

Product Environmental Profile of Luzerna Avant

Reference product: LX34B



Registration number: NORM-00003-V01.01-EN	Rules "PCR-ed4-EN 2021 09 06" Supplemented by " PSR-0014-ed2.0-EN-2023 07 13 "
Verifier accreditation number: V45	Information and reference documents: www.pep-ecopassport.org
Date of issue: 11-2025	Validity period: 5 years
Independent verification of the declaration and data, in compliance with ISO 14025:2010: Internal ☐ External ☒	
The PCR review was conducted by a panel of experts chaired by Shifa Meyer	
PEP are compliant with XP C08-100-1:2016 and EN 50693:2019 or NF E38-500 :2022 The components of the present PEP may not be compared with components from another program.	
Document in compliance with ISO 14025:2010 "Environmental labels and declarations. Type III environmental declarations"	





Indoor lighting



NORMALIT

by Normagrup



1. GENERAL INFORMATION

1.1 COMPANY INFORMATION

*"Lighting the future with efficient, safe and sustainable
efficient, safe and sustainable technological solutions"*

The strategic approach of our corporate culture is based on a commitment to innovation, industrial excellence, and sustainability as fundamental pillars for moving toward a responsible future.

At Normagrup Technology, we are firmly committed to domestic manufacturing, ongoing research and technological development, and respect for sustainability, through a comprehensive approach that encompasses environmental, social, and economic dimensions, driving ethical and responsible growth.

Since its founding in 1971, the company has undergone a continuous process of development and expansion, becoming a benchmark in the technical lighting and safety sector, with a presence in various international markets. Its production model is governed by a commitment to innovation, care for the planet, occupational safety, equal opportunities, and contribution to local development.

We strive to bring innovative solutions to the market, always guided by a sixth sense engraved in our DNA: **the sense of technology.**

Everything we do is driven by the core principles of the Normagrup DNA:





Innovation

Imagining, creating, and daring to take the road less traveled is the only way to build the future.



Safety

Our very first development was an emergency light fixture, and since then, safety has remained a constant priority at Normagrup.



Confort y control

Our developments aim to make life more comfortable for everyone, with simple and intuitive operation.



Design

We care about the aesthetics and appearance of our products to create pleasant environments



Quality

The customer is the absolute priority of our work, and the quality of our products and services is always aimed at achieving their maximum satisfaction.



Sustainability

We design efficient products based on eco-design principles and with a life cycle aligned with circular economy principles.



Owner of the PEP: Normagrup Technology, S.A.

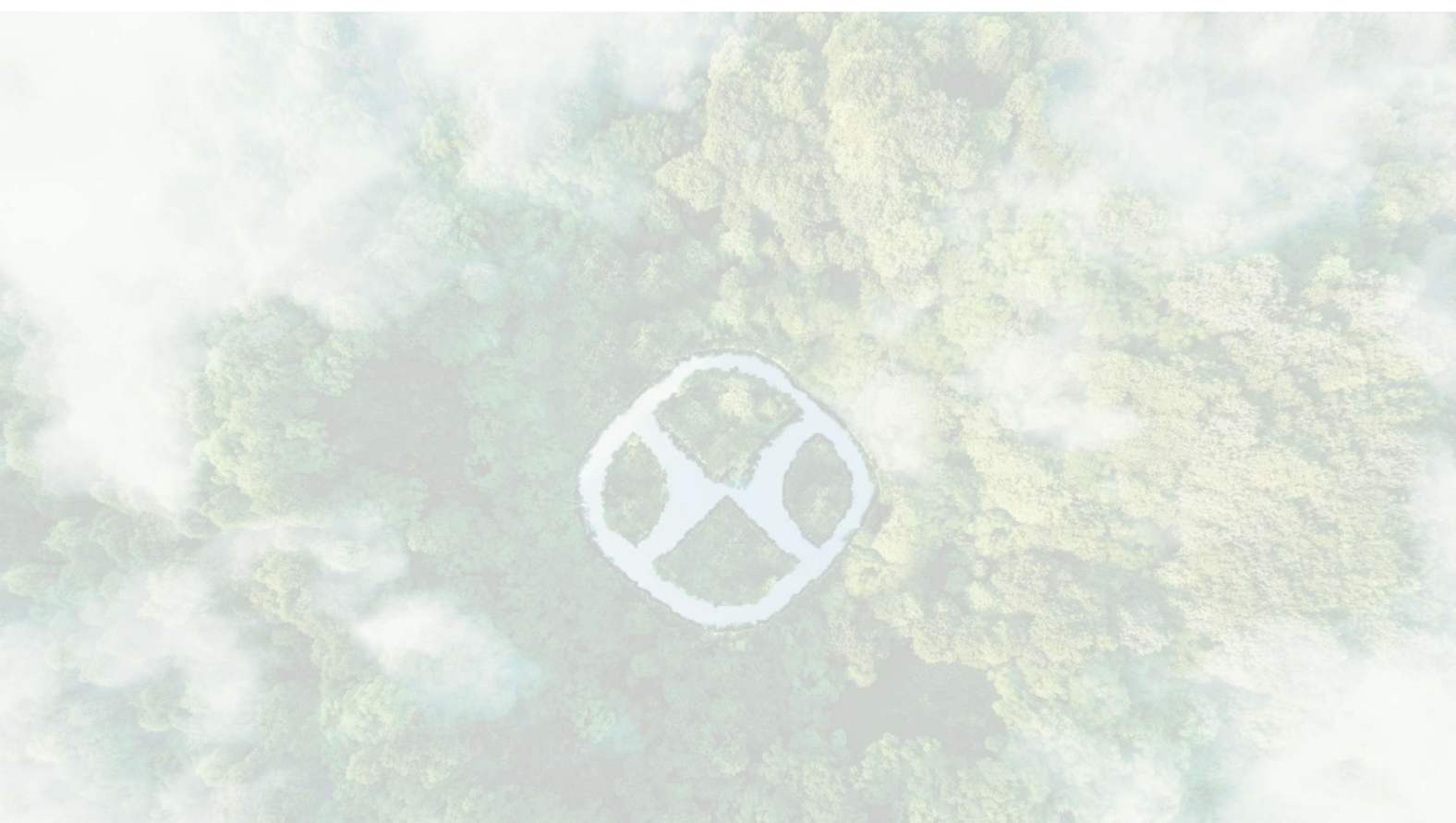
✦ **Location of production and assembly site:**

Parque Tecnológico de Asturias

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ENVIRONMENTAL COMMITMENT OF THE COMPANY

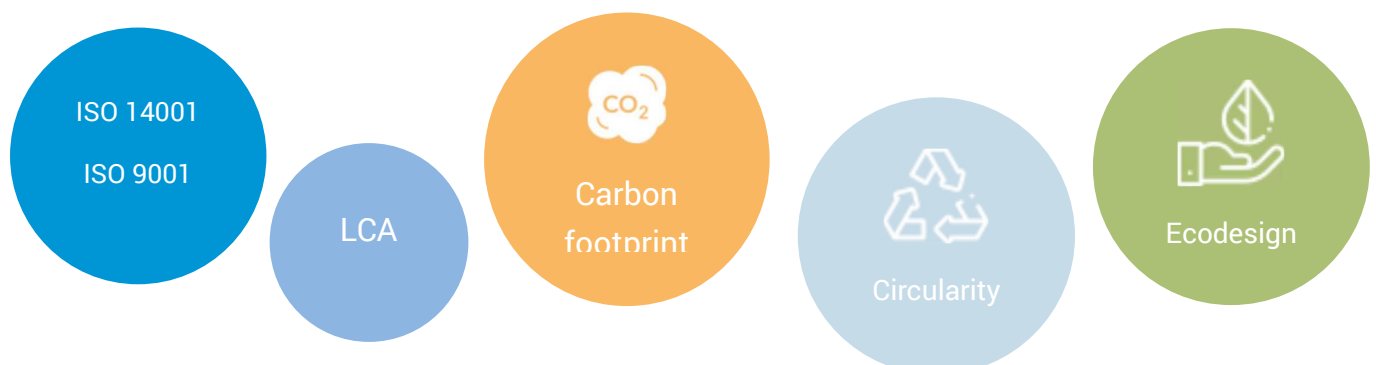
Normagrup Technology is a global company dedicated to the design, manufacture, and marketing of innovative technological solutions in lighting, signage, and emergency and detection systems, backlit fabrics, and hospital headwalls.

Since its origins, Normagrup has integrated environmental protection as a key pillar of its activity, implementing measures aimed at preventing, reducing, and controlling the environmental impacts associated with its production processes and products.

Driven by this strong commitment, an integrated quality and environmental management system was established according to ISO 9001:2015 and ISO 14001: 2015, respectively, based on a holistic approach to the continuous improvement of our processes. This enables us to advance toward efficient and resource-optimized manufacturing, minimize waste and emissions, and incorporate sustainability and efficiency criteria at every stage of our products' life cycle.

This vision is embodied in a strong commitment to evaluating the environmental impact of our products through Life Cycle Assessment (LCA), a key tool for objectively quantifying impacts from the manufacturing phase to end-of-life disposal. This approach allows us to progress toward designing safer products that integrate sustainability criteria from the outset, guiding our decisions toward continuous improvement.

The results of this study are reflected in this Environmental Product Declaration (EPD), which serves as a key element for the improvement and transparency of our products.





1.2 PRODUCT DESCRIPTION AND METHODOLOGY

This Environmental Product Declaration (EPD), represents the Luzerna Avant luminaires lighting family, distinguished by the following technical characteristics:

Luzerna Avant is Normalit LED panels for modular ceilings presented in three different sizes: 600 x 600, 1200 x 300, 1200 x 600. To be installed in plasterboard ceilings, suspended or surface mounted with accessories.

The reference product is the Luzerna Avant LX34B.

Table 1. Technical characteristics

NORMALIT		Luminaire Ref. LX34B
LED Panels: Luzerna Avant .Luzerna Avant panel lights made with extruded aluminium profiles, lacquered with high performance polyester resin with electrostatic application, and polymerized. UV and corrosion resistant. PMMA lenses for a correct light distribution, and a hig reflection. Diffuser: Technical plastic. Light distribution:		
LUZERNA AVANT		LED CE  230V 50/60HZ
	Lumen output (lm)	5140 lm
	Color temperatures (K)	4000
	CRI	80
	Hours Life L80B10	80.000h
	Hours Life L70B10	125.000h
	Macadam ellipses	3
	Beam angle	114
	Photobiological security	0
	Power (W)	32
	Voltage	220-240V 50/60Hz
	Power factor	0,96
	Class	II
	UGR	19
	IP	20-54
	IK	07
	Energy efficiency	B

For more information please visit: https://www.normalux.com/Luzerna_Avant

The EPD is structured according to the life cycle stages established by the standards Product Category Rules (PCR-ed4-EN-2021 09 06) and the Product Specific Rules (PSR-0014-ed2.0-EN-2023 07 13) and is based on the UNE-EN

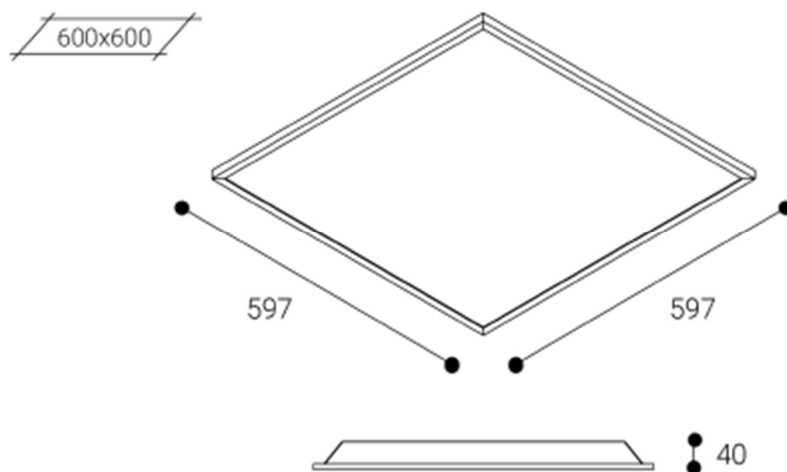


15804:2012+A2:2020 standard. These stages cover the “cradle to grave” phases (A1-C4). The primary data used in the LCA calculation are representative of LUZERNA AVANT production and sales for 2024.

FUNCTIONAL UNIT | REFERENCE PRODUCT

The **reference product** is the self-contained emergency luminaire LUZERNA AVANT, with the reference code LX34B. It is the highest-selling product within the family, accounting for 51,8% of the total sales in this product line during the period considered.

The **functional unit (FU)** of the study is to provide lighting that delivers an outgoing artificial luminous flux of 1,000 lumens during reference lifetime of 35,000 hours. This functional unit is chosen in accordance with the specifications of the Product Category Rules (PCR-ed4-EN-2021 09 06) and the Product Specific Rules (PSR-0007-ed2.1-EN-2023 07 13), which for luminaires.



The following information has been used to generate the Environmental Product Declaration.

**Table 2.** Methodological information

Methodological information	
Product name	LUZERNA AVANT LX34B
Functional unit	Provide lighting that delivers an outgoing artificial luminous flux of 1,000 lumens during a reference lifetime of 35,000 hours"
Reference Flow	0,0851
Declared unit	One Luzerna Avant LX34B luminaire providing a luminous output of 5.140 lumens over a designated lifetime of 100.000 hours.
Reference service life	35.000 h
Life cycle stages covered	Cradle to grave
Product category according to PSR	Luminaires (indoor lighting)

The **reference flow** for this study is defined as:

$$\frac{35,000 \text{ h}}{\text{assigned product lifetime of the reference product (h)}} \times \frac{1.000 \text{ (lm)}}{\text{Outgoing luminous flux of the reference product}} =$$

Consequently, the reference flow of the reference product corresponds to:

$$(35.000 \text{ h} / 80.000 \text{ h}) \times (1.000 \text{ lm} / 5.140 \text{ lm}) = 0,0851$$

The **reference service life (RSL)** is 35.000 hours in accordance with the Product Specific Rules (PSR-0014-ed2-EN-2023 07 13) for luminaire. The declared service life (DSL) refers to the period during which the luminaire is expected to operate under normal conditions before being taken out of service and is 100.000 hours.

In addition to the functional unit, the **declared unit** is defined as a single Luzerna LX34B luminaire that provides 5.140 lumens of lighting over a reference service life of 80.000 hours (L80).



1.3 HOMOGENEOUS ENVIRONMENTAL FAMILY

The reference product represents the LUZERNA AVANT family, all the products in this family of emergency luminaires (escape route) differ in terms of power and weight. **Table 3** shows the range of variations.

Table 3. Range of variation within the family of products.

LUZERNA AVANT family	Unit	Reference product's value LUZERNA AVANT LX34B	Minimum value in product range	Maximum value in product range
Product's gross weight	kg	2,9	1,98	5,97
Power	W	32	32	64
Lumens	Lumen	5140	4320	10280

The rest of the products that belong to the same homogeneous family and are covered by this PEP are listed in **Table 4**.

Table 4. Product references included in the LUZERNA AVANT homogeneous family.

Product references of the LUZERNA AVANT				
Dimensions 600x600	LX33B	LX33DB	LX33GB	LX33GB
	LX34B	LX34DB	LX34GB	LX34GB
	LX35B	LX35DB	LX35GB	LX35GB
Dimensions 1200x300	LX43B	LX43DB	LX43GB	LX43DGB
	LX44B	LX44DB	LX44GB	LX44DGB
	LX45B	LX45DB	LX45GB	LX45DGB
Dimensions 1200x600	LX53B	LX53DB	LX53GB	LX53DGB
	LX54B	LX54DB	LX54GB	LX54DGB
	LX55B	LX55DB	LX55GB	LX55DGB

The present PEP declaration is valid for all the products in the described homogeneous environmental family. The extrapolation coefficients at product level (declared unit) and the information of the products included in the homogeneous environmental family can be found in the spreadsheets provided as annex. This information shall be used by the PEP user to extrapolate the impact of a product from the LUZERNA AVANT family, based on technical parameters of the considered product, as shown in **Annex I** (Annex I. Extrapolation coefficients).

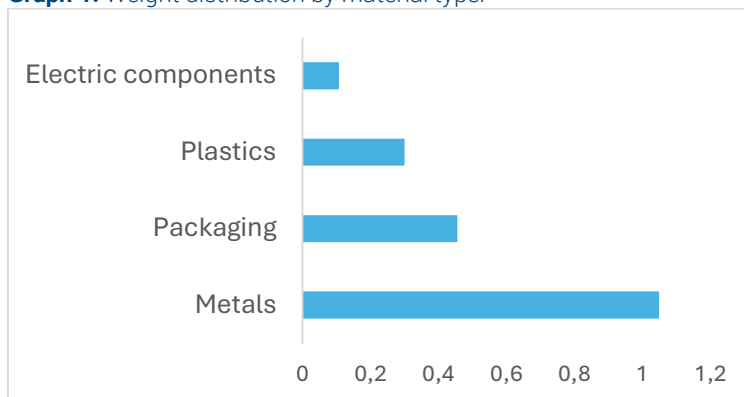


2. CONSTITUENT MATERIALS

Table 5. Weigh by material of the reference product.

	kg	%
Metals		
Steel	0,011	1,05
Aluminium	0,138	13,16
Galvanised steel	0,900	85,80
TOTAL	1,049	100
Plastics		
Polystyrene	0,3	100
TOTAL	0,3	100
Electric components		
Driver circuit	0,077	71,90
LED circuit	0,0121	11,30
Wires	0,018	16,81
TOTAL	0,1071	100
Packaging		
100% recycled cardboard	0,45	98,81
Pallet	0,0003	0,07
Polyethylene film	0,005	1,10
Intructions	1,0E-04	0,02
TOTAL	0,4554	100

Graph 1. Weight distribution by material type.





3. ADDITIONAL ENVIRONMENTAL INFORMATION

Normagrup has integrated environmental protection as a key pillar of its activity, implementing measures aimed at preventing, reducing, and controlling the environmental impacts associated with its production processes and products. Since 2019, we have been calculating our organizational carbon footprint and are working to reduce our greenhouse gas emissions. In line with this goal, we have created an emission absorption project: [Normagrup Forest](#).

The following sections outline the measures taken by Normagrup to minimise the product's environmental impact across all stages of the product's life cycle.



MANUFACTURING: A1-A3

A1 – Supply of raw materials.

A2 – Transport of raw materials.

A3 – Manufacturing.

Regarding the supply of raw materials, all suppliers with whom we maintain supply relationships have been previously assessed to be aligned with our corporate principles. They have accepted our [Code of Conduct](#) and are committed to meeting our [environmental requirements](#).

For packaging, Normagrup uses only 100% recycled cardboard as primary and secondary packaging.

As for the manufacturing, Normagrup has a photovoltaic electricity production centre at the main production plant, which allows to reduce the need for non-renewable electricity in our facilities.

DISTRIBUTION AND INSTALLATION: A4-A5

A4 – Distribution.

A5 – Installation.



The reduced dimensions of the product allow for a smart transportation by maximising the available space during the distribution stage. The product comes in collective boxes of 6 units each. One pallet (1200x800mm) carries 24 collective boxes of 6 units each, that is, one pallet carries 144 units.

During installation, energy consumption is considered negligible because it is carried out manually, although electric tools such as drills may be used. The product comes ready to be installed by the end-user. In this stage, the product is unpacked and therefore the packaging waste is generated during the installation.

The waste of packaging materials is treated using default values according to PCR-ed4-EN-2021 09 06 and PSR-0014-ED2.0-EN-2023 07 13 for distances and waste treatment statistics are based on Eurostat.



USE: B1-B7

B1 - Use.

B2 - Maintenance.

B3 - Repair.

B4 - Replacement.

B5 - Rehabilitation.

B6 – In service energy use.

B7 - In-service water use

The use stage concerns the maintenance (B2) during the product's life cycle and the electricity consumption (B6) associated with the operation of the product.

As a maintenance task, two drivers will be replaced over the product's service life, since a service life of 40.000h is ensured for the driver. The waste treatment of the initial driver is considered in this stage.

The electricity consumption during the use phase is calculated based on the Spain electrical mix, since 90% of the sales are made in this country, and the remaining



sales happened in the European market. Therefore, the electricity consumption scenario is based on the average Spanish electricity grid mix and is estimated over a lifetime of 10.000 hours and for 32 W of power.

The product has no direct emissions (B1) and is designed so that no parts replacement is necessary (B4). Additionally, no standard repairs (B3) or refurbishments (B5) take place as of now. The use of the product does not involve water consumption (B7).



C1-C4 END OF LIFE

C1 - Deconstruction/Demolition

C2 – Waste transport

C3 – Waste processing

C4 - Provision

The product is required to be professionally collected and recycled in accordance with the EU Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE). The company fulfils its responsibility within the EU by participating in national WEEE schemes. We meet our extended producer responsibility obligations by adhering to a national SCRAP.

The waste treatment scenario of each material and component was determined based on public data provided by Eurostat in 2022 and available datasets.

Table 5. Waste treatment scenarios considered.

Scenario	Recycling and incineration with energy recovery	Incineration and landfill	Modelling assumptions
Wire	62%	38%	Transport (100 km) and treatments based on Eurostat for Europe 2022.
Metal	77%	23%	Transport (100 km) and treatments based on Eurostat for Europe 2022.
Plastic	40%	60%	Transport (100 km) and treatments based on Eurostat for Europe 2022.
Electronic	70%	30%	Transport (100 km) and treatments based on available datasets.



1. ENVIRONMENTAL IMPACTS

The environmental impact assessment examines the stages of the reference product's life cycle: manufacturing, distribution, installation, use, and end of life. It is representative of the products marketed and used in Europe.

The Life Cycle Assessment (LCA) model was developed using the online tool *edit@* in combination with the SimaPro 10.2.0.2 software to evaluate the environmental impact associated with the reference product. Data concerning material and energy flows entering the product system were primarily sourced from the Ecoinvent v3.11.1 database.

The impact indicators and models used are those specified by the reference standards PCR-ed3-EN-2015 04 02 and PSR-0014-ed2.0-EN-2023 07 13. The environmental indicators are calculated for the total life cycle and each life cycle stage (i.e., manufacturing, distribution, installation, use and end-of-life) of the reference product. This environmental declaration has been developed by considering an outgoing outgoing luminous flux of 1.000 lumens during a reference lifetime of 35.000 hours.

For the use stage, the electricity consumption scenario considers the geographic area of Europe, specifically Spain, since 89,9% of the sales were made in Spain.

Overall, datasets were selected based on their geographical representativeness, prioritizing those most closely aligned with the location of each life cycle.



RESULTS

Table 1. Results of mandatory inventory indicators per F.U (1.000 lumens during a reference lifetime of 35,000 hours) of Luzerna Avant LX34B luminaire.

Stage	Unit	1. Manufacturing			2. Distribution	3. Installation	4. Use		5. End of life			Total
Impact category		A1	A2	A3	A4	A5	B2	B6	C2	C3	C4	
Climate change - total	kg CO2 eq.	7,28E+00	3,86E-02	1,85E-01	0,30637408	7,60E-02	5,27E+00	6,20E+02	2,72E-02	1,98E-01	3,62E-01	6,34E+02
Climate change - fossil fuels	kg CO2 eq.	7,31E+00	3,86E-02	1,59E-01	0,30623797	1,01E-02	5,25E+00	6,10E+02	2,72E-02	1,81E-01	1,98E-01	6,24E+02
Climate change - land use and land use transformation	kg CO2 eq.	1,30E-02	2,07E-05	4,08E-05	8,2533E-05	3,67E-06	9,35E-03	8,10E+00	8,99E-06	8,81E-05	1,48E-05	8,12E+00
Climate change - biogenic	kg CO2eq.	1,73E-02	6,53E-06	2,54E-02	5,4695E-05	6,58E-02	1,02E-02	1,92E+00	5,72E-06	5,28E-05	3,21E-05	2,03E+00
Ozone depletion	kg CFC-11 eq.	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Acidification	mol H+ eq.	-5,65E-02	0,0E+00	0,0E+00	0,0E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,68E-02	1,64E-01	1,24E-01
Freshwater eutrophication	kg P eq.	-3,92E-02	6,53E-06	2,54E-02	5,4695E-05	6,58E-02	1,02E-02	1,92E+00	5,72E-06	1,69E-02	1,64E-01	2,16E+00
Marine aquatic eutrophication	kg N eq.	2,39E-05	5,47E-10	8,07E-10	6,1649E-09	2,11E-10	1,40E-07	1,43E-05	5,92E-10	1,79E-09	3,60E-10	3,84E-05
Terrestrial eutrophication	mol N eq.	9,46E-02	1,13E-03	3,25E-04	0,0010911	4,50E-05	9,16E-02	2,84E+00	8,72E-05	2,44E-04	1,04E-04	3,03E+00
Photochemical ozone formation	kg NMVOC eq.	8,51E-03	1,37E-06	2,02E-05	1,6898E-05	8,12E-07	8,39E-03	1,53E-01	1,85E-06	5,45E-05	8,74E-06	1,70E-01
Abiotic resource depletion - metals and minerals	kg Sb eq.	1,13E-02	2,81E-04	1,07E-04	0,00038436	4,47E-05	9,30E-03	5,15E-01	2,94E-05	6,02E-05	2,72E-04	5,37E-01
Abiotic resource depletion - fossils	MJ	1,23E-01	3,12E-03	7,34E-04	0,00418855	1,58E-04	1,07E-01	5,47E+00	3,19E-04	5,82E-04	3,94E-04	5,71E+00
Water requirement	m3 depriv.	4,30E-02	8,47E-04	2,61E-04	0,00159661	7,93E-05	4,05E-02	2,11E+00	1,32E-04	2,32E-04	1,20E-04	2,20E+00

The life cycle assessment is compliant with the specific rules applicable to Self-contained emergency electrical safety devices PSR-0014-ed2-EN-2023 07 13, available on the website www.pep-ecopassport.org



Table 2. Results of mandatory inventory indicators per F.U (1.000 lumens during a reference lifetime of 35,000 hours) of Luzerna Avant LX34B luminaire.

Stage	Unit	1. Manufacturing			2. Distribution	3. Installation	4. Use		5. End of life			Total
Impact category		A1	A2	A3	A4	A5	B2	B6	C2	C3	C4	
Use of renewable primary energy (excl. resources used as raw materials)	MJ	1,10E+01	3,66E-03	3,81E-02	5,71E-02	2,68E-03	8,15E+00	8,01E+03	6,29E-03	2,91E-01	1,14E+00	8,03E+03
Use of renewable primary energy resources (used as raw materials)	MJ	6,51E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,94E-01	-1,13E+00	-6,72E-01
Total use of renewable primary energy resources	MJ	1,17E+01	3,66E-03	3,81E-02	5,71E-02	2,68E-03	8,15E+00	8,01E+03	6,29E-03	9,72E-02	1,21E-02	8,03E+03
Use of non-renewable primary energy (excl. resources used as raw materials)	MJ	5,65E+01	2,08E-02	8,74E-01	2,76E-01	1,29E-02	3,89E+01	1,13E+04	3,03E-02	2,63E-01	5,53E-02	1,14E+04
Use of non-renewable primary energy resources (used as raw materials)	MJ	2,03E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,03E-02
Total use of non-renewable primary energy resources	MJ	5,65E+01	2,08E-02	8,74E-01	2,76E-01	1,29E-02	3,89E+01	1,13E+04	3,03E-02	2,63E-01	5,53E-02	1,14E+04
Use of secondary materials	kg	3,83E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,83E-02
Use of renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water	m3	6,94E-02	3,41E-05	2,67E-04	4,51E-04	-1,22E-04	4,76E-02	9,55E+00	4,78E-05	3,55E-04	-2,53E-04	9,67E+00
Hazardous waste	kg	1,05E-02	5,07E-06	7,21E-03	9,13E-05	4,22E-04	3,86E-02	7,93E-01	9,72E-06	6,94E-02	9,41E-02	1,01E+00
Non-hazardous waste	kg	3,52E-01	5,14E-04	2,87E-02	1,58E-01	5,24E-02	3,23E-01	7,98E+01	1,85E-02	1,87E-02	2,41E-01	8,10E+01
Radioactive waste	kg	1,93E-04	5,04E-08	9,40E-06	1,03E-06	4,73E-08	1,32E-04	1,43E-01	1,13E-07	1,19E-06	2,33E-07	1,44E-01

Table 3. Results of mandatory inventory indicators per F.U (1.000 lumens during a reference lifetime of 35,000 hours) of Luzerna Avant LX34B luminaire.

[illegible]



Table 4. Results of mandatory inventory indicators per D.U (1.000 lumens during a reference lifetime of 35,000 hours) of Luzerna Avant LX34B luminaire.

Stage	Unit	1. Manufacturing			2. Distribution	3. Installation	4. Use		5. End of life			Total
Impact category		A1	A2	A3	A4	A5	B2	B6	C2	C3	C4	
Climate change - total	kg CO2 eq.	6,99E+00	1,86E-02	1,85E-01	3,34E-01	7,60E-02	5,27E+00	6,20E+02	2,72E-02	1,98E-01	3,62E-01	6,34E+02
Climate change - fossil fuels	kg CO2 eq.	6,97E+00	1,86E-02	1,59E-01	3,33E-01	1,01E-02	5,25E+00	6,10E+02	2,72E-02	1,81E-01	1,98E-01	6,23E+02
Climate change - land use and land use transformation	kg CO2 eq.	1,25E-02	9,97E-06	4,08E-05	9,15E-05	3,67E-06	9,35E-03	8,10E+00	8,99E-06	8,81E-05	1,48E-05	8,12E+00
Climate change - biogenic	kg CO2eq.	1,29E-02	3,13E-06	2,54E-02	6,04E-05	6,58E-02	1,02E-02	1,92E+00	5,72E-06	5,28E-05	3,21E-05	2,03E+00
Ozone depletion	kg CFC-11 eq.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Acidification	mol H+ eq.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,68E-02	1,64E-01	1,81E-01
Freshwater eutrophication	kg P eq.	1,29E-02	3,13E-06	2,54E-02	6,04E-05	6,58E-02	1,02E-02	1,92E+00	5,72E-06	1,69E-02	1,64E-01	2,21E+00
Marine aquatic eutrophication	kg N eq.	1,37E-07	2,62E-10	8,07E-10	6,76E-09	2,11E-10	1,40E-07	1,43E-05	5,92E-10	1,79E-09	3,60E-10	1,46E-05
Terrestrial eutrophication	mol N eq.	9,32E-02	5,45E-04	3,25E-04	1,18E-03	4,50E-05	9,16E-02	2,84E+00	8,72E-05	2,44E-04	1,04E-04	3,03E+00
Photochemical ozone formation	kg NMVOC eq.	8,38E-03	6,57E-07	2,02E-05	1,88E-05	8,12E-07	8,39E-03	1,53E-01	1,85E-06	5,45E-05	8,74E-06	1,70E-01
Abiotic resource depletion - metals and minerals	kg Sb eq.	1,10E-02	1,36E-04	1,07E-04	4,14E-04	4,47E-05	9,30E-03	5,15E-01	2,94E-05	6,02E-05	2,72E-04	5,36E-01
Abiotic resource depletion - fossils	MJ	1,20E-01	1,51E-03	7,34E-04	4,51E-03	1,58E-04	1,07E-01	5,47E+00	3,19E-04	5,82E-04	3,94E-04	5,71E+00
Water requirement	m3 depriv.	4,20E-02	4,09E-04	2,61E-04	1,73E-03	7,93E-05	4,05E-02	2,11E+00	1,32E-04	2,32E-04	1,20E-04	2,20E+00



Table 5. Results of mandatory inventory indicators per D.U (1.000 lumens during a reference lifetime of 35,000 hours) of Luzerna Avant LX34B luminaire.

Stage	Unit	1. Manufacturing			2. Distribution	3. Installation	4. Use		5. End of life			Total
Impact category		A1	A2	A3	A4	A5	B2	B6	C2	C3	C4	
Use of renewable primary energy (excl. resources used as raw materials)	MJ	1,13E+01	1,74E-03	3,81E-02	6,34E-02	2,68E-03	8,15E+00	8,01E+03	6,29E-03	2,91E-01	1,14E+00	8,03E+03
Use of renewable primary energy resources (used as raw materials)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,94E-01	-1,13E+00	-1,32E+00
Total use of renewable primary energy resources	MJ	1,13E+01	1,74E-03	3,81E-02	6,34E-02	2,68E-03	8,15E+00	8,01E+03	6,29E-03	9,72E-02	1,21E-02	8,03E+03
Use of non-renewable primary energy (excl. resources used as raw materials)	MJ	5,46E+01	9,94E-03	8,74E-01	3,06E-01	1,29E-02	3,89E+01	1,13E+04	3,03E-02	2,63E-01	5,53E-02	1,14E+04
Use of non-renewable primary energy resources (used as raw materials)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy resources	MJ	5,46E+01	9,94E-03	8,74E-01	3,06E-01	1,29E-02	3,89E+01	1,13E+04	3,03E-02	2,63E-01	5,53E-02	1,14E+04
Use of secondary materials	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water	m3	6,59E-02	1,63E-05	2,67E-04	4,99E-04	-1,22E-04	4,76E-02	9,55E+00	4,78E-05	3,55E-04	-2,53E-04	9,67E+00
Hazardous waste	kg	7,54E-03	2,42E-06	7,21E-03	1,01E-04	4,22E-04	3,86E-02	7,93E-01	9,72E-06	6,94E-02	9,41E-02	1,01E+00
Non-hazardous waste	kg	3,31E-01	1,76E-04	2,87E-02	1,76E-01	5,24E-02	3,23E-01	7,98E+01	1,85E-02	1,87E-02	2,41E-01	8,10E+01
Radioactive waste	kg	1,87E-04	2,39E-08	9,40E-06	1,14E-06	4,73E-08	1,32E-04	1,43E-01	1,13E-07	1,19E-06	2,33E-07	1,44E-01

Table 6. Results of mandatory inventory indicators per D.U (1.000 lumens during a reference lifetime of 35,000 hours) of Luzerna Avant LX34B luminaire.

[illegible]



5. EXTRAPOLATION RULES

The extrapolation rules followed are based on the specifications of the PCR-ed4-EN-2021 09 06 and the Product Specific Rules (PSR-0014-ed2.0-EN-2023 07 13).

LUZERNA AVANT LX34B was selected as the representative product due to the market share of LUZERNA AVANT. It is the highest-selling product within the LUZERNA AVANT family, accounting for 51,8% of the total sales in this product line during the period considered.

The different products within the LUZERNA AVANT family differ in terms of power and lumens. Other product parameters that vary among the various products of the family are weight of parts, product mass and energy consumption. A sensitivity analysis was carried out to assess the potential variability of the most influential parameters: product mass and energy consumption. Additionally, extrapolation coefficients were calculated and evaluated. In cases where multiple coefficients were available for a given stage, the most representative one was selected. For example, in the use stage, the extrapolation rule applicable to the electricity consumption was chosen.

The rules defined shall be applied using the Extrapolation rules file provided as annex (ANNEX I. Extrapolation coefficients.xlsx). Please refer to the table below for the data on reference product 'LUZERNA AVANT LX34B, needed to calculate the coefficients.

Table 12. Parameters of the reference product.

Parameter	Unit	Value for reference product LUZERNA AVANT LX34B
Power	W	32
Lumen	lm	5140
Luminaire structure weight	kg	1,338
Power supply equipment weight	kg	0,077
Lighting source weight	kg	0,012
Packaging weight	kg	0,45
Product weight (no packaging)	kg	1,42
Product weight (including packaging)	kg	1,87

**The lumens and power are considered in the LCA to establish the total energy consumption and calculate the results at FU level.*



The calculation of extrapolation coefficients at the functional unit level shall be performed using the following formula:

$$\text{Extrapolation coefficient at the product level} \times \frac{\text{Lighting output of reference product (lm)}}{\text{Lighting output of concerned product (lm)}}$$