ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

EPD HUB, HUB-5729
Published on 15.03.2026, last updated on 15.03.2026, valid until 15.03.2031

BEAM 13W

Maxel AB

This EPD is intended for business-to-business and/or business-to-consumer communication. Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1. 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.

MANUFACTURER AND SITE

Manufacturer	Maxel AB
Address	Avestagatan 35, 16353, Spånga, Sweden
Contact details	kishor.p@maxel.se
Website	www.maxel.se
Place of production	ZhongShan, China, Spånga, Sweden
Place(s) of raw material origin	China
Place(s) of installation and use	Sweden
Period for data	Calendar year 2025

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR version 1.2, 24 Mar 2025
Sector	Electrical product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, B6, and modules C1-C4, D
EPD author	Kishor Pasala, MAXEL AB.
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐Internal verification ☒ External verification
EPD verifier	Magaly Gonzalez Vazquez as an authorized verifier for EPD Hub

PRODUCT SPECIFICATION

Product name	BEAM 13W
Product number / reference	BEAM 13W 930
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	10,6

PRODUCT CLASSIFICATION

Declared operating voltage, Volt	230
Light source color temperature, Kelvin	3000
Protection index for water and dust (IP)	20
Impact resistance index (IK)	-
Luminous flux, Lumen	1385
Electrical power, Watt	12,25
Luminous efficiency, Lm/W	113
Additional characteristics	For more detailed specs, please see our website.

PRODUCT DESCRIPTION

BEAM 13W 930 Spotlight is a 13 W indoor LED track-mounted luminaire uniquely identified by its model designation and 930 light specification (3000 K, CRI ≥ 90). The product consists of a powder-coated aluminium housing, integrated COB LED module, 36° lens optic, and track adapter. It delivers 3000 K correlated colour temperature with Ra ≥ 90 and is designed for professional accent and general indoor lighting applications. Lumen maintenance is specified as L88 at 50,000 h, L84 at 75,000 h, and L80 at 100,000 h (declared RSL 100,000 h under normal indoor conditions). The product is manufactured and tested in accordance with EN 60598 and other applicable European standards, consistent with the associated project report under EN 15804+A2.

ABOUT THE MANUFACTURER

Maxel specializes in designing, developing, and manufacturing professional lighting solutions for both indoor and outdoor public environments. We focus on innovative, energy-efficient products tailored to meet each customer's unique needs, leveraging extensive knowledge and experience to deliver optimal lighting solutions.

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit
Declared unit mass, kg	0,44
Mass of packaging, kg	0,15
Functional unit	Provide lighting that delivers an outgoing artificial luminous flux of 1,000 lumens during a reference lifetime of 35,000 hours
Reference service life (years)	10
Assigned lifetime (hours)	50000
GWP-total, A1-A3 (kg CO_2e)	9,96
GWP-fossil, A1-A3 (kg CO_2e)	13,8
Secondary material, inputs (%)	6,39
Secondary material, outputs (%)	51
Total energy use, A1-A3 (kWh)	58,5
Net freshwater use, A1-A3 (m^3)	7,80E-02

LIFE CYCLE ASSESSMENT

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	ND	ND	ND	ND	ND	x	ND	x	x	x	x	x
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demo.	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling

Not declared = ND.

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. 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.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

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
Manufacturing energy and waste	Allocated by mass

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	-

This EPD is product and factory specific.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	68,84	Asia
Minerals	0	-
Fossil materials	31,16	Asia
Bio-based materials	0	-
Electronic parts	0	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	1,077

SUBSTANCES, REACH - VERY HIGH CONCERN

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

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA Luminaire EPD Generator v2.2.8. The LCA and EPD have been prepared according to the reference standards, EN 50693, and ISO 14040/14044. Ecoinvent v3.10.1/3.11/3.12 and One Click LCA databases were used as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11/3.12 environmental data sources follow the methodology ‘allocation, cut-off, EN 15804+A2‘.

PRODUCT LIFE CYCLE

MANUFACTURING (A1-A3)

The Beam 13W spotlight is manufactured from metals, plastics, and electronic components. Component production, including aluminum fabrication, plastic molding, and PCB manufacturing, is carried out by suppliers in China. The components are then transported to Maxel for assembly. Transport distances for each material are based on the supplier's country of origin. A vehicle capacity utilization factor of 100% is assumed, representing full loads. Variations in actual utilization are considered negligible, as transport emissions contribute only a minor share of the total environmental impact.
The product stage (A1–A3) includes the environmental impacts of raw materials, components, packaging materials, and ancillary materials. Production losses at the assembly site are assumed to be negligible. The finished spotlight is packed in cardboard packaging for shipment to the installation site. Ancillary materials include tap water and rainwater, with quantities based on factory-level data.
Energy use at the assembly site comprises grid electricity, modeled according to the market-based electricity mix.

TRANSPORT AND INSTALLATION (A4-A5)

A4 – Transport to Construction Site
Transportation impacts associated with delivery of the Maxel Beam 13W spotlight include direct exhaust emissions from fuel, environmental impacts from fuel production, and related infrastructure emissions. Component transport from suppliers in China to Maxel is assumed as 18,954 km by boat and 450 km by road. Final delivery of the assembled product from Maxel to the construction site is assumed as 250 km by lorry. A vehicle capacity utilization factor of 100% is assumed, representing full loads. Variations in actual utilization are considered negligible, as transport emissions contribute only a minor share of the total environmental impact. Empty return trips are not considered, as it is assumed that return journeys are used by the transportation company to serve other clients. Transportation does not cause product losses because the products are properly packaged. Volume capacity utilization for nested packaged products is also assumed to be 100%.
A5 – Installation
Environmental impacts from installation cover waste from packaging materials. Calculations are based on EUROSTAT data: 83% of paper/cardboard packaging is recycled, 8% is incinerated (resulting in exported electric and thermal energy), and 9% is landfilled. Transportation of packaging waste to treatment facilities is assumed as 50 km by lorry (C2). Impacts from energy consumption and ancillary materials used during installation are considered negligible.

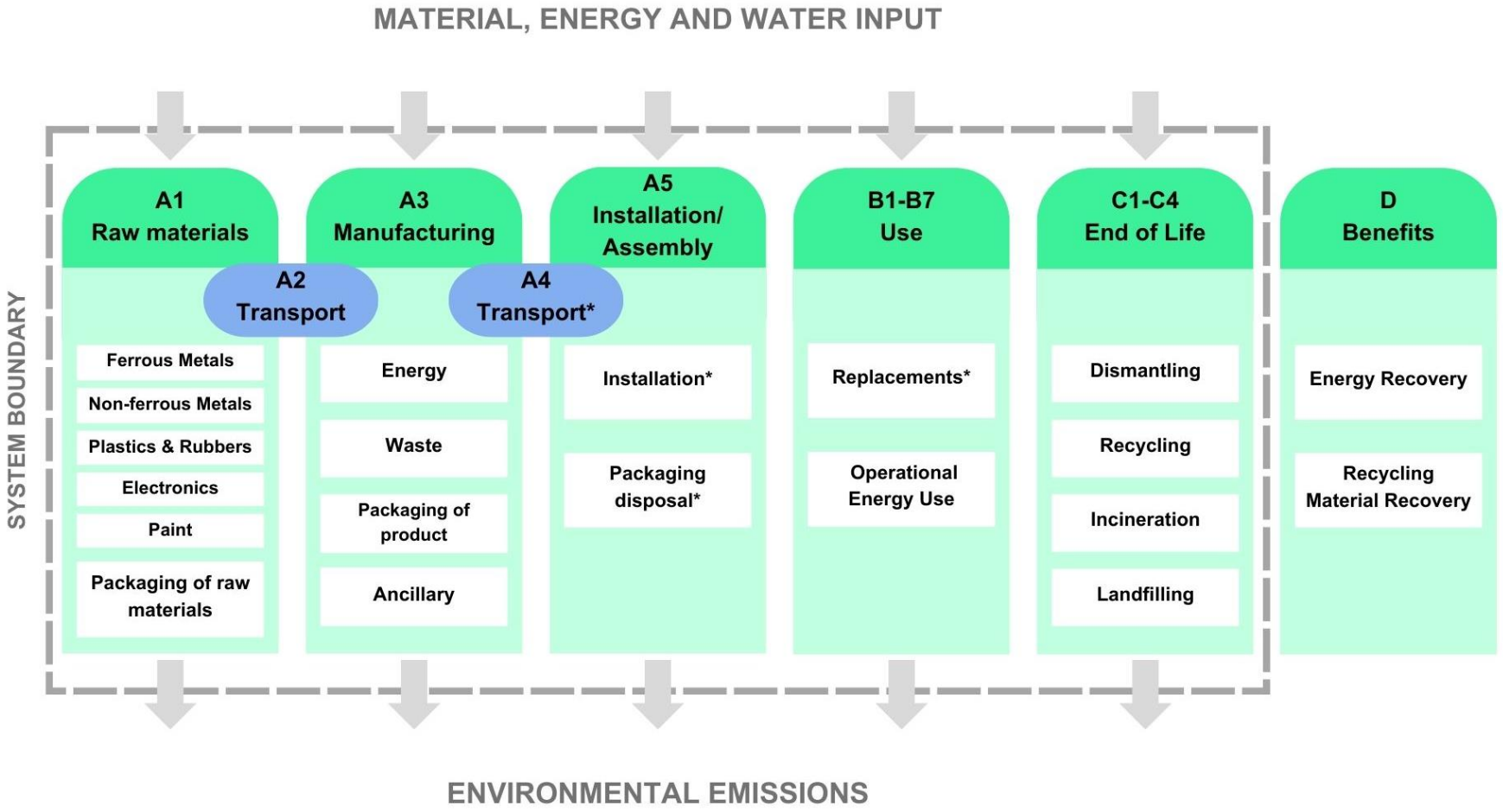
PRODUCT USE AND MAINTENANCE (B1-B7)

During the use phase, the Maxel Beam 13W spotlight consumes electricity from the Swedish electricity grid mix (B6). Environmental impacts from electricity consumption include direct emissions to air and transformation and transmission losses.
The reference service life of the luminaire is 100,000 hours. When the luminaire is operated 8 hours per day, this corresponds to a reference service life of approximately 34 years.
During the use phase, the product may require replacement of selected components at intervals aligned with the lifespan of individual parts to ensure the luminaire remains fully functional throughout its service life. Based on this, modules B1–B5 are excluded, as no additional energy, water, or material inputs are expected during this period. Module B7 is not applicable.
Environmental impacts to air, soil, and water during the use phase have not been studied.

END-OF-LIFE AND BENEFITS BEYOND SYSTEM BOUNDARIES (C1–C4, D)

Energy and natural resource consumption during demolition and removal of the Maxel Beam 13W spotlight is assumed to be negligible. Waste is collected separately and transported 50 km by lorry (C2) to the waste treatment facility. Treatment of the product follows EN 50693:2019, including de-pollution, fractions separation and preparation (dismantling, crushing, shredding, sorting), recycling, other material recovery, energy recovery, and disposal. Default values from Table G.4 of EN 50693 is applied for material recovery: Aluminum: 70% recovery, 30% disposal Copper: 40% recovery, 60% disposal Other plastics: 50% energy recovery, 50% disposal. Packaging waste is not included in C3–C4; impacts of packaging disposal are accounted for in A5 (installation). Module D includes environmental benefits from: Energy recovery (electricity and heat) from incineration of plastics Avoided production of aluminum, steel, and other materials Packaging-related benefits and burdens, aligned with A5 stage, including transfer of PERM and GWPbiogenic

LIFE CYCLE FLOW DIAGRAM



*If module declared as per scope of the EPD

ENVIRONMENTAL IMPACT DATA, RESULTS PER DECLARED UNIT

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

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	1,14E+01	9,21E-01	-2,34E+00	9,96E+00	1,59E-02	3,91E+00	ND	ND	ND	ND	ND	6,02E+01	ND	0,00E+00	0,00E+00	6,46E-02	2,96E-02	-1,17E+00
GWP – fossil	kg CO_2e	1,13E+01	9,20E-01	1,60E+00	1,38E+01	1,59E-02	3,32E-02	ND	ND	ND	ND	ND	5,83E+01	ND	0,00E+00	0,00E+00	6,47E-02	2,96E-02	3,40E-01
GWP – biogenic	kg CO_2e	3,55E-02	2,08E-04	-3,95E+00	-3,91E+00	3,60E-06	3,88E+00	ND	ND	ND	ND	ND	1,10E+00	ND	0,00E+00	0,00E+00	-3,66E-05	-6,33E-06	-1,51E+00
GWP – LULUC	kg CO_2e	1,17E-02	4,12E-04	7,98E-03	2,01E-02	7,10E-06	2,95E-05	ND	ND	ND	ND	ND	7,92E-01	ND	0,00E+00	0,00E+00	2,20E-05	4,85E-06	7,22E-04
Ozone depletion pot.	kg CFC_{-11}e	2,14E-07	1,36E-08	2,34E-08	2,51E-07	2,34E-10	5,46E-10	ND	ND	ND	ND	ND	3,30E-06	ND	0,00E+00	0,00E+00	1,35E-10	7,10E-11	2,42E-09
Acidification potential	mol H^+e	9,10E-02	3,14E-03	2,23E-02	1,16E-01	5,41E-05	2,54E-04	ND	ND	ND	ND	ND	5,00E-01	ND	0,00E+00	0,00E+00	1,18E-04	2,66E-05	1,52E-03
EP-freshwater[2)]	kg Pe	7,72E-03	7,17E-05	3,41E-04	8,13E-03	1,24E-06	1,97E-05	ND	ND	ND	ND	ND	3,04E-02	ND	0,00E+00	0,00E+00	6,89E-06	5,85E-07	1,46E-04
EP-marine	kg Ne	1,39E-02	1,03E-03	5,91E-03	2,09E-02	1,78E-05	4,62E-04	ND	ND	ND	ND	ND	9,16E-02	ND	0,00E+00	0,00E+00	2,87E-05	3,40E-05	3,69E-04
EP-terrestrial	mol Ne	1,44E-01	1,12E-02	6,31E-02	2,18E-01	1,94E-04	1,08E-03	ND	ND	ND	ND	ND	1,11E+00	ND	0,00E+00	0,00E+00	3,02E-04	1,15E-04	3,20E-03
POCP ("smog")[3)]	kg NMVOCe	5,06E-02	4,63E-03	1,86E-02	7,38E-02	7,98E-05	3,33E-04	ND	ND	ND	ND	ND	2,80E-01	ND	0,00E+00	0,00E+00	8,55E-05	3,50E-05	1,14E-03
ADP-minerals & metals[4)]	kg Sbe	1,09E-03	2,57E-06	6,08E-06	1,10E-03	4,43E-08	9,49E-08	ND	ND	ND	ND	ND	3,47E-03	ND	0,00E+00	0,00E+00	4,33E-07	1,07E-08	9,09E-07
ADP-fossil resources	MJ	1,37E+02	1,34E+01	2,20E+01	1,72E+02	2,30E-01	5,12E-01	ND	ND	ND	ND	ND	3,41E+03	ND	0,00E+00	0,00E+00	1,77E-01	6,03E-02	3,92E+00
Water use[5)]	m^3e depr.	2,53E+00	6,60E-02	5,39E-01	3,13E+00	1,14E-03	3,25E-02	ND	ND	ND	ND	ND	8,22E+01	ND	0,00E+00	0,00E+00	6,34E-03	2,37E-03	2,08E-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 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, EF 3.1

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	6,29E-07	9,22E-08	1,65E-07	8,85E-07	1,59E-09	3,54E-09	ND	ND	ND	ND	ND	4,70E-06	ND	0,00E+00	0,00E+00	1,35E-09	4,69E-10	3,29E-08
Ionizing radiation[6)]	kBq U235e	8,88E-01	1,16E-02	1,15E-01	1,01E+00	2,01E-04	4,13E-03	ND	ND	ND	ND	ND	2,18E+02	ND	0,00E+00	0,00E+00	1,24E-03	8,01E-05	2,66E-02
Ecotoxicity (freshwater)	CTUe	1,39E+02	1,89E+00	8,43E+00	1,49E+02	3,26E-02	8,54E-01	ND	ND	ND	ND	ND	4,63E+03	ND	0,00E+00	0,00E+00	1,67E-01	6,57E+00	2,97E+00
Human toxicity, cancer	CTUh	6,35E-09	1,52E-10	5,28E-09	1,18E-08	2,62E-12	3,17E-11	ND	ND	ND	ND	ND	5,32E-08	ND	0,00E+00	0,00E+00	1,18E-11	1,38E-11	6,84E-10
Human tox. non-cancer	CTUh	2,11E-07	8,65E-09	1,38E-08	2,34E-07	1,49E-10	2,08E-09	ND	ND	ND	ND	ND	3,08E-06	ND	0,00E+00	0,00E+00	6,96E-10	6,87E-10	2,00E-08
SQP[7)]	-	3,68E+01	1,35E+01	4,90E+02	5,40E+02	2,32E-01	6,50E-01	ND	ND	ND	ND	ND	2,34E+03	ND	0,00E+00	0,00E+00	1,69E-01	9,20E-02	1,74E+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 the 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	9,81E+00	1,83E-01	3,34E+01	4,34E+01	3,16E-03	-3,28E+01	ND	ND	ND	ND	ND	1,78E+03	ND	0,00E+00	0,00E+00	2,52E-02	1,37E-03	-1,42E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	3,47E+01	3,47E+01	0,00E+00	-3,47E+01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	9,81E+00	1,83E-01	6,80E+01	7,80E+01	3,16E-03	-6,75E+01	ND	ND	ND	ND	ND	1,78E+03	ND	0,00E+00	0,00E+00	2,52E-02	1,37E-03	-1,42E+00
Non-re. PER as energy	MJ	1,33E+02	1,34E+01	1,99E+01	1,66E+02	2,30E-01	5,12E-01	ND	ND	ND	ND	ND	3,41E+03	ND	0,00E+00	0,00E+00	-6,02E-01	-7,19E-01	3,91E+00
Non-re. PER as material	MJ	3,84E+00	0,00E+00	2,17E+00	6,02E+00	0,00E+00	-2,17E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	-1,53E+00	-2,31E+00	0,00E+00
Total use of non-re. PER	MJ	1,37E+02	1,34E+01	2,21E+01	1,72E+02	2,30E-01	-1,66E+00	ND	ND	ND	ND	ND	3,41E+03	ND	0,00E+00	0,00E+00	-2,14E+00	-3,03E+00	3,91E+00
Secondary materials	kg	2,81E-02	0,00E+00	0,00E+00	2,81E-02	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Renew. secondary fuels	MJ	2,45E-03	7,22E-05	8,80E-01	8,82E-01	1,25E-06	2,75E-06	ND	ND	ND	ND	ND	1,59E-02	ND	0,00E+00	0,00E+00	8,35E-06	8,96E-07	3,07E-05
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	6,42E-02	1,97E-03	1,18E-02	7,80E-02	3,41E-05	-3,41E-03	ND	ND	ND	ND	ND	1,93E+00	ND	0,00E+00	0,00E+00	1,41E-04	-1,19E-04	-2,36E-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	1,75E+00	2,26E-02	9,63E-02	1,87E+00	3,90E-04	6,61E-03	ND	ND	ND	ND	ND	5,36E+00	ND	0,00E+00	0,00E+00	2,13E-03	2,83E-02	9,00E-02
Non-hazardous waste	kg	3,61E+01	4,19E-01	1,73E+00	3,82E+01	7,22E-03	5,86E+00	ND	ND	ND	ND	ND	1,58E+02	ND	0,00E+00	0,00E+00	5,62E-02	3,88E-01	4,08E+00
Radioactive waste	kg	2,17E-04	2,85E-06	2,60E-05	2,46E-04	4,91E-08	1,06E-06	ND	ND	ND	ND	ND	4,66E-02	ND	0,00E+00	0,00E+00	3,04E-07	1,97E-08	6,66E-06

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 reuse	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	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	9,32E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	2,24E-01	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	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	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	4,18E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	2,45E-01	0,00E+00	0,00E+00
Exported energy: Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,76E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	1,03E-01	0,00E+00	0,00E+00
Exported energy: Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,41E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	1,42E-01	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

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	1,13E+01	9,15E-01	1,62E+00	1,38E+01	1,58E-02	1,09E-01	ND	ND	ND	ND	ND	5,92E+01	ND	0,00E+00	0,00E+00	6,46E-02	2,95E-02	3,39E-01
Ozone depletion Pot.	kg $CFC_{-11}e$	2,20E-07	1,08E-08	2,03E-08	2,51E-07	1,87E-10	4,44E-10	ND	ND	ND	ND	ND	3,23E-06	ND	0,00E+00	0,00E+00	1,15E-10	5,78E-11	2,03E-09

Acidification	kg SO_2e	7,68E-02	2,40E-03	1,76E-02	9,68E-02	4,13E-05	1,86E-04	ND	ND	ND	ND	ND	3,99E-01	ND	0,00E+00	0,00E+00	9,48E-05	1,94E-05	1,25E-03
Eutrophication	kg PO_4^3e	1,77E-02	5,84E-04	2,51E-02	4,34E-02	1,01E-05	1,04E-04	ND	ND	ND	ND	ND	8,49E-02	ND	0,00E+00	0,00E+00	1,51E-05	9,22E-06	4,48E-04
POCP ("smog")	kg C_2H_4e	7,50E-03	2,14E-04	1,20E-03	8,91E-03	3,68E-06	3,12E-05	ND	ND	ND	ND	ND	2,55E-02	ND	0,00E+00	0,00E+00	5,54E-06	1,78E-06	1,05E-04
ADP-elements	kg Sbe	1,09E-03	2,50E-06	5,99E-06	1,10E-03	4,32E-08	8,88E-08	ND	ND	ND	ND	ND	3,47E-03	ND	0,00E+00	0,00E+00	4,30E-07	9,57E-09	8,66E-07
ADP-fossil	MJ	1,23E+02	1,32E+01	2,04E+01	1,56E+02	2,27E-01	4,40E-01	ND	ND	ND	ND	ND	5,30E+02	ND	0,00E+00	0,00E+00	1,58E-01	5,91E-02	3,48E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG [9)]	kg CO_2e	1,13E+01	9,21E-01	1,61E+00	1,39E+01	1,59E-02	3,33E-02	ND	ND	ND	ND	ND	5,91E+01	ND	0,00E+00	0,00E+00	6,47E-02	2,96E-02	3,41E-01

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.

ENVIRONMENTAL IMPACT DATA, RESULTS PER FUNCTIONAL UNIT

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

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_2 éq/FU	5,75E+00	4,65E-01	-1,18E+00	5,03E+00	8,03E-03	1,98E+00	ND	ND	ND	ND	ND	3,04E+01	ND	0,00E+00	0,00E+00	3,27E-02	1,50E-02	-5,91E-01
GWP – fossil	kg CO_2 éq/FU	5,73E+00	4,65E-01	8,08E-01	7,00E+00	8,02E-03	1,68E-02	ND	ND	ND	ND	ND	2,95E+01	ND	0,00E+00	0,00E+00	3,27E-02	1,50E-02	1,72E-01
GWP – biogenic	kg CO_2 éq/FU	1,80E-02	1,05E-04	-2,00E+00	-1,98E+00	1,82E-06	1,96E+00	ND	ND	ND	ND	ND	5,55E-01	ND	0,00E+00	0,00E+00	-1,85E-05	-3,20E-06	-7,64E-01
GWP – LULUC	kg CO_2 éq/FU	5,93E-03	2,08E-04	4,03E-03	1,02E-02	3,59E-06	1,49E-05	ND	ND	ND	ND	ND	4,00E-01	ND	0,00E+00	0,00E+00	1,11E-05	2,45E-06	3,65E-04
Ozone depletion pot.	kg CFC_{11}e/FU	1,08E-07	6,87E-09	1,18E-08	1,27E-07	1,18E-10	2,76E-10	ND	ND	ND	ND	ND	1,67E-06	ND	0,00E+00	0,00E+00	6,85E-11	3,59E-11	1,22E-09
Acidification potential	mole H^+e/FU	4,60E-02	1,59E-03	1,13E-02	5,89E-02	2,74E-05	1,28E-04	ND	ND	ND	ND	ND	2,53E-01	ND	0,00E+00	0,00E+00	5,97E-05	1,35E-05	7,71E-04
EP-freshwater[2)]	kg Pe/FU	3,90E-03	3,62E-05	1,72E-04	4,11E-03	6,25E-07	9,94E-06	ND	ND	ND	ND	ND	1,54E-02	ND	0,00E+00	0,00E+00	3,48E-06	2,96E-07	7,36E-05
EP-marine	kg Ne/FU	7,04E-03	5,21E-04	2,99E-03	1,05E-02	8,99E-06	2,33E-04	ND	ND	ND	ND	ND	4,63E-02	ND	0,00E+00	0,00E+00	1,45E-05	1,72E-05	1,86E-04
EP-terrestrial	mol Ne/FU	7,29E-02	5,67E-03	3,19E-02	1,10E-01	9,78E-05	5,45E-04	ND	ND	ND	ND	ND	5,62E-01	ND	0,00E+00	0,00E+00	1,53E-04	5,82E-05	1,62E-03
POCP (“smog”)[3)]	kg NMVOCe/	2,56E-02	2,34E-03	9,39E-03	3,73E-02	4,03E-05	1,68E-04	ND	ND	ND	ND	ND	1,42E-01	ND	0,00E+00	0,00E+00	4,32E-05	1,77E-05	5,77E-04
ADP-minerals & metals[4)]	kg Sbe/FU	5,50E-04	1,30E-06	3,07E-06	5,55E-04	2,24E-08	4,79E-08	ND	ND	ND	ND	ND	1,76E-03	ND	0,00E+00	0,00E+00	2,19E-07	5,42E-09	4,59E-07
ADP-fossil resources	MJ/FU	6,93E+01	6,75E+00	1,11E+01	8,72E+01	1,16E-01	2,59E-01	ND	ND	ND	ND	ND	1,72E+03	ND	0,00E+00	0,00E+00	8,97E-02	3,05E-02	1,98E+00
Water use[5)]	m^3e priv. /FU	1,28E+00	3,33E-02	2,72E-01	1,58E+00	5,75E-04	1,64E-02	ND	ND	ND	ND	ND	4,16E+01	ND	0,00E+00	0,00E+00	3,21E-03	1,20E-03	1,05E-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 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, EF 3.1

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 /FU	3,18E-07	4,66E-08	8,32E-08	4,48E-07	8,03E-10	1,79E-09	ND	ND	ND	ND	ND	2,38E-06	ND	0,00E+00	0,00E+00	6,83E-10	2,37E-10	1,66E-08
Ionizing radiation[6)]	kBq U235e/FU	4,49E-01	5,88E-03	5,83E-02	5,13E-01	1,01E-04	2,09E-03	ND	ND	ND	ND	ND	1,10E+02	ND	0,00E+00	0,00E+00	6,27E-04	4,05E-05	1,34E-02
Ecotoxicity (freshwater)	CTUe/FU	7,02E+01	9,55E-01	4,26E+00	7,54E+01	1,65E-02	4,32E-01	ND	ND	ND	ND	ND	2,34E+03	ND	0,00E+00	0,00E+00	8,45E-02	3,32E+00	1,50E+00
Human toxicity, cancer	CTUh/FU	3,21E-09	7,68E-11	2,67E-09	5,96E-09	1,32E-12	1,60E-11	ND	ND	ND	ND	ND	2,69E-08	ND	0,00E+00	0,00E+00	5,99E-12	6,99E-12	3,46E-10
Human tox. non-cancer	CTUh/FU	1,07E-07	4,37E-09	7,00E-09	1,18E-07	7,54E-11	1,05E-09	ND	ND	ND	ND	ND	1,55E-06	ND	0,00E+00	0,00E+00	3,52E-10	3,47E-10	1,01E-08
SQP[7)]	-/FU	1,86E+01	6,80E+00	2,48E+02	2,73E+02	1,17E-01	3,29E-01	ND	ND	ND	ND	ND	1,18E+03	ND	0,00E+00	0,00E+00	8,55E-02	4,65E-02	8,79E+00

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/FU	4,96E+00	9,25E-02	1,69E+01	2,19E+01	1,60E-03	-1,66E+01	ND	ND	ND	ND	ND	8,97E+02	ND	0,00E+00	0,00E+00	1,28E-02	6,91E-04	-7,18E-01
Renew. PER as material	MJ/FU	0,00E+00	0,00E+00	1,75E+01	1,75E+01	0,00E+00	-1,75E+01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ/FU	4,96E+00	9,25E-02	3,44E+01	3,94E+01	1,60E-03	-3,41E+01	ND	ND	ND	ND	ND	8,97E+02	ND	0,00E+00	0,00E+00	1,28E-02	6,91E-04	-7,18E-01
Non-re. PER as energy	MJ/FU	6,73E+01	6,75E+00	1,01E+01	8,41E+01	1,16E-01	2,59E-01	ND	ND	ND	ND	ND	1,72E+03	ND	0,00E+00	0,00E+00	-3,04E-01	-3,64E-01	1,98E+00
Non-re. PER as material	MJ/FU	1,94E+00	0,00E+00	1,10E+00	3,04E+00	0,00E+00	-1,10E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	-7,76E-01	-1,17E+00	0,00E+00
Total use of non-re. PER	MJ/FU	6,93E+01	6,75E+00	1,12E+01	8,72E+01	1,16E-01	-8,40E-01	ND	ND	ND	ND	ND	1,72E+03	ND	0,00E+00	0,00E+00	-1,08E+00	-1,53E+00	1,98E+00
Secondary materials	kg/FU	1,42E-02	0,00E+00	0,00E+00	1,42E-02	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Renew. secondary fuels	MJ/FU	1,24E-03	3,65E-05	4,45E-01	4,46E-01	6,30E-07	1,39E-06	ND	ND	ND	ND	ND	8,03E-03	ND	0,00E+00	0,00E+00	4,22E-06	4,53E-07	1,55E-05
Non-ren. secondary fuels	MJ/FU	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3/FU	3,25E-02	9,98E-04	5,96E-03	3,94E-02	1,72E-05	-1,72E-03	ND	ND	ND	ND	ND	9,75E-01	ND	0,00E+00	0,00E+00	7,12E-05	-6,03E-05	-1,19E-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/FU	8,85E-01	1,14E-02	4,87E-02	9,45E-01	1,97E-04	3,34E-03	ND	ND	ND	ND	ND	2,71E+00	ND	0,00E+00	0,00E+00	1,07E-03	1,43E-02	4,55E-02
Non-hazardous waste	kg/FU	1,82E+01	2,12E-01	8,72E-01	1,93E+01	3,65E-03	2,96E+00	ND	ND	ND	ND	ND	7,99E+01	ND	0,00E+00	0,00E+00	2,84E-02	1,96E-01	2,06E+00
Radioactive waste	kg/FU	1,10E-04	1,44E-06	1,32E-05	1,24E-04	2,48E-08	5,34E-07	ND	ND	ND	ND	ND	2,36E-02	ND	0,00E+00	0,00E+00	1,54E-07	9,97E-09	3,37E-06

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/FU	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg/FU	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,71E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	1,13E-01	0,00E+00	0,00E+00
Materials for energy rec	kg/FU	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/FU	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,11E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	1,24E-01	0,00E+00	0,00E+00
Exported energy: Electricity	MJ/FU	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,89E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	5,20E-02	0,00E+00	0,00E+00
Exported energy: Heat	MJ/FU	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,22E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	7,16E-02	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

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_2 éq./FU	5,71E+00	4,63E-01	8,20E-01	6,99E+00	7,98E-03	5,53E-02	ND	ND	ND	ND	ND	2,99E+01	ND	0,00E+00	0,00E+00	3,26E-02	1,49E-02	1,72E-01
Ozone depletion Pot.	kg CFC_{11}e/FU	1,11E-07	5,48E-09	1,02E-08	1,27E-07	9,45E-11	2,24E-10	ND	ND	ND	ND	ND	1,63E-06	ND	0,00E+00	0,00E+00	5,80E-11	2,92E-11	1,03E-09
Acidification	kg SO_2e/FU	3,88E-02	1,21E-03	8,90E-03	4,89E-02	2,09E-05	9,41E-05	ND	ND	ND	ND	ND	2,02E-01	ND	0,00E+00	0,00E+00	4,79E-05	9,81E-06	6,34E-04
Eutrophication	kg PO_4^3e/FU	8,94E-03	2,95E-04	1,27E-02	2,19E-02	5,09E-06	5,25E-05	ND	ND	ND	ND	ND	4,29E-02	ND	0,00E+00	0,00E+00	7,61E-06	4,66E-06	2,26E-04
POCP (“smog”)	kg C_2H_4e/FU	3,79E-03	1,08E-04	6,06E-04	4,50E-03	1,86E-06	1,58E-05	ND	ND	ND	ND	ND	1,29E-02	ND	0,00E+00	0,00E+00	2,80E-06	8,98E-07	5,31E-05
ADP-elements	kg Sbe/FU	5,50E-04	1,27E-06	3,03E-06	5,54E-04	2,18E-08	4,49E-08	ND	ND	ND	ND	ND	1,75E-03	ND	0,00E+00	0,00E+00	2,17E-07	4,84E-09	4,38E-07
ADP-fossil	MJ/FU	6,21E+01	6,66E+00	1,03E+01	7,90E+01	1,15E-01	2,22E-01	ND	ND	ND	ND	ND	2,68E+02	ND	0,00E+00	0,00E+00	7,97E-02	2,98E-02	1,76E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG [9]	kg CO_2e/FU	5,73E+00	4,65E-01	8,12E-01	7,01E+00	8,03E-03	1,68E-02	ND	ND	ND	ND	ND	2,99E+01	ND	0,00E+00	0,00E+00	3,27E-02	1,50E-02	1,72E-01

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION
DATA SOURCES

Manufacturing energy scenario documentation – A3 (Energy data source)

1. Energy supply, electricity transformation and distribution, distribution low voltage, Electricity, low voltage, residual mix, Sweden, ecoinvent 3.11, 0.0983 kgCO2e/kWh

Transport scenario documentation - A4

1. Transport, freight, lorry >32 metric ton, EURO5, 250.0 km

Installation scenario documentation - A5 (Waste materials data source)

1. Corrugated board box production, 0.1535 kg
2. Eur-flat pallet production, 0.0926 unit

Use stages scenario documentation - B6-B7 (Energy data source)

1. Energy supply, electricity transformation and distribution, distribution low voltage, Electricity, low voltage, residual mix, Sweden, 612.5 kWh

TRANSPORT SCENARIO DOCUMENTATION - A4

Scenario parameter	Value
Capacity utilization (including empty return) %	50 %
Bulk density of transported products / kg/m³	6,78E+00
Volume capacity utilization factor (factor: =1 or <1 or ≥1 for compressed or nested packaged products)	1

INSTALLATION SCENARIO DOCUMENTATION - A5

Scenario parameter	Value
Ancillary materials for installation (specified by material) / kg or other units as appropriate	0
Water use / m³	0
Other resource use / kg	0
Direct emissions to ambient air, soil and water / kg	0

USE STAGES SCENARIO DOCUMENTATION - B4 REPLACEMENT

Scenario information	Value
Replacement cycle / Number per RSL or year	Not applicable.

USE STAGES SCENARIO DOCUMENTATION - B6-B7 USE OF ENERGY AND WATER

Scenario information	Value
Ancillary materials specified by material / kg or units as appropriate	Not applicable
Net fresh water consumption / m³	0
Power output of equipment / kW	12,25
Characteristic performance, e.g., energy efficiency, emissions, variation of performance with capacity utilization, etc. / Units as appropriate	Emits 1385 lumen during a reference lifetime of 100000 hours
Further assumptions for scenario development, e.g., frequency and period of use, number of occupants / Units as appropriate	34 Years when luminaire operates 8 hours a day.

END OF LIFE SCENARIO DOCUMENTATION

Scenario information	Value
Collection process – kg collected separately	0,44
Collection process – kg collected with mixed construction waste	0
Recovery process – kg for re-use	0
Recovery process – kg for recycling	2,24E-01
Recovery process – kg for energy recovery	0
Disposal (total) – kg for final deposition	1,92E-01
Scenario assumptions e.g. transportation	Lorry, 16-32 metric ton, EURO5; 150 km

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

Program assistant: Xinyuan Zhang

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools
Tool verifier: Hai Ha Nguyen
Tool verification validity: 28 March 2025 - 27 March 2028

ANNEX : Scaling table with coefficients for total Actor G2 Ceiling family

This section apply the Rule(s) for extrapolation to a homogeneous environmental family" of the current PCR (PSR-0014-ED2.0-EN-2023 07 13) of the Product Environmental Profiles (PEP).

Note:The extrapolation coefficients are intended at product level(declared unit)and not at functional unit

According Extrapolation rules applied to fabrication stage (A1-A3),distribution stage(A4),Installation stage(A5),Use stage(B6),End of Life stage(C1-C4) and net benefits beyond the system boundaries stage (D).

Table A1 Scaled GWP per scaling factor

Product name	CCT	corresponding factor A1-A3	GWP A1- A3- total kg CO2e	corresponding factor A4	GWP A4- total kg CO2e	corresponding factor A5	GWP A5- total kg CO2e	corresponding factor B6	GWP B6- total kg CO2e	corresponding factor Module C	GWP Module Ctotal kg CO2e	corresponding factor Module D	GWP Module Dtotal kg
BEAM 9 W	2700K 3000K	1,00	10,20	1,00	0,0159	1,00	3,49	1,00	60,20	1,00	0,0942	1,00	-0,883
BEAM 13 W	2700K 3000K	1,00	10,20	1,00	0,0159	1,00	3,49	1,00	60,20	1,00	0,0942	1,00	-0,883
BEAM 17 W	2700K 3000K	1,59	16,20	1,44	0,0229	0,99	3,45	1,43	86,10	2,37	0,2233	0,77	-0,682
BEAM 25 W	2700K 3000K	1,59	16,20	1,44	0,0229	0,99	3,45	1,43	86,10	2,37	0,2233	0,77	-0,682
BEAM Zoom 9 W	2700K 3000K	1,03	10,50	1,04	0,0166	1,00	3,49	1,00	60,2	1,25	0,1176	0,99	-0,876
BEAM Zoom 13 W	2700K 3000K	1,03	10,50	1,04	0,0166	1,00	3,49	1,00	60,2	1,25	0,1176	0,99	-0,876
BEAM Zoom 17 W	2700K 3000K	1,56	15,90	1,42	0,0226	0,99	3,45	1,43	86,1	2,34	0,2205	0,78	-0,692
BEAM Zoom 25 W	2700K 3000K	1,56	15,90	1,42	0,0226	0,99	3,45	1,43	86,1	2,34	0,2205	0,78	-0,692
BEAM Wallwasher 9 W	2700K 3000K	1,05	10,70	1,04	0,0165	1,00	3,49	1,00	60,2	0,85	0,0799	0,97	-0,858
BEAM Wallwasher 13 W	2700K 3000K	1,05	10,70	1,04	0,0165	1,00	3,49	1,00	60,2	0,85	0,0799	0,97	-0,858
BEAM Wallwasher 17 W	2700K 3000K	1,54	15,70	1,35	0,0214	0,99	3,45	1,43	86,1	1,13	0,1062	0,76	-0,673
BEAM Wallwasher 25 W	2700K 3000K	1,54	15,70	1,35	0,0214	0,99	3,45	1,43	86,1	1,13	0,1062	0,76	-0,673
BEAM Projektor 9 W	2700K 3000K	1,14	11,60	1,16	0,0185	1,00	3,49	1,00	60,2	1,08	0,1020	0,92	-0,810
BEAM Projektor 13 W	2700K 3000K	1,14	11,60	1,16	0,0185	1,00	3,49	1,00	60,2	1,08	0,1020	0,92	-0,810
BEAM Projektor 17 W	2700K 3000K	1,70	17,30	1,52	0,0241	1,00	3,49	1,43	86,1	1,26	0,1187	0,67	-0,593
BEAM Projektor 25 W	2700K 3000K	1,70	17,30	1,52	0,0241	1,00	3,49	1,43	86,1	1,26	0,1187	0,67	-0,593

Bibliography and References Used in Modeling

All references used for the Life Cycle Assessment (LCA) modeling have been included in the **EPD Description Tab "Bibliography and references used in modeling"** in OCL and are also documented in the EPD. The relevant sources and assumptions are provided for all life cycle modules as follows:

- **A4 – Distribution stage:** Transport data sources are fully documented.
- **A5 – Installation stage:** Assumptions and references for product installation, any additional transport, and packaging/waste treatment are included.
- **B1–B7 – Use stage:** Each module is described with calculation methodology, assumptions, and supporting references. Module B2 is not declared, and therefore the methodology of B6 has been applied.
- **C1–C4 – End-of-life stage:** References for energy (C1), transport (C2), and end-of-life processes (C3–C4) are provided.
- **D – Benefits beyond system boundaries (optional):** Net benefits are calculated according to PSR-0014-ED2-EN-2023-07-13, Section 3.6.8.

Extrapolation coefficients for all modules were applied in accordance with **PSR-0014-ED2-EN-2023-07-13, Section 3.6**, as detailed in the EPD document.

No additional references beyond those listed have been used.