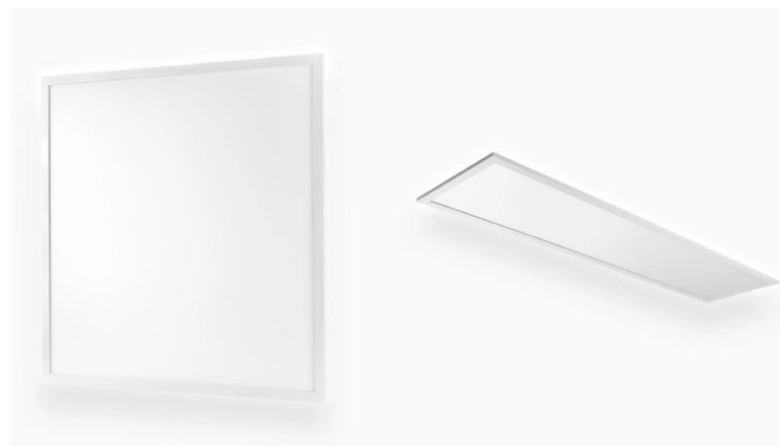




ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Skyled Prisma G2 LED panel
Inwave ApS



EPD HUB, HUB-7628

Published on 24.09.2026, last updated on 24.09.2026, valid until 23.09.2031

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.



Created with One Click LCA



GENERAL INFORMATION

MANUFACTURER

Manufacturer	Inwave ApS
Address	Smedemestervej 7, 5600 Faaborg, Danmark
Contact details	info@inwave.dk
Website	www.inwave.dk

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 50693:2019 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025, EN 50693
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	Eg Groa, Inwave ApS
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Elena Antuña-Bernardo as an authorized verifier for EPD Hub

This EPD is intended for business-to-business communication. 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	Skyled Prisma G2 LED panel
Additional labels	Skyled Prolux G2 LED panel
Product reference	164030 - 164035 - 164050 - 164055 - 164040 - 164045 - 164060 - 164065 - 164010 - 164015 - 164020 - 164025
Place(s) of raw material origin	China
Place of production	Yangshe Town, Zhangjiagang City, Jiangsu Province, PRC (China)
Place(s) of installation and use	Denmark
Period for data	08/2024 - 08/2025
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	"-"
GTIN (Global Trade Item Number)	5711516031758 - 5711516031741 - 5711516035589 - 5711516035596 - 5711516035688 - 5711516035572 - 5711516035602 - 5711516035619 - 5711516031796 - 5711516031789 - 5711516031772 - 5711516031765
NOBB (Norwegian Building Product Database)	(coming soon)
A1-A3 Specific data (%)	6,38

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit of LED panel with driver
Declared unit mass	2,75 kg
Mass of packaging	1,641 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	26,6
GWP-total, A1-A3 (kgCO ₂ e)	25,7
Secondary material, inputs (%)	14,1
Total energy use, A1-A3 (kWh)	93,1
Net freshwater use, A1-A3 (m ³)	0,22

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Inwave is a dynamic company with over 20 years of experience in the design, development and sale of energy-saving quality LED lighting and intelligent lighting control systems - primarily for the professional project market. We work with leading consultants and installers on all types of lighting projects in both the public and private sector. It is our clear opinion that Scandinavian design tradition, good economy and climate-friendly choices are not opposites – on the contrary. Based on this approach, it is always our goal to create functional, character-building and not least energy-saving lighting with easy installation, a very long service life and a high degree of replaceable parts. Many of our products are stocked with the option of day-to-day delivery and are of course followed by a first-class service from start to finish.

We offer quality lighting for industry, the marine sector, outdoor lighting for roads and squares, and indoor lighting for offices, the education sector, etc. We deliver and advise on intelligent lighting control systems such as Koolmesh®, Casambi® and Tunable White solutions.

We do lighting design and calculations in Dialux® for projects, and we have ELE-certified lighting designers (European Lighting Expert).

Our products are being manufactured mainly in the PRC and some within the EU. All manufacturing sites comply with local legislation, workers' rights and do not use forced or child labour.

Our products are built from maintenance-free quality components with high efficiency and very good lighting properties – all developed with a focus on reducing life cycle costs and improving reliability/service life. This means not only a sound economy for your project and great visual user experience, but also a strong climate and environmental profile with great savings potential on the consumption of energy as well as natural resources. This benefits both economy and carbon impact.

PRODUCT DESCRIPTION

The Skyled Prisma G2/Prolux G2 LED panel is an efficient and energy-saving LED panel with micro prismatic or opal diffuser (depending on variant). This ensures a soft and even light distribution, low glare and high efficiency.

This EPD covers 2 versions and 2 sizes of the LED panel:

- Skyled Prisma G2 with micro-prismatic diffuser in sizes:

595*595*10mm and 295*1195*10mm

- Skyled Prolux G2 with opal diffuser in sizes:

595*595*10mm and 295*1195*10mm

The number of raw materials, ancillary materials, energy use etc. used for the different versions of the LED panel are the same and there is no noticeable difference in weight for the two sizes.

The LED panel and driver are manufactured in the PRC and transported to Denmark where it is sold to Danish customers and installed in buildings in Denmark.

Product benefits:

- Suitable for DALI-2 and Bluetooth based mesh Light Management Systems
- Tool-free electrical connection due to push button loop-in – loop-out terminal and DC quick connectors
- Energy savings thanks to high system efficacy: up to 143 Lm/W
- Available micro prismatic diffuser ensuring glare reduction (UGR < 19)
- High colour consistency with SDCM 3
- Extended services such as energy monitoring and remote maintenance possible with DALI and Bluetooth Mesh control
- External driver for extended flexibility and easy installation
- Flicker free light thanks to quality electronic control gear
- Extremely long service life of 100.000 hours.
- The LED driver is replaceable. However, a potential replacement of the driver after 100.000 hours service life is not taken into account in the LCA as the service life of the LED panel itself is 100.000 hours. Therefore, the driver shouldn't need replacement during the service life of the LED panel.

Areas of application:

- Suitable for offices, conference rooms, classrooms, reception areas, foyers and corridors
- Suitable for recessed ceiling systems with grid size of 600 x 600 mm and 1200 x 300 mm (depending on product variation)

Product features:

- IoT-ready luminaire with DALI-2 technology
- Extruded aluminium frame
- PMMA LGP (light guiding plate)
- Polystyrene diffuser

Equipment / Accessories:

- Accessories for several mounting options available.

Type of luminaire: LED Panel

Operating mode: External LED driver

Lamp type: Integrated LED not exchangeable

Colour temperature: 3000K/4000K

Nominal wattage: 14 - 36 W

Luminous flux: Up to 4295/4565 Lm

Colour rendering index: CRI80/90

Nominal lifetime: (L80/B20) 100.000 hours

Electrical class: II

Nominal voltage: 220-240 V AC

IK rating: IK07

IP rating: IP40

Length/Width/Height: 595*595*10 mm / 295*1195*10 mm

Further information can be found at:

www.inwave.dk

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	31,25	Asia
Minerals	0,03	Asia
Fossil materials	31,48	Asia
Bio-based materials	37,239	Asia

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	0,48

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 unit of LED panel with driver
Mass per declared unit	2,75 kg
Functional unit	The lifetime energy consumption for one LED panel is based on the following data: In a worst-case scenario with no daylight lighting control the LED panel will consume 36W for 2500 hours a year for 40 years (100.000 hours guaranteed service life of product/2500 hours usage a year = 40 years theoretical service life of the product). This gives a total lifetime energy consumption of: $36W \cdot 2500H = 90kWh$ a year * 40 years = 3600kWh used during the products estimated 40-year service life of the product. Based on the assigned lifetime according EN 15193-1:2017 for indoor industry application and a maximum annual operating hours of 2500 hours, the LED panel and driver has the following reference service life:
Reference service life	40 years

SUBSTANCES, REACH - VERY HIGH CONCERN

Substances of very high concern	EC	CAS
Not applicable		
Not applicable		
Not applicable		
Not applicable		

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	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	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Not declared = ND

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.

A market-based approach is used in modelling the electricity mix utilized in the factory.

The environmental impacts considered for the manufacturing and packaging (A1-A3) stage cover the manufacturing of raw materials used in the production and the production of the finished product. The material losses occurring during the manufacturing processes are treated as per the waste handling practices in the factory, where material losses are sent for recycling locally. The study also considers the electricity and water used during the manufacturing process of the LED panel and driver. The product is made of metals, plastics, and electronic components, including driver. All components are transported to the production facility, where the main manufacturing processes are associated with assembly of different parts and components. The product is packaged with EPE foam supports in cardboard boxes. The study also considers the environmental impact of the transport of the finished LED panel and driver from the factory in China to the Inwave Warehouse in Denmark.

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. Transportation distances from the Inwave warehouse to customer locations vary a lot. A "worst case scenario i.e. longest possible distance has been used as no valid data can be obtained regarding the percentage of the typical transportation distances. In the absence of exact data, conservative assumptions are made (A4). Environmental impacts from installation include waste packaging materials (A5).

Regarding "capacity utilization" the carriers always uses full capacity – i.e. the lorry is loaded when it leaves their logistics center and collects goods from customers locally (like Inwave) on the way back securing that the lorry is full when it departs from the local area/town (Faaborg in our case) The

capacity utilization has therefore been set to 95% to take the rare occasion into account when the lorry cannot be fully loaded on the return journey to the logistics center/end customer.

The impacts of energy consumption and the used ancillary materials during installation are considered negligible as the LED panel and driver is installed by hand.

PRODUCT USE AND MAINTENANCE (B1-B7)

Only operational energy use - B6 is considered relevant. The product consumes electricity during use phase and the scenario in this study is based on the Ecoinvent 3.11 datapoint "Market for electricity, low voltage (Reference product: electricity, low voltage) for Denmark"(B6). No energy savings due to lighting control systems (e.g. daylight harvest and motion sensors) are included in the scenario. The reference service lifetime is 100 000 hours. Impacts due to electricity production include direct emissions to air, transformation, and transmission losses.

PRODUCT END OF LIFE (C1-C4, D)

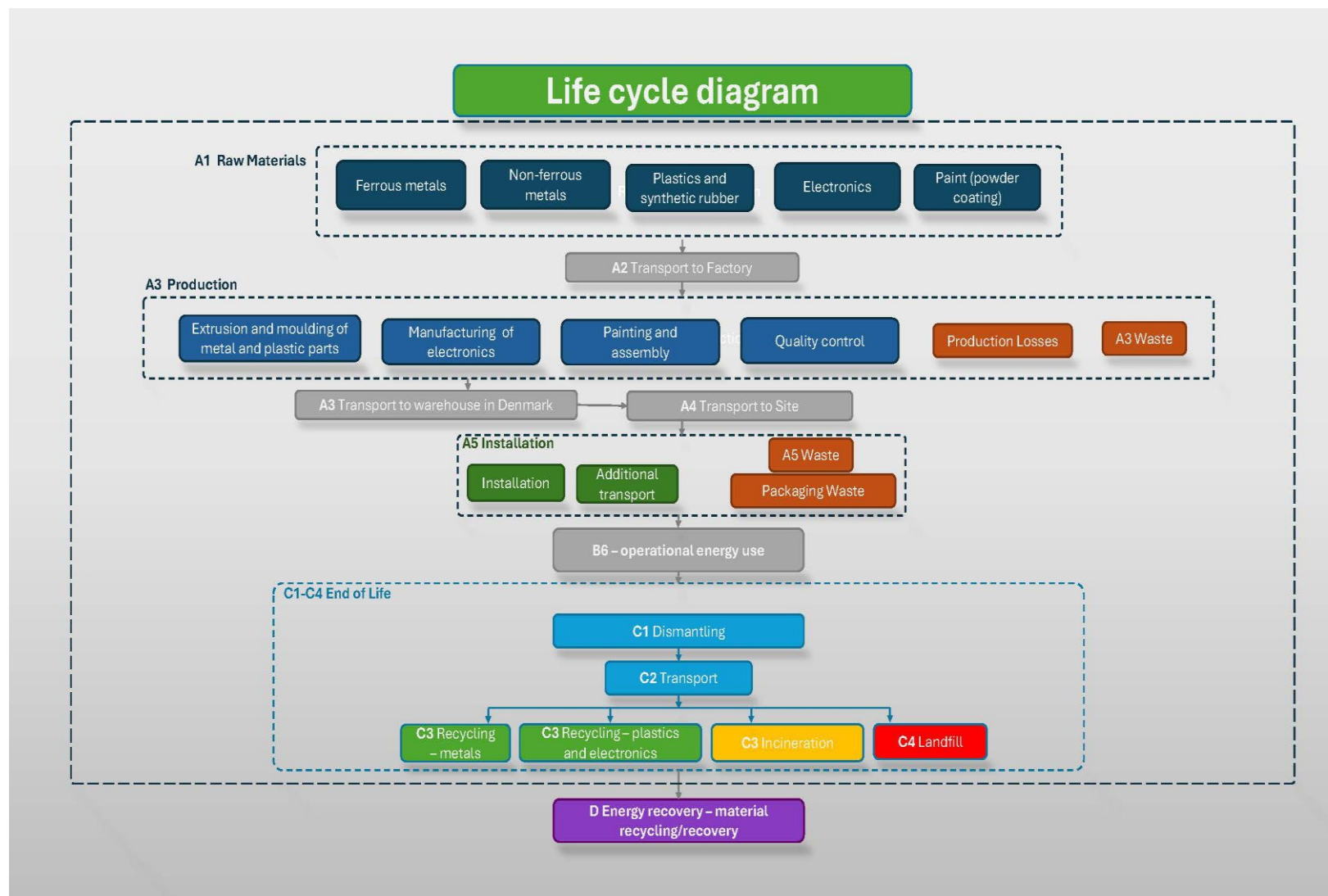
Consumption of energy and natural resources in demolition process (C1) is assumed to be negligible as the product is a LED panel with LED driver that is simply removed from the installation by hand. No special tools or electrical power required.

It is assumed that the waste is collected separately and transported to the waste treatment center. Transportation distance to treatment is assumed as 50 km and 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 are used for treating materials in different waste treatment methods.

The handling of the electronic waste is handled by Elretur in Denmark. 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. 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 cardboard box and plastic (EPD foam) packaging used during transportation is also incinerated for energy recovery and/or recycled. The benefits and loads of incineration and recycling are included in the used Pre-Made Groups Module D.

LIFE CYCLE FLOW DIAGRAM



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.

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.

All industrial processes from raw material acquisition and pre-processing, production, product distribution, installation, use/application of product and end-of-life management are included. For easier modelling and because of lack of accuracy in available modelling resources some constituents under 0,1% of product mass are excluded. These include some additives and fasteners which are present in the product only in very small amounts and have no serious impact on the emissions. Further, water used for cleaning and maintenance of the equipment, transportation and waste streams of the packaging materials used for delivering the raw materials to the factory are omitted since the quantified mass contribution is less than 0.1%. The production of capital equipment, construction activities, and infrastructure, 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

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 material	No allocation
Ancillary materials	Physical Properties
Manufacturing energy and waste	Physical Properties

This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs. Allocation used in Ecoinvent 3.6 environmental data sources follow the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of the EN 15804-standard.

All estimations and assumptions regarding the cut off criteria and the Skyled Prisma G2/Prolux G2 LED panel

allocation are declared in the part “Cut-off Criteria except the estimations/assumptions below:

- Module A2, A4 & C2: Vehicle capacity utilization volume factor is assumed to be 1 which means full load. It may vary but as the role of transportation emission in total results is small, the variety in load is assumed to be negligible. Empty returns are not considered as it is assumed that return trip is used by transportation companies to serve the needs of other clients.
- Module A4: Transportation does not cause losses as products are packaged properly. Also, volume capacity utilization factor is assumed to be 1 for the nested packaged products. Additionally, transportation distances are based on a sales volume-based weighted average and a lorry is the assumed vehicle type used.
- Module C2: Transportation distance to e-waste handling facility is estimated as 50 km and the transportation method is assumed as lorry.
- Module C3, C4, D: The product undergoes dismantling, and the parts are sorted into metals, plastics, paint and electronics. The waste treatment percentages based on EN 50693 are assumed to be applicable. Module C3 accounts for energy and resource inputs for sorting and treating these waste streams for recycling and incineration with energy recovery. Ash from recycling processes is negligible. The recycled end-of-life materials are assumed to serve as secondary raw materials in manufacturing, while incinerated materials displace the need for electricity and heat production.

PRODUCT & MANUFACTURING SITES GROUPING

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

"_"

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD Process Certification v3.2.5. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11/3.12 and One Click LCA databases 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’.

- EPD Hub Core Product Category Rules version 1.2, March 2025
- EPD Hub General Program Instructions version 1.3, March 2025
- EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
- EN 50693:2020 Product category rules for life cycle assessments of electronic and electrical products and systems
- EN 15941:2024 Sustainability of construction works - Data quality for environmental assessment of products and construction work - Selection and use of data
- EN 15942:2011 Sustainability of construction works - Environmental product declarations - Communication format business-to-business
- ISO 14025:2006 Environmental statements and programmes for products - Principles and general requirements
- ISO 14040:2006 Environmental management - Life cycle assessment - Principles and framework
- ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines
- Paper and cardboard packaging waste treatment: EUROSTAT, https://ec.europa.eu/eurostat/databrowser/view/env_waspac__custom_8519259/default/table?lang=en
- Plastic packaging waste treatment: EUROSTAT, https://ec.europa.eu/eurostat/databrowser/view/env_waspac__custom_8519242/default/table?lang=en

ENVIRONMENTAL IMPACT DATA

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 e	2,32E+01	1,46E-01	2,34E+00	2,57E+01	1,84E-01	1,08E+00	ND	ND	ND	ND	ND	6,97E+02	ND	0,00E+00	8,62E-02	2,15E+00	0,00E+00	-8,08E+00
GWP – fossil	kg CO ₂ e	2,31E+01	1,46E-01	3,33E+00	2,66E+01	1,84E-01	3,67E-02	ND	ND	ND	ND	ND	6,61E+02	ND	0,00E+00	8,61E-02	2,15E+00	0,00E+00	-7,98E+00
GWP – biogenic	kg CO ₂ e	4,96E-02	3,87E-05	-1,04E+00	-9,95E-01	3,88E-05	1,05E+00	ND	ND	ND	ND	ND	3,34E+01	ND	0,00E+00	1,88E-05	-2,48E-04	0,00E+00	-3,80E-02
GWP – LULUC	kg CO ₂ e	5,74E-02	6,57E-05	5,40E-02	1,11E-01	6,93E-05	3,27E-05	ND	ND	ND	ND	ND	2,60E+00	ND	0,00E+00	3,81E-05	5,88E-05	0,00E+00	-6,13E-02
Ozone depletion pot.	kg CFC-11e	2,97E-06	2,06E-09	5,87E-08	3,03E-06	3,71E-09	1,70E-10	ND	ND	ND	ND	ND	1,53E-05	ND	0,00E+00	1,20E-09	1,31E-09	0,00E+00	-3,24E-08
Acidification potential	mol H ⁺ e	2,52E-01	9,81E-04	4,05E-02	2,94E-01	5,95E-04	1,82E-04	ND	ND	ND	ND	ND	4,12E+00	ND	0,00E+00	2,87E-04	8,51E-04	0,00E+00	-4,07E-02
EP-freshwater ²⁾	kg Pe	7,86E-03	2,57E-05	1,13E-03	9,02E-03	1,24E-05	1,07E-05	ND	ND	ND	ND	ND	5,86E-01	ND	0,00E+00	6,70E-06	2,35E-05	0,00E+00	-6,60E-03
EP-marine	kg Ne	2,64E-02	3,69E-04	1,16E-02	3,84E-02	2,02E-04	8,70E-05	ND	ND	ND	ND	ND	8,17E-01	ND	0,00E+00	9,30E-05	1,34E-03	0,00E+00	-7,03E-03
EP-terrestrial	mol Ne	7,42E-01	4,02E-03	1,12E-01	8,58E-01	2,20E-03	4,81E-04	ND	ND	ND	ND	ND	9,89E+00	ND	0,00E+00	1,01E-03	3,33E-03	0,00E+00	-8,00E-02
POCP (“smog”) ³⁾	kg NMVOce	8,48E-02	1,25E-03	3,15E-02	1,17E-01	9,70E-04	1,54E-04	ND	ND	ND	ND	ND	2,27E+00	ND	0,00E+00	4,00E-04	9,02E-04	0,00E+00	-2,72E-02
ADP-minerals & metals ⁴⁾	kg Sbe	1,72E+00	3,79E-07	1,00E-05	1,72E+00	5,09E-07	3,78E-07	ND	ND	ND	ND	ND	1,79E-02	ND	0,00E+00	2,83E-07	1,90E-06	0,00E+00	-1,04E-04
ADP-fossil resources	MJ	2,90E+02	2,03E+00	4,33E+01	3,35E+02	2,67E+00	2,92E-01	ND	ND	ND	ND	ND	1,04E+04	ND	0,00E+00	1,21E+00	9,49E-01	0,00E+00	-1,34E+02
Water use ⁵⁾	m ³ e depr.	9,20E+00	1,19E-02	8,28E-01	1,00E+01	1,37E-02	6,75E-03	ND	ND	ND	ND	ND	9,19E+02	ND	0,00E+00	5,60E-03	1,44E-01	0,00E+00	-7,56E+00

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	2,35E-06	1,73E-08	2,63E-07	2,63E-06	1,84E-08	1,12E-08	ND	ND	ND	ND	ND	2,74E-05	ND	0,00E+00	6,83E-09	8,19E-09	0,00E+00	-5,31E-07
Ionizing radiation ⁶⁾	kBq 11235e	1,48E+00	1,96E-03	1,58E-01	1,64E+00	3,22E-03	1,49E-03	ND	ND	ND	ND	ND	2,22E+02	ND	0,00E+00	9,78E-04	2,25E-03	0,00E+00	-5,53E-01
Ecotoxicity (freshwater)	CTUe	3,12E+02	5,61E-01	1,89E+02	5,02E+02	3,15E-01	3,76E-01	ND	ND	ND	ND	ND	3,93E+04	ND	0,00E+00	1,91E-01	2,53E+01	0,00E+00	-7,11E+01
Human toxicity, cancer	CTUh	1,16E-08	2,12E-11	1,48E-09	1,31E-08	3,04E-11	7,30E-11	ND	ND	ND	ND	ND	3,36E-07	ND	0,00E+00	1,46E-11	2,07E-10	0,00E+00	-4,90E-09
Human tox. non-cancer	CTUh	3,43E-07	1,13E-09	3,68E-08	3,81E-07	1,74E-09	2,86E-09	ND	ND	ND	ND	ND	1,85E-05	ND	0,00E+00	7,56E-10	9,16E-09	0,00E+00	1,76E-08
SQP ⁷⁾	-	5,64E+01	2,21E+00	1,23E+02	1,82E+02	2,69E+00	2,17E-01	ND	ND	ND	ND	ND	1,88E+04	ND	0,00E+00	7,21E-01	1,18E+00	0,00E+00	-8,68E+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	3,22E+01	3,10E-02	1,61E+00	3,38E+01	4,35E-02	-2,60E+01	ND	ND	ND	ND	ND	1,39E+04	ND	0,00E+00	1,66E-02	7,44E-02	0,00E+00	-1,76E+01
Renew. PER as material	MJ	0,00E+00	0,00E+00	2,08E+01	2,08E+01	0,00E+00	-2,08E+01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,73E-01
Total use of renew. PER	MJ	3,22E+01	3,10E-02	2,24E+01	5,46E+01	4,35E-02	-4,68E+01	ND	ND	ND	ND	ND	1,39E+04	ND	0,00E+00	1,66E-02	7,44E-02	0,00E+00	-1,74E+01
Non-re. PER as energy	MJ	2,56E+02	2,03E+00	4,28E+01	3,01E+02	2,67E+00	-4,76E-02	ND	ND	ND	ND	ND	1,04E+04	ND	0,00E+00	1,21E+00	-4,77E+01	0,00E+00	-1,39E+02
Non-re. PER as material	MJ	3,43E+01	0,00E+00	5,07E-01	3,48E+01	0,00E+00	-5,09E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	-3,43E+01	0,00E+00	4,60E+01
Total use of non-re. PER	MJ	2,91E+02	2,03E+00	4,33E+01	3,36E+02	2,67E+00	-5,56E-01	ND	ND	ND	ND	ND	1,04E+04	ND	0,00E+00	1,21E+00	-8,20E+01	0,00E+00	-9,34E+01
Secondary materials	kg	3,86E-01	7,80E-04	1,24E+00	1,63E+00	1,16E-03	8,89E-04	ND	ND	ND	ND	ND	5,07E+00	ND	0,00E+00	5,43E-04	8,39E-04	0,00E+00	1,96E+00
Renew. secondary fuels	MJ	6,17E-02	8,68E-06	1,79E-01	2,41E-01	1,46E-05	3,73E-06	ND	ND	ND	ND	ND	3,82E-02	ND	0,00E+00	6,91E-06	3,15E-05	0,00E+00	-1,32E-04
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	2,04E-01	4,01E-04	1,78E-02	2,22E-01	3,94E-04	1,62E-04	ND	ND	ND	ND	ND	2,10E+01	ND	0,00E+00	1,60E-04	3,66E-04	0,00E+00	-1,96E-01

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	2,23E+00	6,51E-03	1,90E-01	2,42E+00	3,87E-03	4,29E-03	ND	ND	ND	ND	ND	4,31E+01	ND	0,00E+00	2,11E-03	3,91E-02	0,00E+00	-1,29E+00
Non-hazardous waste	kg	4,00E+01	1,35E-01	8,80E+00	4,90E+01	7,74E-02	9,46E-02	ND	ND	ND	ND	ND	2,89E+03	ND	0,00E+00	3,95E-02	3,98E+00	0,00E+00	8,86E+00
Radioactive waste	kg	3,08E-04	4,79E-07	3,77E-05	3,46E-04	7,97E-07	3,63E-07	ND	ND	ND	ND	ND	5,07E-02	ND	0,00E+00	2,40E-07	5,60E-07	0,00E+00	-1,48E-04

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	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	1,17E-02	1,17E-02	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	1,08E+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	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	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	6,76E+00	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	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	2,84E+00	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	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	3,92E+00	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 e	2,30E+01	1,45E-01	3,56E+00	2,67E+01	1,83E-01	8,07E-02	ND	0,00E+00	ND	0,00E+00	ND	6,62E+02	ND	0,00E+00	8,57E-02	2,15E+00	0,00E+00	-7,97E+00
Ozone depletion Pot.	kg CFC ₁₁ e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acidification	kg SO ₂ e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Eutrophication	kg PO ₄ ³ e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
POCP (“smog”)	kg C ₂ H ₄ e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ADP-elements	kg Sbe	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADP-fossil	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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 ₂ e	2,32E+01	1,46E-01	3,39E+00	2,67E+01	1,84E-01	3,67E-02	ND	ND	ND	ND	ND	6,64E+02	ND	0,00E+00	8,62E-02	2,15E+00	0,00E+00	-8,04E+00

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 characterisation factor for biogenic CO₂ is set to zero



SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

1. Market for electricity, low voltage, eastChinaGrid, Ecoinvent, 0.88 kgCO₂e/kWh

Transport scenario documentation - A4 (Transport resources)

1. Transport, freight, lorry >32 metric ton, EURO5, 392.0 km

Transport to the building site (A4) - Scenario documentation

Scenario parameter	Value
Capacity utilization (including empty return) %	95
Bulk density of transported products	375
Volume capacity utilization factor	1

Installation at the building site (A5) - Scenario documentation

Scenario parameter	Value
Energy: type and consumption (MJ or kWh)	No energy is needed for the installation of the product as it is considered to be done manually.
Water use (m ³)	No water is needed for the installation of the product.
Ancillary materials: type and mass (kg)	No ancillary materials are needed for the installation of the product.
Waste materials: type and mass (kg)	Waste packaging materials: Panel and driver cardboard boxes: 1.63 kg recyclable cardboard. Panel EPE foam edge protectors: 0.008 kg recyclable EPE foam
Waste materials: output routes	Waste cardboard: 100% sent for recycling. The datapoint used does not specify the actual percentage of material recycled at the recycling facility. Waste EPE foam: 100% sent for recycling. The datapoint used does not specify the actual percentage of material recycled at the recycling facility.

Direct emissions (kg)	No direct emissions are expected to occur during the installation process. Emissions from energy use, ancillary materials and their processing are considered in the respective datasets used in the modelling.
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Use stages scenario documentation – B6 operational energy use

Scenario parameter	Value
Activity type, Energy use (kWh)	During the estimated theoretical service life of the LED panel (40 years) the total energy consumption would amount to 3600kWh if no energy saving lighting control systems were used.

End of life (C1-C4) - Scenario documentation

Scenario information	Value
Collection process: collected separately (kg)	The entire product (LED panel and driver) is assumed collected separately as electronic waste and handled within the "Elretur" scheme.
Collection process: Mixed waste (kg)	"-"
Recovery: re-use (kg)	0
Recovery: recycling (kg)	2,43
Recovery: energy recovery (kg)	0
Disposal (kg)	0
Scenario assumptions e.g. transportation (mode, km) & other	It is assumed that the waste is collected separately and transported to the waste treatment center. The assumed environmental load of the transport and energy use associated with the recycling/waste disposal process is included in the used Pre-Made Groups Module C2-C4 and D. Otherwise an assumed standard transport ranging from 50 km by lorry is used.

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.

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: Magaly Gonzalez Vazquez

Tool verification validity: 27 March 2025 - 26 March 2028

Elena Antuña-Bernardo as an authorized verifier for EPD Hub Limited
24.09.2026

