DELTALIGHT

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

EPD HUB, HUB-4596
Published on 05.12.2025, last updated on 05.12.2025, valid until 05.12.2030

19920 XXX0
SPYCO 70
Delta Light nv

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	Delta Light nv
Address	Muizelstraat 2, 8560 Wevelgem, Belgium
Contact details	sustainability@deltalight.com
Website	www.deltalight.com
Place of production	Aufung Lighting Company Limited, No.78, Ganjiao Industrial Zone, Lishui Xixian Road, Nanhai, FOSHAN, China
Place(s) of raw material origin	Asia
Place(s) of installation and use	Worldwide
Period for data	FY2024

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 c-PCR EN 50693 for electronic and electrical products and systems
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	Iris Heus
EPD verification	Independent verification of this EPD and data, according to ISO 14025: External verification
EPD verifier	Imane Uald Lamkaddam as an authorized verifier for EPD Hub

PRODUCT SPECIFICATION

Product name	SPYCO 70
Product number / reference	19920 XXX0
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	12,6

PRODUCT CLASSIFICATION

Declared operating voltage, Volt	220-240V
Light source color temperature, Kelvin	3000/4000K
Protection index for water and dust (IP)	IP20
Impact resistance index (IK)	-
Luminous flux, Lumen	1849
Electrical power, Watt	19,8
Luminous efficiency, Lm/W	93

PRODUCT DESCRIPTION

The Spyco family is a range of spot luminaires, applicable in multiple lighting installations. The Spyco 70 / 90 3-phase track spotlight version is available up to 3500lm and comes with non-dimmable and DALI dimmable versions. Utilizing advanced lenses ensures accurate and refined lighting, with the larger model offering up to three distinct optics for enhanced control and customization of illumination. The optional honeycomb filter can be added for improved visual comfort.
Specifications about the representative product: Class II, IP20, mains voltage track luminaire. A power supply is included 500mA-DC (max: 450 mA with honeycomb). The track adapter has a length of 176 mm. The head has a diameter of 70 mm and a length of 150 mm. The luminaire can be adjusted 0° to 90° swiveling and is 350° rotatable. The main materials used are aluminium for the body and hinge, steel for the back cover, polycarbonate for the anti-glare baffle, PMMA for the lens and stainless steel for the connection parts.

ABOUT THE MANUFACTURER

Belgian and family-run since 1989, Delta Light provides premium lighting solutions for architecture. Quality products, designed for comfort and developed to last, that stand for simplicity and consistency but also show unexpected detail, from a visible screw to an ingenious touch. Because in everything Delta Light does, at project start or follow-up, we always seek to add a little extra care — and work with our partners, to guarantee we can bring their visions to completion.

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit
Declared unit mass, kg	0,54
Mass of packaging, kg	0,297
Functional unit	1849 lumen during a reference lifetime of 50 000 hours
Reference service life (years)	17
Assigned lifetime (hours)	50000
GWP-total, A1-A3 (kg CO_2e)	10,7
GWP-fossil, A1-A3 (kg CO_2e)	11
Secondary material, inputs (%)	13
Secondary material, outputs (%)	55,6
Total energy use, A1-A3 (kWh)	36,6
Net freshwater use, A1-A3 (m^3)	4,78E-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

Modules 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, %	-

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	65,98	Asia
Minerals	0	
Fossil materials	10,20	Asia
Bio-based materials	0	
Electronic parts	23,82	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	0,117

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

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

PRODUCT LIFE CYCLE

MANUFACTURING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production. The material losses occurring during the manufacturing processes are treated as per the waste handling practices in the factory, while scenario assumptions are made in the absence of exact data. The study also considers the fuels used by machines as well as losses during electricity transmission.

The product is made of metals, plastics, and electronic components. The component manufacturing happens outside of Delta Light with subcontractors (aluminium production, moulding, pcb production,...) and are then transported to Delta Light N.V. where they are assembled together. The finished product is packaged in packaging cardboard before being sent to the installation site. Energy sources are natural gas, water and electricity. Electricity is supplied to the factory through a combination of on-site photovoltaic generation and purchased grid power. A market-based approach is applied to model the purchased electricity grid mix, which is fully sourced from renewable energy. The use of green electricity is demonstrated through contractual instruments (GOs, RECs, etc), and its use is ensured throughout the validity period of this EPD.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation distances from manufacturing sites to customer locations are based on sales volume-based weighted averages and defined according to the PCR. Average distance of transportation from production plant to building site is assumed as average 1340km, 592km, 179km for respectively boat, road and air transport. Vehicle capacity utilization volume factor is assumed to be 100% which means full load. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients. Transportation does not cause losses as products are packaged properly. Also, volume capacity utilization factor is assumed to be 100% for the nested packaged products. Transportation impacts that occur from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions. Environmental impacts from installation into the building include waste packaging materials (A5) and release of biogenic carbon dioxide from wood pallets and cardboard. The impacts of energy consumption and the used ancillary materials during installation are considered negligible. EoL of the packaging references: Eurostat & PSR-0014 v2 (2023) for paperboard recycling (82%)/incineration (9%)/landfill (9%). Transportation distance to e-waste handling facility is estimated as 150 km and the transportation method is assumed as lorry.

PRODUCT USE AND MAINTENANCE (B1-B7)

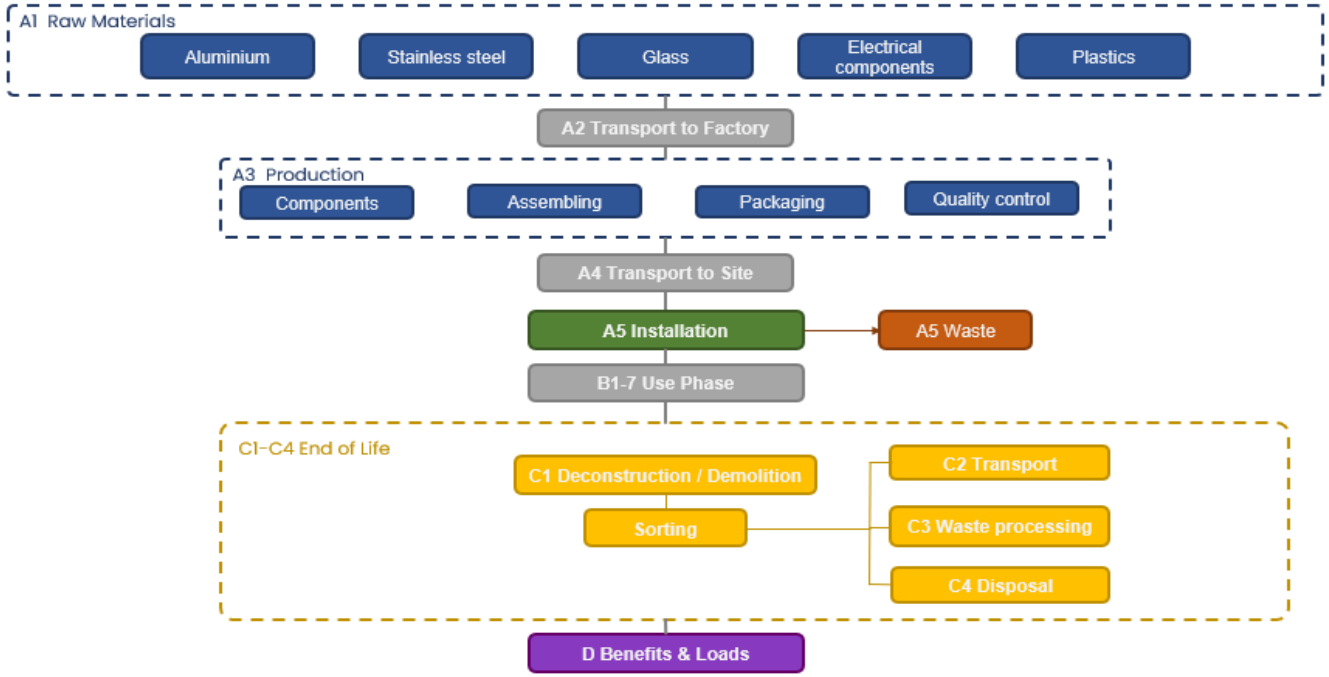
During the use phase (B6), the product emits light and consumes electricity from regional (EU, North America, Asia and rest of the world) electricity grid mix (location-based approach where emissions are based on the average grid emission factors of the region where the electricity is consumed). The percentage of electricity consumed in each region is based on the company's sales distribution across those regions.
The reference service life is based on the LM80 report of the LED which is 50 000 hours. When the luminaire is operated 8 hours a day, this will result in an RSL of approximately 17 years. The product is assumed to undergo replacement of selected components in intervals of time (17 years when the luminaire is operated for 8 hours a day) based on the lifespan of parts and components. This is to ensure that the product is fully functional throughout its lifetime. This is why B1-B5 is excluded. B7 is not applicable.
Impacts due to electricity production include direct emissions to air, transformation and transmission losses. No direct air, soil, or water impacts are assumed during the use phase and no waste is generated. The luminaires only require electricity during the use phase, so no water is consumed.
This EPD complies with the additional requirements for products using energy in module B6 of the use stage and permanently installed in buildings or infrastructure, according to EN 15804+A2, ECO Platform Standards, and the applicable PCRs.

PRODUCT END OF LIFE (C1-C4, D)

Consumption of energy and natural resources in demolition process is assumed to be negligible. It is assumed that the waste is collected separately and transported to the waste treatment centre. The transport distance is 150 km while the transportation method is assumed to be lorry (C2). According to EN 50693:2019, the sequence of treatment operations occurring to the product shall include de-pollution, fractions separation and preparation (dismantling, crushing, shredding, sorting), recycling, other material recovery, energy recovery and disposal. In this study, the default values from table G.4 of EN 50693 is used for treating materials in different waste treatment methods. Due to the material and energy recovery potential of parts in the lighting system, the end-of-life product is converted into recycled raw materials, while the energy recovered from incineration displaces electricity and heat production (D). The benefits and

loads of incineration and recycling are included in Module D. For aluminium 70% recovery rate and 30% disposal rate. For Plastics 50% energy recovery rate and 50% disposal rate. For stainless steel 80% recovery rate and 20% disposal rate. For copper 60% disposal rate and 40% disposal rate. For glass 60% recovery rate and 40% disposal rate. Packaging waste is not included in the End of Life stages (C3–C4). All impacts related to packaging disposal are instead accounted for in stage A5 (installation).

LIFE CYCLE FLOW DIAGRAM



All estimations and assumptions regarding the cut off criteria and the 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 B4 & B6: The product is assumed to undergo replacement of selected components in intervals of time (20.5 years when the luminaire is operated for 8 hours a day) based on the lifespan of parts and components. This is to ensure that the product is fully functional throughout its lifetime.
- Module C2: Transportation distance to e-waste handling facility is estimated as 150 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

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	9,36E+00	1,31E-01	1,17E+00	1,07E+01	1,90E-01	4,48E-01	ND	ND	ND	0,00E+00	ND	4,29E+02	ND	0,00E+00	1,58E-02	8,03E-02	3,74E-02	-4,58E+00
GWP – fossil	kg CO_2e	9,32E+00	1,31E-01	1,59E+00	1,10E+01	1,90E-01	1,86E-02	ND	ND	ND	0,00E+00	ND	4,27E+02	ND	0,00E+00	1,58E-02	8,03E-02	3,74E-02	-4,58E+00
GWP – biogenic	kg CO_2e	3,22E-02	2,08E-05	-4,29E-01	-3,97E-01	2,23E-05	4,29E-01	ND	ND	ND	0,00E+00	ND	6,87E-01	ND	0,00E+00	3,45E-06	-4,19E-05	-7,56E-06	-1,50E-03
GWP – LULUC	kg CO_2e	6,15E-03	7,01E-05	9,99E-03	1,62E-02	3,50E-05	6,86E-06	ND	ND	ND	0,00E+00	ND	1,03E+00	ND	0,00E+00	7,00E-06	2,26E-05	5,48E-06	-1,15E-03
Ozone depletion pot.	kg CFC_{-11}e	6,47E-08	1,92E-09	2,23E-08	8,90E-08	3,17E-09	2,56E-10	ND	ND	ND	0,00E+00	ND	5,29E-06	ND	0,00E+00	2,21E-10	1,56E-10	8,03E-11	-1,77E-08
Acidification potential	mol H^+e	1,02E-01	3,71E-03	7,87E-03	1,13E-01	1,03E-03	1,11E-04	ND	ND	ND	0,00E+00	ND	2,32E+00	ND	0,00E+00	5,27E-05	1,38E-04	3,06E-05	-5,53E-02
EP-freshwater[2)]	kg Pe	6,18E-03	4,32E-06	3,25E-04	6,51E-03	5,70E-06	1,87E-06	ND	ND	ND	0,00E+00	ND	2,96E-01	ND	0,00E+00	1,23E-06	7,59E-06	6,94E-07	-2,99E-03
EP-marine	kg Ne	1,19E-02	9,25E-04	2,33E-03	1,52E-02	3,53E-04	5,16E-05	ND	ND	ND	0,00E+00	ND	3,99E-01	ND	0,00E+00	1,71E-05	3,45E-05	4,22E-05	-6,11E-03
EP-terrestrial	mol Ne	1,26E-01	1,03E-02	2,01E-02	1,56E-01	3,87E-03	4,71E-04	ND	ND	ND	0,00E+00	ND	3,81E+00	ND	0,00E+00	1,86E-04	3,62E-04	1,33E-04	-6,40E-02
POCP ("smog")[3)]	kg NMVOCe	3,91E-02	2,79E-03	6,28E-03	4,82E-02	1,27E-03	1,34E-04	ND	ND	ND	0,00E+00	ND	1,19E+00	ND	0,00E+00	7,34E-05	1,03E-04	4,01E-05	-1,94E-02
ADP-minerals & metals[4)]	kg Sbe	3,55E-04	1,38E-07	3,77E-06	3,59E-04	1,84E-07	5,54E-08	ND	ND	ND	0,00E+00	ND	4,26E-03	ND	0,00E+00	5,19E-08	5,46E-07	1,16E-08	-2,03E-04
ADP-fossil resources	MJ	1,03E+02	1,62E+00	2,01E+01	1,24E+02	2,57E+00	1,92E-01	ND	ND	ND	0,00E+00	ND	7,95E+03	ND	0,00E+00	2,22E-01	1,92E-01	6,76E-02	-4,64E+01
Water use[5)]	m^3e depr.	1,66E+00	4,71E-03	2,50E-01	1,92E+00	6,61E-03	2,23E-02	ND	ND	ND	0,00E+00	ND	1,96E+02	ND	0,00E+00	1,03E-03	7,44E-03	2,94E-03	-5,41E-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	5,70E-07	4,28E-09	8,84E-08	6,62E-07	6,79E-09	1,38E-09	ND	ND	ND	0,00E+00	ND	1,43E-05	ND	0,00E+00	1,25E-09	1,63E-09	5,27E-10	-2,68E-07
Ionizing radiation[6)]	kBq U235e	5,77E-01	7,91E-04	5,34E-02	6,31E-01	1,47E-03	2,33E-04	ND	ND	ND	0,00E+00	ND	1,81E+02	ND	0,00E+00	1,79E-04	1,20E-03	9,13E-05	-2,52E-01
Ecotoxicity (freshwater)	CTUe	6,22E+01	1,23E-01	4,45E+00	6,68E+01	1,77E-01	5,33E-01	ND	ND	ND	0,00E+00	ND	1,36E+03	ND	0,00E+00	3,51E-02	2,07E-01	7,93E+00	-2,15E+01
Human toxicity, cancer	CTUh	7,55E-09	2,76E-11	3,56E-10	7,93E-09	1,89E-11	2,57E-11	ND	ND	ND	0,00E+00	ND	1,11E-07	ND	0,00E+00	2,69E-12	1,44E-11	1,32E-11	-3,61E-09
Human tox. non-cancer	CTUh	3,36E-07	4,28E-10	1,11E-08	3,48E-07	1,81E-09	1,05E-09	ND	ND	ND	0,00E+00	ND	5,89E-06	ND	0,00E+00	1,39E-10	8,14E-10	6,72E-10	-2,11E-07
SQP[7)]	-	2,87E+01	2,02E-01	2,35E+01	5,24E+01	8,94E-01	9,42E-02	ND	ND	ND	0,00E+00	ND	1,67E+03	ND	0,00E+00	1,32E-01	2,12E-01	9,92E-02	-1,19E+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	6,39E+00	1,31E-02	2,36E+00	8,76E+00	1,98E-02	-5,27E+00	ND	ND	ND	0,00E+00	ND	1,85E+03	ND	0,00E+00	3,04E-03	2,73E-02	1,55E-03	-1,31E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	3,79E+00	3,79E+00	0,00E+00	-3,79E+00	ND	ND	ND	0,00E+00	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	6,39E+00	1,31E-02	6,14E+00	1,25E+01	1,98E-02	-9,06E+00	ND	ND	ND	0,00E+00	ND	1,85E+03	ND	0,00E+00	3,04E-03	2,73E-02	1,55E-03	-1,31E+00
Non-re. PER as energy	MJ	1,01E+02	1,62E+00	2,01E+01	1,23E+02	2,57E+00	1,92E-01	ND	ND	ND	0,00E+00	ND	7,95E+03	ND	0,00E+00	2,22E-01	-8,12E-01	-9,35E-01	-4,64E+01
Non-re. PER as material	MJ	1,34E+00	0,00E+00	3,08E-02	1,37E+00	0,00E+00	-3,08E-02	ND	ND	ND	0,00E+00	ND	0,00E+00	ND	0,00E+00	0,00E+00	-6,71E-01	-6,70E-01	0,00E+00
Total use of non-re. PER	MJ	1,03E+02	1,62E+00	2,01E+01	1,24E+02	2,57E+00	1,62E-01	ND	ND	ND	0,00E+00	ND	7,95E+03	ND	0,00E+00	2,22E-01	-1,48E+00	-1,61E+00	-4,64E+01
Secondary materials	kg	7,02E-02	0,00E+00	0,00E+00	7,02E-02	0,00E+00	0,00E+00	ND	ND	ND	0,00E+00	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Renew. secondary fuels	MJ	1,69E-03	2,04E-06	3,26E-02	3,43E-02	5,07E-06	2,40E-06	ND	ND	ND	0,00E+00	ND	9,28E-03	ND	0,00E+00	1,27E-06	9,15E-06	1,02E-06	-1,54E-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	0,00E+00	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	4,20E-02	1,17E-04	5,72E-03	4,78E-02	1,99E-04	3,61E-04	ND	ND	ND	0,00E+00	ND	5,96E+00	ND	0,00E+00	2,94E-05	1,61E-04	-1,51E-04	-1,36E-02

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	2,14E+00	2,15E-03	1,10E-01	2,25E+00	1,96E-03	5,86E-03	ND	ND	ND	0,00E+00	ND	3,23E+01	ND	0,00E+00	3,87E-04	2,47E-03	2,33E-02	-9,92E-01
Non-hazardous waste	kg	2,99E+01	2,98E-02	3,58E+00	3,35E+01	3,85E-02	3,17E-01	ND	ND	ND	0,00E+00	ND	1,44E+03	ND	0,00E+00	7,25E-03	6,61E-02	4,64E-01	-1,55E+01
Radioactive waste	kg	1,41E-04	1,93E-07	1,27E-05	1,54E-04	3,61E-07	5,84E-08	ND	ND	ND	0,00E+00	ND	4,61E-02	ND	0,00E+00	4,40E-08	2,95E-07	2,25E-08	-6,09E-05

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for reuse	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	0,00E+00	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	2,26E-03	2,26E-03	0,00E+00	0,00E+00	ND	ND	ND	0,00E+00	ND	0,00E+00	ND	0,00E+00	0,00E+00	3,00E-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	0,00E+00	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	0,00E+00	ND	0,00E+00	ND	0,00E+00	0,00E+00	3,14E-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	0,00E+00	ND	ND	ND	0,00E+00	ND	0,00E+00	ND	0,00E+00	0,00E+00	1,32E-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	0,00E+00	ND	ND	ND	0,00E+00	ND	0,00E+00	ND	0,00E+00	0,00E+00	1,82E-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	9,29E+00	1,31E-01	1,62E+00	1,10E+01	1,89E-01	1,85E-02	ND	ND	ND	0,00E+00	ND	4,27E+02	ND	0,00E+00	1,57E-02	8,02E-02	3,73E-02	-4,55E+00
Ozone depletion Pot.	kg CFC_{-11}e	5,89E-08	1,52E-09	2,09E-08	8,13E-08	2,51E-09	2,17E-10	ND	ND	ND	0,00E+00	ND	4,47E-06	ND	0,00E+00	1,77E-10	1,32E-10	6,54E-11	-1,63E-08
Acidification	kg SO_2e	8,73E-02	2,96E-03	6,12E-03	9,64E-02	7,82E-04	8,13E-05	ND	ND	ND	0,00E+00	ND	1,95E+00	ND	0,00E+00	4,04E-05	1,10E-04	2,22E-05	-4,78E-02
Eutrophication	kg PO_4^3e	7,85E-03	3,27E-04	1,58E-03	9,76E-03	1,39E-04	2,52E-05	ND	ND	ND	0,00E+00	ND	2,44E-01	ND	0,00E+00	9,82E-06	1,78E-05	1,08E-05	-3,07E-03
POCP (“smog”)	kg C_2H_4e	5,08E-03	1,47E-04	4,30E-04	5,66E-03	5,43E-05	6,19E-06	ND	ND	ND	0,00E+00	ND	1,07E-01	ND	0,00E+00	3,62E-06	6,50E-06	2,04E-06	-2,69E-03
ADP-elements	kg Sbe	3,53E-04	1,36E-07	3,71E-06	3,57E-04	1,80E-07	4,63E-08	ND	ND	ND	0,00E+00	ND	4,25E-03	ND	0,00E+00	5,07E-08	5,43E-07	1,05E-08	-2,02E-04
ADP-fossil	MJ	9,29E+01	1,61E+00	1,92E+01	1,14E+02	2,55E+00	1,89E-01	ND	ND	ND	0,00E+00	ND	4,82E+03	ND	0,00E+00	2,19E-01	1,73E-01	6,61E-02	-4,23E+01

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	9,33E+00	1,31E-01	1,60E+00	1,11E+01	1,90E-01	1,86E-02	ND	ND	ND	0,00E+00	ND	4,28E+02	ND	0,00E+00	1,58E-02	8,03E-02	3,74E-02	-4,58E+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 characterization factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation – A3

Scenario parameter	Value
Electricity data source and quality	Market group for electricity, medium voltage (Reference product: electricity, medium voltage)
Electricity kg CO2e / kWh	0.95
District heating data source and quality	District heat, based on world datapoint, 2024
District heating kg CO2e / MJ	0.075

Transport to installation site scenario documentation - A4

Scenario parameter	Value
List of fuel and vehicle types with corresponding average transport distance in km	Lorry >32 metric ton, EURO5: 592 Container ship: 1340 Aircraft: 179
Capacity utilization (including empty return) %	50
Bulk density of transported products / kg/m^3	1,37E+01
Volume capacity utilization factor (factor: =1 or <1 or ≥1 for compressed or nested packaged products)	1

Installation scenario documentation - A5 (Energy and waste materials)

Scenario parameter	Value
Ancillary materials for installation	Not applicable
Water use	Not applicable
Direct emissions to ambient air, soil and water / kg	Not applicable
Corrugated board box production in kg	0.297

Use stages scenario documentation - B4

Scenario information	Value
Replacement cycle / Number per RSL or year	0

Use stages scenario documentation - B6 Use of energy and water

Scenario information	Value
Ancillary materials	Not applicable
Net fresh water consumption	Not applicable
Power consumption in W	19,8
Sales-weighted distribution of low voltage regional electricity grid mix consumption	EU: 71 % Asia: 7.1 % NA: 10 % Rest of world: 11.9 %
Period of use	17 years when the luminaire operates 8 hours a day

End-of-life scenario documentation – C1-4

Scenario information	Value
Collection process – kg collected separately	0,54
Collection process – kg collected with mixed construction waste	0
Recovery process – kg for re-use	0
Recovery process – kg for recycling	3,00E-01
Recovery process – kg for energy recovery	0
Disposal (total) – kg for final deposition	2,12E-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 1 – PEP EXTRAPOLATION COEFFICIENTS DOT.COM

Extrapolation rules have been calculated according to PSR-0014-ed2.0-EN-2023 07 13. The extrapolation coefficients are calculated at product level, with respect to the reference product 19920 XXX0.

The extrapolation coefficients were calculated in the following way:

- **Fabrication stage (A1-A3) extrapolation coefficient:**
  Maximum value out of formulas described in 3.6.3 Extrapolation rules applied to fabrication stage (A1-A3)
- **Distribution stage (A4) extrapolation coefficient:**
  Value out of formula described in 3.6.4 Extrapolation rules applied to distribution stage (A4)
- **Installation stage (A5) extrapolation coefficient:**
  Value out of formula described in 3.6.5 Extrapolation rules applied to installation stage (A5)
- **Use stage (B1 – B7) extrapolation coefficient:**
  Maximum value out of formulas described in 3.6.6. Extrapolation rules applied to use stage (B1 to B7) (B2 is not declared in our case, so the formula of B6 applies)
- **End of life stage (C1 to C4) extrapolation coefficient:**
  Value out of formula described in 3.6.7. Extrapolation rules applied to end-of-life stage (C1 to C4)
- **Benefits (D) extrapolation coefficient:**
  Maximum value out of formulas described in 3.6.8. Extrapolation rules applied to net benefits beyond the system boundaries stage (D) (optional)

The extrapolation at the level of the functional unit can be done according to the following formula:

$$Extrapolation\ coefficient\ at\ the\ product\ level\ x\ \left(\frac{Lighting\ output\ of\ reference\ product\ (lumen)}{Lighting\ output\ of\ product\ concerned\ (lumen)}\right)$$

Data used in the calculation of extrapolation coefficients

Mass code	Description	product weight	packaging weight	Total weight	Control gear weight	Class	IP	Luminaire lumen	Luminaire power
19920 XXX0 (**ref**)	SPYCO 70 ADM	0,54	0,29	0,83	0,12	II	IP20	1849	20
19920 XXX5	SPYCO 70 ADM DIM5	0,527	0,303	0,83	0,15	II	IP20	1849	20
19921 XXX0	SPYCO 90 ADM	0,814	0,3	1,114	0,15	II	IP20	3303	38
19921 XXX5	SPYCO 90 ADM DIM5	0,814	0,301	1,115	0,15	II	IP20	3303	38

Applicable extrapolation coefficients for Spyco mass codes similar to the reference

		A1-A3	A4	A5	B6	C1-C4	D
Mass code	Extrapol. FU	MAXIMUM A1-A3	Distribution stage	Installation stage	Use stage	EOL stage	MAXIMUM D
19920 XXX0 (**ref**)	1,000	1,000	1,000	1,000	1,000	1,000	1,000
19920 XXX5	1,000	1,250	1,000	1,045	0,500	1,000	1,250
19921 XXX0	0,560	1,507	1,342	1,034	1,900	1,342	1,507
19921 XXX5	0,560	1,507	1,343	1,038	0,950	1,343	1,507