lighting system, the end-of-life product is converted into recycled raw materials, or energy recovered from incineration that also displaces electricity and heat production. The rates of waste treatment for materials included in the product are based on statistics presented by agencies mainly in Scandinavia. Materials being recycled are 95 % of the metals (World Steel Association), 74 % of the electrical and electronic waste (Elkretsen) and 10 % of the plastics (Naturvårdsverket). The wooden pallet used during transportation is also incinerated for energy recovery. The benefits and loads of incineration and recycling of the packaging materials are included in Module D.

MANUFACTURING PROCESS

DESIGN & PREPERATION

RAW MATERIAL & COMPONENTS

PRODUCTION

ASSEMBLY

PACKAGING & DELIVERY

LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways.

Data type	Allocation
Raw materials	Partly allocated by mass or volume
Packaging materials	Allocated by mass or volume
Ancillary materials	Not applicable
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Averaged by shares of total volume
Variation in GWP-fossil for A1-A3	-11 % / +7 %

This is an average EPD of multiple products from the manufacturer Fagerhults Belysning AB. The average EPD concern Induflex (1500 mm) that are included in the product family, Induflex. The EPD are based on representative version of Induflex (1500 mm) based on sales, and includes the extremities of both sides. The versions differ mainly in the electronic components. The application area for the products are the same, as well as the reference service life time. The difference between average case and best case is -11 %, and the difference between average case to worst case is +7 % (GWP fossil for A1-A3).

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	4,12E1	2,59E-1	9,89E-2	4,16E1	1,54E-1	1,09E0	MND	MND	MND	MND	MND	5,39E2	MND	2,23E-3	2,04E-2	1,22E0	-2,83E-3	-1,07E1
GWP – fossil	kg CO_2e	4,08E1	2,58E-1	7,08E-1	4,18E1	1,56E-1	5,09E-2	MND	MND	MND	MND	MND	5,03E2	MND	2,07E-3	2,03E-2	1,4E0	9,47E-3	-1,05E1
GWP – biogenic	kg CO_2e	1,98E-1	0E0	-1,05E0	-8,49E-1	0E0	1,04E0	MND	MND	MND	MND	MND	0E0	MND	0E0	0E0	-1,79E-1	-1,23E-2	-1,78E-1
GWP – LULUC	kg CO_2e	1,74E-1	8,45E-5	4,39E-1	6,13E-1	5,82E-5	1,63E-4	MND	MND	MND	MND	MND	3,53E1	MND	1,54E-4	7,51E-6	1,37E-4	1,56E-6	-6,23E-3
Ozone depletion pot.	kg CFC_{-11}e	3,33E-6	5,94E-8	1,07E-7	3,5E-6	3,58E-8	1,81E-9	MND	MND	MND	MND	MND	2,45E-5	MND	9,63E-11	4,68E-9	1,09E-8	5,65E-10	-5,85E-7
Acidification potential	mol H^+e	5,82E-1	1,13E-3	5,16E-3	5,88E-1	7,28E-4	1,45E-4	MND	MND	MND	MND	MND	3,51E0	MND	1,05E-5	8,62E-5	1,22E-3	1,43E-5	-5,81E-2
EP-freshwater[2)]	kg Pe	4,39E-3	1,88E-6	3,89E-5	4,43E-3	1,26E-6	4,72E-7	MND	MND	MND	MND	MND	2,74E-2	MND	9,74E-8	1,67E-7	5,08E-6	2,63E-8	-6,4E-4
EP-marine	kg Ne	5,28E-2	3,48E-4	1,8E-3	5,49E-2	2,13E-4	5,74E-5	MND	MND	MND	MND	MND	6E-1	MND	2,36E-6	2,56E-5	3,09E-4	1,82E-5	-1,06E-2
EP-terrestrial	mol Ne	1,8E0	3,84E-3	1,85E-2	1,82E0	2,35E-3	5,98E-4	MND	MND	MND	MND	MND	7,55E0	MND	2,93E-5	2,83E-4	3,48E-3	5,41E-5	-1,22E-1
POCP ("smog")[3)]	kg NMVOCe	1,59E-1	1,18E-3	4,01E-3	1,65E-1	7,37E-4	1,54E-4	MND	MND	MND	MND	MND	1,78E0	MND	6,7E-6	9,04E-5	9,18E-4	1,74E-5	-4,85E-2
ADP-minerals & metals[4)]	kg Sbe	5,26E-2	5,33E-7	6,44E-6	5,26E-2	3,63E-7	1,82E-7	MND	MND	MND	MND	MND	3,45E-2	MND	3,88E-8	4,77E-8	1E-5	4,5E-9	-1,49E-4
ADP-fossil resources	MJ	5,69E2	3,84E0	1,03E1	5,83E2	2,33E0	4,78E-1	MND	MND	MND	MND	MND	6,83E4	MND	2,96E-1	3,06E-1	1,37E0	4E-2	-1,38E2
Water use[5)]	m^3e depr.	2,72E1	1,57E-2	1,44E1	4,16E1	1,04E-2	4,6E-2	MND	MND	MND	MND	MND	2,62E3	MND	1,13E-2	1,37E-3	6,12E-2	1,68E-4	-5,24E0

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	4,31E-6	2,62E-8	7,32E-8	4,41E-6	1,77E-8	1,88E-9	MND	MND	MND	MND	MND	4,18E-5	MND	1,54E-10	2,35E-9	1,38E-8	2,85E-10	-9,68E-7
Ionizing radiation[6)]	kBq U235e	5,26E0	1,82E-2	7,27E-2	5,35E0	1,11E-2	2,25E-2	MND	MND	MND	MND	MND	4,88E3	MND	2,13E-2	1,46E-3	1,39E-2	1,86E-4	-4,35E-1
Ecotoxicity (freshwater)	CTUe	2,88E3	3,28E0	3,26E1	2,92E3	2,09E0	6,17E-1	MND	MND	MND	MND	MND	3,37E4	MND	1,04E-1	2,75E-1	6,73E0	7,7E-2	-4,51E2
Human toxicity, cancer	CTUh	1,11E-7	7,75E-11	1,28E-9	1,12E-7	5,22E-11	4,69E-11	MND	MND	MND	MND	MND	1,13E-6	MND	2,7E-12	6,75E-12	2,29E-10	1,11E-12	-9,33E-8
Human tox. non-cancer	CTUh	2,3E-6	3,41E-9	1,77E-8	2,32E-6	2,06E-9	1,48E-9	MND	MND	MND	MND	MND	2,65E-5	MND	5,3E-11	2,72E-10	1,48E-8	3,33E-11	-1,29E-6
SQP[7)]	-	1,59E2	3,94E0	9,1E1	2,54E2	2,66E0	1,96E-1	MND	MND	MND	MND	MND	1,59E4	MND	6,71E-2	3,52E-1	2,11E0	8,98E-2	-2,26E1

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	9,35E1	6,53E-2	5,96E1	1,53E2	2,61E-2	1,31E-1	MND	MND	MND	MND	MND	2,83E4	MND	1,22E-1	3,44E-3	2,08E-1	5,14E-4	-2,27E1
Renew. PER as material	MJ	0E0	0E0	9,04E0	9,04E0	0E0	-9,04E0	MND	MND	MND	MND	MND	0E0	MND	0E0	0E0	0E0	0E0	1,63E0
Total use of renew. PER	MJ	9,35E1	6,53E-2	6,87E1	1,62E2	2,61E-2	-8,91E0	MND	MND	MND	MND	MND	2,83E4	MND	1,22E-1	3,44E-3	2,08E-1	5,14E-4	-2,1E1
Non-re. PER as energy	MJ	6,81E2	6,14E0	9,51E0	6,97E2	2,33E0	4,76E-1	MND	MND	MND	MND	MND	6,8E4	MND	2,95E-1	3,06E-1	1,37E0	4E-2	-1,18E2
Non-re. PER as material	MJ	1,34E1	0E0	7,83E-1	1,42E1	0E0	-7,83E-1	MND	MND	MND	MND	MND	0E0	MND	0E0	0E0	-1,29E1	-5,63E-1	-1,22E1
Total use of non-re. PER	MJ	6,95E2	6,14E0	1,03E1	7,11E2	2,33E0	-3,06E-1	MND	MND	MND	MND	MND	6,8E4	MND	2,95E-1	3,06E-1	-1,15E1	-5,23E-1	-1,31E2
Secondary materials	kg	5,39E-1	1,6E-3	3,78E-1	9,19E-1	6,52E-4	3,57E-4	MND	MND	MND	MND	MND	6,16E0	MND	2,05E-5	8,49E-5	1,45E-3	1,07E-5	-2,71E0
Renew. secondary fuels	MJ	1,43E-2	1,62E-5	1,75E-1	1,89E-1	6,49E-6	1,45E-6	MND	MND	MND	MND	MND	2,55E-2	MND	6,82E-8	8,56E-7	6,91E-5	2,5E-7	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	0E0	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	7,97E-1	7,52E-4	3,35E-1	1,13E0	3E-4	2,65E-4	MND	MND	MND	MND	MND	6,58E1	MND	2,84E-4	3,96E-5	9,78E-4	4,35E-5	-6,22E-2

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	6,46E0	7,66E-3	3,86E-2	6,5E0	3,09E-3	3,01E-3	MND	MND	MND	MND	MND	5,68E1	MND	2,21E-4	4,05E-4	8,66E-3	0E0	-3,3E0
Non-hazardous waste	kg	1,18E2	1,25E-1	8,62E-1	1,19E2	5,05E-2	4,62E-1	MND	MND	MND	MND	MND	1,54E3	MND	5,3E-3	6,66E-3	6,88E-1	2,34E-1	-3,01E1
Radioactive waste	kg	1,89E-3	4,14E-5	4,27E-5	1,97E-3	1,56E-5	5,22E-6	MND	MND	MND	MND	MND	1,05E0	MND	4,56E-6	2,04E-6	6,5E-6	0E0	-3,39E-4

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	0E0	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	2,08E-1	2,08E-1	0E0	3,1E-1	MND	MND	MND	MND	MND	0E0	MND	0E0	0E0	3,67E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	0E0	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	8,12E0	MND	MND	MND	MND	MND	0E0	MND	0E0	0E0	1,24E1	0E0	0E0

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	4,01E1	3,64E-1	1,22E0	4,17E1	1,54E-1	5,3E-2	MND	MND	MND	MND	MND	5,32E2	MND	2,2E-3	2,01E-2	1,4E0	7,89E-3	-1,01E1
Ozone depletion Pot.	kg CFC_{-11}e	2,4E-6	6,69E-8	9,16E-8	2,56E-6	2,83E-8	1,51E-9	MND	MND	MND	MND	MND	2,21E-5	MND	8,64E-11	3,71E-9	8,9E-9	4,47E-10	-5,34E-7
Acidification	kg SO_2e	2,84E-1	1,23E-3	3,62E-3	2,89E-1	5,67E-4	1,06E-4	MND	MND	MND	MND	MND	2,82E0	MND	8,08E-6	6,69E-5	9,67E-4	1,08E-5	-4,65E-2
Eutrophication	kg PO_4^3e	8,94E-2	2,76E-4	1,89E-3	9,16E-2	1,22E-4	1,12E-4	MND	MND	MND	MND	MND	1,41E0	MND	4,83E-6	1,52E-5	4,27E-4	1,33E-3	-2,56E-2
POCP (“smog”)	kg C_2H_4e	1,56E-2	4,55E-5	2,69E-4	1,59E-2	2,13E-5	5,85E-6	MND	MND	MND	MND	MND	1,36E-1	MND	4,23E-7	2,61E-6	3,41E-5	1,49E-6	-5,53E-3
ADP-elements	kg Sbe	5E-2	7,64E-7	5,99E-6	5E-2	3,51E-7	1,78E-7	MND	MND	MND	MND	MND	3,46E-2	MND	3,92E-8	4,62E-8	9,98E-6	4,39E-9	-1,49E-4
ADP-fossil	MJ	5,61E2	5,48E0	1,02E1	5,77E2	2,33E0	4,76E-1	MND	MND	MND	MND	MND	6,8E4	MND	2,95E-1	3,06E-1	1,37E0	4E-2	-1,38E2

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
20.07.2023

VERIFIED ISO 14025