

# ENVIRONMENTAL PRODUCT DECLARATION

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

Sigma  
Luceco



**EPD HUB, HUB-1639**

Published on 31.07.2024, last updated on 31.07.2024, valid until 31.07.2029

## GENERAL INFORMATION

### MANUFACTURER

Manufacturer	Luceco
Address	Luceco Group   Luceco Distribution Centre   Stafford Park 1   Telford, Shropshire TF3 3BD
Contact details	simon.shenton@luceco.com
Website	https://www.luceco.com/uk

### 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 1.1, 5 Dec 2023
Sector	Electrical product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-B7, and modules C1-C4, D
EPD author	Tom Cotton Luceco Plc
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	Imane Uald lamkaddam, 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	Sigma
Additional labels	LSP66W
Product reference	LSP66
Place of production	Building 6, No. 200, Xuqiao Road, Sunshine Technology Town, Yuan Hua Town, Haining City, Zhejiang Pr, China
Period for data	2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	0 %

### ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Unit of Sigma Luminaire
Declared unit mass	4.5 kg
GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)	1.36E+02
GWP-total, A1-A3 (kgCO <sub>2</sub> e)	1.35E+02
Secondary material, inputs (%)	19.1
Secondary material, outputs (%)	55.6
Total energy use, A1-A3 (kWh)	529
Net fresh water use, A1-A3 (m <sup>3</sup> )	1.27

## PRODUCT AND MANUFACTURER

### ABOUT THE MANUFACTURER

Luceco Lighting is a global leader in the design, manufacture and supply of lighting systems for the specification and wholesale markets across the globe. From off-the-shelf product to tailored solutions, Luceco also provides a comprehensive technical support service to installers and end-users. Luceco continually invests in environmentally responsible technology and innovation, its brands offer a leading portfolio of thoughtfully designed and diligently made products. From task and emergency to ambient and architectural, employing the latest in energy-saving and sustainable technology. Major sectors served include residential, commercial, office, healthcare, education, retail, industrial, public sector, street and highway applications.

### PRODUCT DESCRIPTION

Sigma is an high performance LED recessed luminaire, designed for low glare applications. RAL9016 white coated steel body featuring a central micro-prism optic and opal side diffuser to assist with LG7 compliant designs. Designed with unique swing-tabs giving flexible installation perfect for low-void grid ceilings to plasterboard. The Luceco Sigma is a long lasting solution.

Further information can be found at <https://www.luceco.com/uk>.

### PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	58	China
Minerals	8	China
Fossil materials	34	China
Bio-based materials	0	China

### 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	0.365

### FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Unit of Sigma Luminaire
Mass per declared unit	4.5 kg
Functional unit	Provide lighting that delivers an outgoing artificial luminous flux of 3,500 lumens during a referen
Reference service life	25

### 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	MND	MND	MND	MND	MND	x	MND	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 is made of a mixture of virgin and recycled metals, plastics and electronic components. The materials are manufactured by suppliers in China where the main manufacturing processes involved are hot rolling, extruding, and cutting of steel sheets and plastic injection moulding. Components are then transported to Luceco's production facility in Zhejiang, China, where the main manufacturing processes include LED board mounting and spray painting of metal components. The different parts are processed further using CNC manufacturing

and undergo manual and robotic assembly. A mix of grid electricity and natural gas are consumed during manufacturing. The finished product is packaged with polyethylene, cardboard, and paper as packaging material before being sent to the logistics platform.

## 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 average distance of transportation from production plant in China to installation site in United Kingdom is approximately 18000 km. This includes intermediate transport legs such as the logistics platform in China to the distribution center in the UK before final installation. The transportation method is a combination of lorry and container ship. Vehicle capacity utilisation volume factor is assumed to be 100 % which means full load. In reality, this may vary, but as the role of transportation emissions in the total result is small, the variation in load is assumed to be negligible. To be conservative, empty returns are included in this study as implemented through an average load factor in the Ecoinvent transport datapoints. Transportation does not cause losses as products are packaged properly. The impacts of energy consumption and the used ancillary materials during product installation are considered negligible. Environmental impacts from installation into the building include waste packaging materials (A5) and release of biogenic carbon dioxide from cardboard and paper treatment. The packaging waste treatment is assumed to be conservative with a combination of recycling, incineration and landfilling for paper, plastic and cardboard.

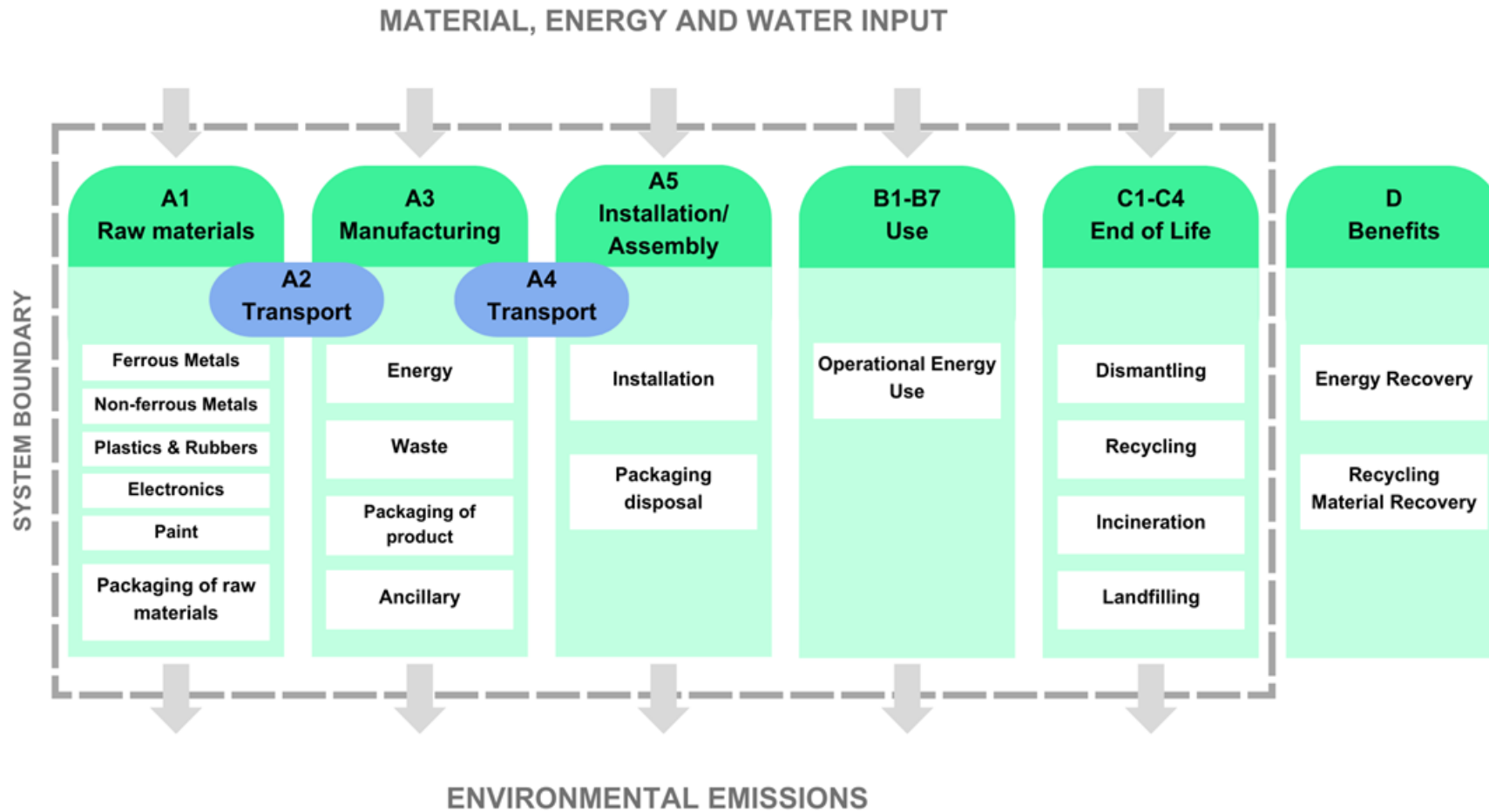
## PRODUCT USE AND MAINTENANCE (B1-B7)

During the use phase (B6), the luminaire consumes power from electricity available on the low voltage level in United Kingdom. The product runs for 100,000 hours and consumes 0.027 kWh. Impacts due to electricity production include direct emissions to air, transformation, and transmission losses. Air, soil, and water impacts during the use phase have not been studied.

### PRODUCT END OF LIFE (C1-C4, D)

Consumption of energy and natural resources in demolition process is assumed to be negligible. It is also assumed that the waste is collected separately and transported to the waste treatment center. The transportation method is assumed to be lorry (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. In this study, the default values from table G.4 of EN 50693 is used for treating materials in different waste treatment methods. 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, while the energy recovered from incineration displaces electricity and heat production (D). The benefits and loads of incineration and recycling are included in Module D.

# MANUFACTURING PROCESS





## 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	No allocation
Packaging materials	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

### AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	0 %

There is no average result considered in this study since this EPD refers to one specific product produced in one production plant.

### 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. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases 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 <sup>1)</sup>	kg CO <sub>2</sub> e	1.34E+02	1.37E-01	2.40E-01	1.35E+02	4.86E-01	1.37E+00	MND	MND	MND	MND	MND	6.86E+02	MND	3.18E-07	7.78E-02	1.37E+00	1.01E-01	-7.29E-01
GWP – fossil	kg CO <sub>2</sub> e	1.34E+02	1.37E-01	1.58E+00	1.36E+02	4.86E-01	2.53E-02	MND	MND	MND	MND	MND	6.85E+02	MND	3.17E-07	7.77E-02	1.37E+00	1.01E-01	-7.28E-01
GWP – biogenic	kg CO <sub>2</sub> e	0.00E+00	0.00E+00	-1.34E+00	-1.34E+00	0.00E+00	1.34E+00	MND	MND	MND	MND	MND	0.00E+00	MND	4.37E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP – LULUC	kg CO <sub>2</sub> e	2.21E-01	5.05E-05	6.90E-03	2.28E-01	1.98E-04	1.54E-05	MND	MND	MND	MND	MND	9.37E-01	MND	4.37E-10	3.17E-05	6.76E-05	1.47E-05	-4.80E-04
Ozone depletion pot.	kg CFC <sub>11</sub> e	1.00E-05	3.15E-08	9.90E-08	1.01E-05	1.07E-07	1.79E-09	MND	MND	MND	MND	MND	4.64E-05	MND	2.18E-14	1.71E-08	1.03E-08	4.02E-09	-9.17E-08
Acidification potential	mol H <sup>+</sup> e	9.09E-01	5.79E-04	8.43E-03	9.18E-01	2.01E-03	1.11E-04	MND	MND	MND	MND	MND	2.14E+00	MND	1.11E-09	3.22E-04	6.74E-04	1.19E-04	-1.56E-03
EP-freshwater <sup>2)</sup>	kg Pe	2.04E-02	1.12E-06	8.46E-05	2.05E-02	4.10E-06	6.46E-07	MND	MND	MND	MND	MND	1.33E-02	MND	6.80E-12	6.56E-07	2.48E-06	3.77E-07	-2.16E-05
EP-marine	kg Ne	1.58E-01	1.72E-04	3.13E-03	1.61E-01	5.87E-04	1.93E-04	MND	MND	MND	MND	MND	4.66E-01	MND	2.22E-10	9.39E-05	2.58E-04	2.19E-04	-2.88E-04
EP-terrestrial	mol Ne	1.79E+00	1.90E-03	2.27E-02	1.81E+00	6.48E-03	3.19E-04	MND	MND	MND	MND	MND	5.61E+00	MND	2.67E-09	1.04E-03	2.56E-03	4.28E-04	-3.22E-03
POCP (“smog”) <sup>3)</sup>	kg NMVOCe	4.87E-01	6.08E-04	5.23E-03	4.93E-01	1.97E-03	1.18E-04	MND	MND	MND	MND	MND	1.37E+00	MND	6.63E-10	3.15E-04	6.58E-04	1.41E-04	-9.81E-04
ADP-minerals & metals <sup>4)</sup>	kg Sbe	3.27E-02	3.21E-07	5.34E-06	3.27E-02	1.69E-06	2.56E-07	MND	MND	MND	MND	MND	1.94E-03	MND	3.62E-12	2.70E-07	1.93E-06	1.51E-07	-6.47E-07
ADP-fossil resources	MJ	1.72E+03	2.06E+00	1.83E+01	1.74E+03	7.03E+00	2.14E-01	MND	MND	MND	MND	MND	1.82E+04	MND	8.31E-06	1.12E+00	9.72E-01	3.07E-01	-1.32E+01
Water use <sup>5)</sup>	m <sup>3</sup> e depr.	4.88E+01	9.20E-03	5.97E-01	4.94E+01	3.08E-02	9.05E-03	MND	MND	MND	MND	MND	1.41E+02	MND	7.24E-08	4.92E-03	6.52E-02	2.15E-03	-1.26E-01

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 PO<sub>4</sub>e; 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	7.17E-06	1.58E-08	1.27E-07	7.31E-06	4.14E-08	1.60E-09	MND	MND	MND	MND	MND	1.05E-05	MND	5.71E-15	6.62E-09	7.34E-09	2.24E-09	-4.73E-09
Ionizing radiation <sup>6)</sup>	kBq U235e	1.52E+01	9.79E-03	1.07E-01	1.54E+01	3.27E-02	2.14E-03	MND	MND	MND	MND	MND	6.41E+02	MND	2.90E-07	5.23E-03	9.17E-03	1.77E-03	-1.19E-01
Ecotoxicity (freshwater)	CTUe	1.14E+04	1.85E+00	4.11E+01	1.14E+04	6.48E+00	1.35E+00	MND	MND	MND	MND	MND	8.73E+03	MND	5.07E-06	1.04E+00	7.24E+00	1.73E+00	-2.89E+00
Human toxicity, cancer	CTUh	1.50E-07	4.54E-11	5.79E-10	1.51E-07	1.82E-10	4.67E-11	MND	MND	MND	MND	MND	1.79E-07	MND	1.36E-16	2.91E-11	2.13E-10	1.70E-09	-5.68E-11
Human tox. non-cancer	CTUh	4.99E-06	1.83E-09	1.87E-08	5.01E-06	6.03E-09	9.74E-10	MND	MND	MND	MND	MND	5.45E-06	MND	4.06E-15	9.65E-10	6.31E-09	1.16E-07	-2.80E-09
SQP <sup>7)</sup>	-	5.30E+02	2.37E+00	3.95E+01	5.72E+02	4.87E+00	1.98E-01	MND	MND	MND	MND	MND	6.80E+03	MND	3.67E-06	7.79E-01	2.47E+00	7.89E-01	-7.59E-01

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 <sup>8)</sup>	MJ	1.75E+02	2.32E-02	8.51E+00	1.84E+02	8.24E-02	1.69E-02	MND	MND	MND	MND	MND	3.31E+03	MND	1.78E-06	1.32E-02	8.23E-02	8.84E-03	-7.65E-01
Renew. PER as material	MJ	0.00E+00	0.00E+00	1.15E+01	1.15E+01	0.00E+00	-1.15E+01	MND	MND	MND	MND	MND	0.00E+00	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renew. PER	MJ	1.75E+02	2.32E-02	2.01E+01	1.95E+02	8.24E-02	-1.15E+01	MND	MND	MND	MND	MND	3.31E+03	MND	1.78E-06	1.32E-02	8.23E-02	8.84E-03	-7.65E-01
Non-re. PER as energy	MJ	1.70E+03	2.06E+00	1.82E+01	1.72E+03	7.03E+00	2.14E-01	MND	MND	MND	MND	MND	1.82E+04	MND	8.31E-06	1.13E+00	9.72E-01	3.07E-01	-1.32E+01
Non-re. PER as material	MJ	2.57E+01	0.00E+00	9.26E-02	2.57E+01	0.00E+00	-8.85E-02	MND	MND	MND	MND	MND	0.00E+00	MND	0.00E+00	0.00E+00	-1.29E+01	-1.28E+01	0.00E+00
Total use of non-re. PER	MJ	1.72E+03	2.06E+00	1.83E+01	1.74E+03	7.03E+00	1.26E-01	MND	MND	MND	MND	MND	1.82E+04	MND	8.31E-06	1.13E+00	-1.19E+01	-1.25E+01	-1.32E+01
Secondary materials	kg	8.60E-01	5.71E-04	8.54E-01	1.71E+00	2.32E-03	3.94E-04	MND	MND	MND	MND	MND	1.24E+00	MND	8.09E-10	3.70E-04	1.08E-03	1.35E-04	1.49E-03
Renew. secondary fuels	MJ	3.32E-02	5.76E-06	6.05E-02	9.37E-02	3.00E-05	1.98E-06	MND	MND	MND	MND	MND	4.76E-03	MND	6.22E-12	4.80E-06	6.92E-05	5.50E-06	-2.08E-06
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	0.00E+00	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m <sup>3</sup>	1.26E+00	2.66E-04	1.39E-02	1.27E+00	8.31E-04	1.47E-04	MND	MND	MND	MND	MND	3.31E+00	MND	1.71E-09	1.33E-04	2.30E-03	3.07E-04	-3.88E-03

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	1.42E+01	2.73E-03	1.41E-01	1.44E+01	1.01E-02	4.43E-03	MND	MND	MND	MND	MND	3.78E+01	MND	1.83E-08	1.62E-03	4.63E-03	7.31E-02	-1.58E-02
Non-hazardous waste	kg	2.85E+02	4.48E-02	1.89E+00	2.87E+02	1.62E-01	4.71E-02	MND	MND	MND	MND	MND	5.23E+02	MND	2.77E-07	2.59E-02	6.85E-01	1.20E+00	-9.79E-01
Radioactive waste	kg	4.55E-03	1.38E-05	4.09E-05	4.60E-03	4.65E-05	1.09E-06	MND	MND	MND	MND	MND	1.61E-01	MND	7.27E-11	7.44E-06	4.61E-06	2.95E-07	-3.58E-05

### 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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	0.00E+00	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.60E-01	MND	MND	MND	MND	MND	0.00E+00	MND	0.00E+00	0.00E+00	2.50E+00	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.30E-02	MND	MND	MND	MND	MND	0.00E+00	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.50E-01	MND	MND	MND	MND	MND	0.00E+00	MND	0.00E+00	0.00E+00	1.21E+01	0.00E+00	0.00E+00

### 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 <sub>2</sub> e	1.31E+02	1.35E-01	1.58E+00	1.33E+02	4.81E-01	1.06E-01	MND	MND	MND	MND	MND	6.78E+02	MND	3.13E-07	7.69E-02	1.39E+00	8.54E-02	-7.17E-01
Ozone depletion Pot.	kg CFC <sub>11</sub> e	9.70E-06	2.49E-08	8.47E-08	9.81E-06	8.49E-08	1.48E-09	MND	MND	MND	MND	MND	4.08E-05	MND	1.92E-14	1.36E-08	8.54E-09	3.19E-09	-8.04E-08
Acidification	kg SO <sub>2</sub> e	7.44E-01	4.50E-04	6.40E-03	7.51E-01	1.57E-03	8.64E-05	MND	MND	MND	MND	MND	1.70E+00	MND	8.87E-10	2.51E-04	5.05E-04	9.08E-05	-1.29E-03
Eutrophication	kg PO <sub>4</sub> <sup>3</sup> e	5.05E-01	1.03E-04	3.32E-03	5.08E-01	3.60E-04	7.23E-04	MND	MND	MND	MND	MND	5.65E-01	MND	2.96E-10	5.75E-05	3.91E-04	1.75E-02	-8.02E-04
POCP ("smog")	kg C <sub>2</sub> H <sub>4</sub> e	3.54E-02	1.76E-05	3.08E-04	3.58E-02	6.37E-05	2.39E-05	MND	MND	MND	MND	MND	8.31E-02	MND	4.27E-11	1.02E-05	2.20E-05	1.55E-05	-7.05E-05
ADP-elements	kg Sbe	3.27E-02	3.11E-07	4.49E-06	3.27E-02	1.65E-06	2.52E-07	MND	MND	MND	MND	MND	1.95E-03	MND	3.62E-12	2.64E-07	1.90E-06	1.50E-07	-6.45E-07
ADP-fossil	MJ	1.72E+03	2.06E+00	1.82E+01	1.74E+03	7.03E+00	2.14E-01	MND	MND	MND	MND	MND	1.82E+04	MND	8.30E-06	1.12E+00	9.72E-01	3.07E-01	-1.32E+01

## 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.

Imane Uald lamkaddam, as an authorized verifier acting for EPD Hub Limited  
31.07.2024

