



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

EPD HUB, HUB-3730

Published on 01 August 2025, last updated on 01 August 2025, valid until 31 July 2030

SPARTAN Linear

Raytec Ltd.



MANUFACTURER AND SITE

Manufacturer	Raytec Ltd.
Address	Unit 15 Wansbeck Business Park, Rotary Parkway, Ashington, Northumberland NE63 8QW, United Kingdom
Contact details	sales@raytecled.com
Website	https://www.raytecled.com/
Place of production	Raytec Ltd, Ashington, UK
Place(s) of raw material origin	World
Place(s) of installation and use	World
Period for data	01/01/2024 - 31/12/2024

EPD STANDARDS, SCOPE AND VERIFICATION

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

PRODUCT SPECIFICATION

Product name	SPARTAN Linear
Product number / reference	SPX-WL168
Product description	The SPARTAN Linear range is designed to retrofit conventional fluorescent fittings or for use in new hazardous area installations. Ex Linear lighting that's designed to provide extreme levels of durability, and with a unique modular design which makes maintenance quick and easy. All SPARTAN luminaires are designed and manufactured in the UK and come with an industry-leading 5-year warranty. SPARTAN Linear delivers industry-leading power and performance with an efficacy of up to 142 lumens per watt on standard variants.
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	32.3

PRODUCT CLASSIFICATION

Declared operating voltage, Volt	110-254
Light source color temperature, Kelvin	6500
Protection index for water and dust (IP)	IP66
Impact resistance index (IK)	10
Luminous flux, Lumen	6130
Electrical power, Watt	49
Luminous efficiency, Lm/W	125
Additional characteristic	-

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.



Created with One Click LCA

ABOUT THE MANUFACTURER

Raytec are specialists in LED lighting. Founded in 2005, every Raytec product manufactured since then has been based on LED technology. Today, Raytec manufacture specialist LED lighting products across four main divisions – Hazardous, Industrial, Transport and Security. Raytec products are designed to increase safety and security for any application in which they're installed across the globe.

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit
Declared unit mass, kg	8.6
Mass of packaging, kg	1.0778
Functional unit	Provide lighting that delivers an outgoing artificial luminous flux of 6,130 lumens during a reference lifetime of 40,000 hours
Reference service life (years)	10
Assigned lifetime (hours)	40000
GWP-total, A1-A3 (kg CO ₂ e)	1.03E+02
GWP-fossil, A1-A3 (kg CO ₂ e)	1.02E+02
Secondary material, inputs (%)	5.17
Secondary material, outputs (%)	56.6
Total energy use, A1-A3 (kWh)	422
Net freshwater use, A1-A3 (m ³)	1.72E+00

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

Modules not declared = MND.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. There is no neglected unit process more than 1% of total mass or energy flows. The module-specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

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

VALIDATION OF DATA

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

ALLOCATION, ESTIMATES AND ASSUMPTIONS

All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging materials	No allocation
Ancillary materials	Allocated by mass
Manufacturing energy and waste	Allocated by mass

PRODUCT & MANUFACTURING SITES GROUPING

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

This EPD is product and factory specific.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	79	EU, Asia
Minerals	9	EU, Asia
Fossil materials	8	EU, Asia
Bio-based materials	0	-
Electronic parts	3	EU, Asia

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.199
Biogenic carbon content in packaging, kg C	0.00261

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 and One Click LCA databases were used as sources of environmental data. Allocation used in Ecoinvent 3.10.1 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 use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc), and its use is ensured throughout the validity period of this EPD.

The product is made of metals, plastics, and electronic components. All components are transported to the production facility, where the main manufacturing processes are associated with assembly of different parts and components. The finished product is packaged with polyethylene, cardboard, and/or paper as packaging material before being sent to customers.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation distances from manufacturing sites to customer locations are based on sales volume-based weighted averages. In the absence of exact data, conservative assumptions are made (A4). Environmental impacts from installation include waste packaging materials (A5).

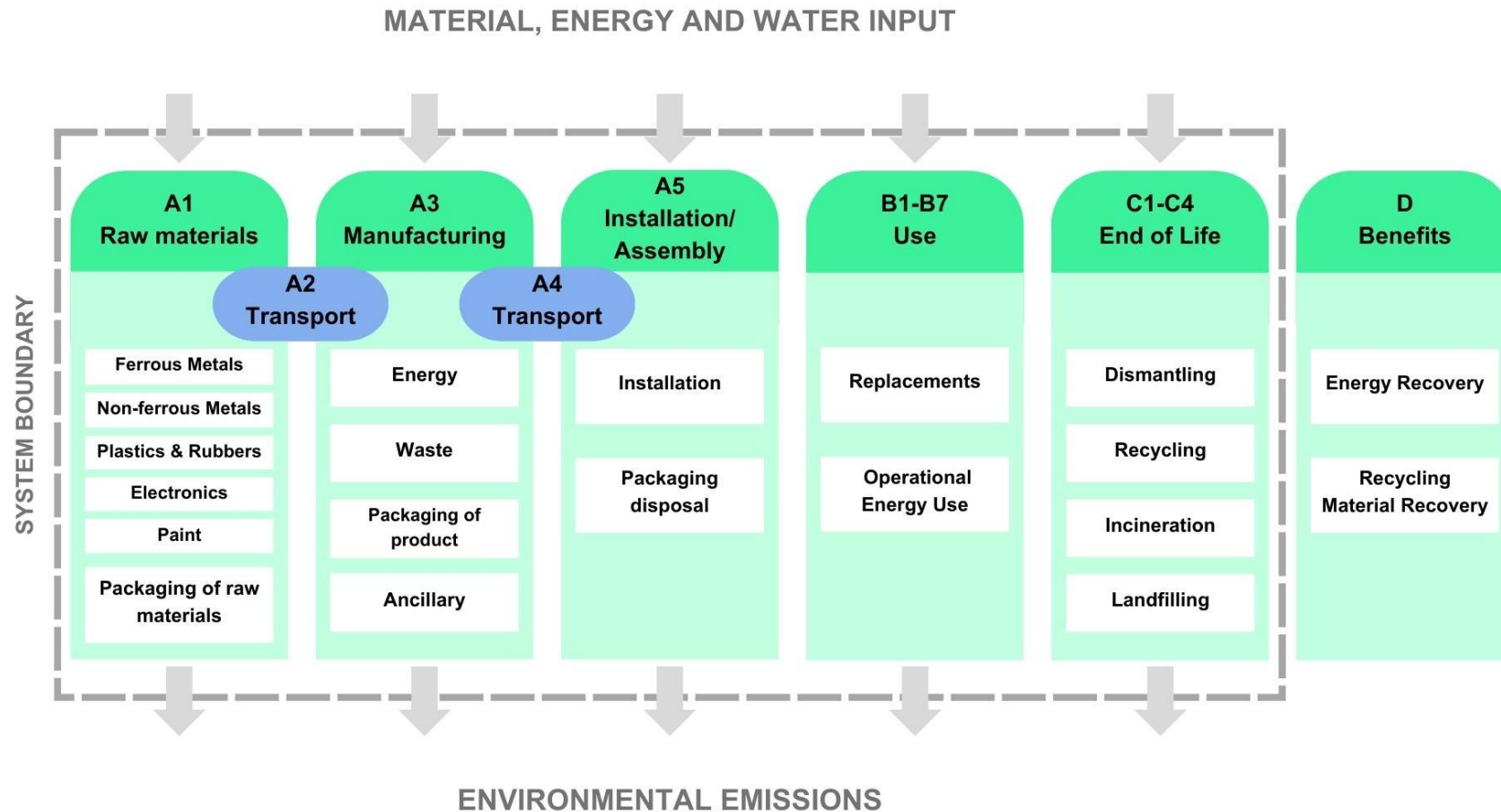
PRODUCT USE AND MAINTENANCE (B1-B7)

During the use phase, the product consumes electricity (B6). 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 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.

LIFE CYCLE FLOW DIAGRAM



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 ₂ e	9.72E+01	4.11E-01	5.34E+00	1.03E+02	3.89E+00	3.85E-01	MNR	MNR	MNR	MNR	MNR	1.43E+03	MNR	0.00E+00	2.55E-01	1.13E+00	9.10E-01	-9.49E+01
GWP – fossil	kg CO ₂ e	9.64E+01	4.11E-01	4.99E+00	1.02E+02	3.89E+00	3.54E-01	MNR	MNR	MNR	MNR	MNR	1.42E+03	MNR	0.00E+00	2.55E-01	1.13E+00	7.26E-01	-9.45E+01
GWP – biogenic	kg CO ₂ e	4.09E-01	8.22E-05	3.46E-01	7.55E-01	6.59E-04	3.03E-02	MNR	MNR	MNR	MNR	MNR	2.15E+00	MNR	0.00E+00	5.57E-05	-4.78E-04	1.84E-01	-3.95E-01
GWP – LULUC	kg CO ₂ e	4.21E-01	1.48E-04	1.22E-02	4.34E-01	1.26E-03	9.36E-04	MNR	MNR	MNR	MNR	MNR	2.83E+00	MNR	0.00E+00	1.13E-04	1.86E-04	1.03E-04	-7.94E-03
Ozone depletion pot.	kg CFC ₁₁ e	2.91E-06	7.82E-09	1.52E-07	3.07E-06	5.85E-08	6.06E-09	MNR	MNR	MNR	MNR	MNR	9.87E-06	MNR	0.00E+00	3.56E-09	1.87E-09	1.47E-09	-3.43E-07
Acidification potential	mol H ⁺ e	6.55E-01	1.06E-03	1.79E-02	6.74E-01	1.42E-02	1.96E-03	MNR	MNR	MNR	MNR	MNR	7.38E+00	MNR	0.00E+00	8.49E-04	1.71E-03	6.23E-04	-9.95E-01
EP-freshwater ²⁾	kg Pe	2.85E-02	2.76E-05	1.31E-03	2.99E-02	2.12E-04	2.83E-04	MNR	MNR	MNR	MNR	MNR	6.46E-01	MNR	0.00E+00	1.98E-05	8.01E-05	6.82E-05	-5.25E-02
EP-marine	kg Ne	9.76E-02	2.77E-04	4.22E-03	1.02E-01	4.21E-03	4.82E-04	MNR	MNR	MNR	MNR	MNR	1.40E+00	MNR	0.00E+00	2.75E-04	4.55E-04	1.74E-03	-1.22E-01
EP-terrestrial	mol Ne	1.03E+00	3.01E-03	4.03E-02	1.08E+00	4.60E-02	3.16E-03	MNR	MNR	MNR	MNR	MNR	1.42E+01	MNR	0.00E+00	2.99E-03	4.77E-03	2.57E-03	-1.26E+00
POCP (“smog”) ³⁾	kg NMVOce	3.30E-01	1.59E-03	2.32E-02	3.55E-01	1.78E-02	1.09E-03	MNR	MNR	MNR	MNR	MNR	4.23E+00	MNR	0.00E+00	1.18E-03	1.36E-03	8.91E-04	-3.79E-01
ADP-minerals & metals ⁴⁾	kg Sbe	2.17E-03	1.30E-06	2.96E-05	2.20E-03	8.44E-06	4.30E-06	MNR	MNR	MNR	MNR	MNR	8.13E-03	MNR	0.00E+00	8.37E-07	7.98E-06	2.16E-07	-8.69E-04
ADP-fossil resources	MJ	1.14E+03	5.78E+00	1.21E+02	1.26E+03	5.34E+01	7.50E+00	MNR	MNR	MNR	MNR	MNR	1.84E+04	MNR	0.00E+00	3.57E+00	1.90E+00	1.28E+00	-9.53E+02
Water use ⁵⁾	m ³ e depr.	3.78E+01	2.81E-02	2.55E+00	4.03E+01	1.88E-01	2.01E-01	MNR	MNR	MNR	MNR	MNR	3.59E+02	MNR	0.00E+00	1.66E-02	9.27E-02	5.15E-02	-6.98E+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	4.48E-06	2.83E-08	1.77E-07	4.69E-06	1.95E-07	9.96E-09	MNR	MNR	MNR	MNR	MNR	6.32E-05	MNR	0.00E+00	2.02E-08	2.15E-08	9.60E-09	-4.89E-06
Ionizing radiation ⁶⁾	kBq U235e	5.14E+00	8.02E-03	6.22E-01	5.77E+00	3.37E-02	1.92E-01	MNR	MNR	MNR	MNR	MNR	1.94E+02	MNR	0.00E+00	2.89E-03	7.47E-03	2.17E-03	-5.44E+00
Ecotoxicity (freshwater)	CTUe	4.77E+02	8.19E-01	2.84E+01	5.06E+02	6.30E+00	5.59E+00	MNR	MNR	MNR	MNR	MNR	3.79E+03	MNR	0.00E+00	5.65E-01	2.89E+00	1.82E+02	-2.14E+02
Human toxicity, cancer	CTUh	5.10E-08	6.53E-11	1.12E-09	5.21E-08	5.13E-10	1.30E-10	MNR	MNR	MNR	MNR	MNR	2.53E-07	MNR	0.00E+00	4.33E-11	1.94E-10	2.74E-10	-3.42E-08
Human tox. non-cancer	CTUh	1.27E-06	3.43E-09	3.77E-08	1.31E-06	3.56E-08	6.79E-09	MNR	MNR	MNR	MNR	MNR	1.37E-05	MNR	0.00E+00	2.24E-09	1.01E-08	1.11E-08	-1.01E-06
SQP ⁷⁾	-	2.17E+02	3.47E+00	3.98E+01	2.60E+02	2.17E+01	1.96E+00	MNR	MNR	MNR	MNR	MNR	3.32E+03	MNR	0.00E+00	2.13E+00	3.06E+00	1.80E+00	-2.45E+02

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	3.42E+02	1.06E-01	1.43E-01	3.42E+02	5.51E-01	-1.56E+01	MNR	MNR	MNR	MNR	MNR	2.79E+03	MNR	0.00E+00	4.90E-02	2.72E-01	-6.92E+00	-2.05E+01
Renew. PER as material	MJ	2.83E+00	0.00E+00	-2.70E+00	1.29E-01	0.00E+00	-1.29E-01	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renew. PER	MJ	3.45E+02	1.06E-01	-2.56E+00	3.42E+02	5.51E-01	-1.57E+01	MNR	MNR	MNR	MNR	MNR	2.79E+03	MNR	0.00E+00	4.90E-02	2.72E-01	-6.92E+00	-2.05E+01
Non-re. PER as energy	MJ	1.11E+03	5.78E+00	6.25E+01	1.18E+03	5.34E+01	7.50E+00	MNR	MNR	MNR	MNR	MNR	1.84E+04	MNR	0.00E+00	3.57E+00	-1.32E+01	-1.89E+01	-9.53E+02
Non-re. PER as material	MJ	2.39E+01	0.00E+00	4.15E+01	6.54E+01	0.00E+00	-4.54E+01	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	0.00E+00	0.00E+00	-9.60E+00	-1.04E+01	0.00E+00
Total use of non-re. PER	MJ	1.13E+03	5.78E+00	1.04E+02	1.24E+03	5.34E+01	-3.79E+01	MNR	MNR	MNR	MNR	MNR	1.84E+04	MNR	0.00E+00	3.57E+00	-2.28E+01	-2.93E+01	-9.53E+02
Secondary materials	kg	4.45E-01	0.00E+00	0.00E+00	4.45E-01	0.00E+00	0.00E+00	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renew. secondary fuels	MJ	3.87E-02	2.67E-05	5.74E-02	9.62E-02	2.05E-04	1.43E-05	MNR	MNR	MNR	MNR	MNR	1.67E-02	MNR	0.00E+00	2.05E-05	9.47E-05	1.67E-05	-2.03E-03
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m ³	1.66E+00	7.98E-04	6.24E-02	1.72E+00	5.56E-03	5.83E-03	MNR	MNR	MNR	MNR	MNR	1.01E+01	MNR	0.00E+00	4.74E-04	1.88E-03	-6.43E-03	-3.07E-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	1.12E+01	7.97E-03	2.81E-01	1.15E+01	6.87E-02	2.23E-02	MNR	MNR	MNR	MNR	MNR	1.24E+02	MNR	0.00E+00	6.23E-03	3.03E-02	8.04E-02	-1.93E+01
Non-hazardous waste	kg	1.76E+02	1.77E-01	2.71E+01	2.04E+02	1.30E+00	2.03E+00	MNR	MNR	MNR	MNR	MNR	3.12E+03	MNR	0.00E+00	1.17E-01	8.29E-01	1.26E+01	-1.78E+02
Radioactive waste	kg	1.14E-02	2.00E-06	1.49E-04	1.16E-02	8.25E-06	4.93E-05	MNR	MNR	MNR	MNR	MNR	4.74E-02	MNR	0.00E+00	7.09E-07	1.84E-06	5.33E-07	-1.31E-03

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	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	2.93E-01	0.00E+00	1.97E-01	4.90E-01	0.00E+00	8.84E-01	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	0.00E+00	0.00E+00	4.87E+00	0.00E+00	0.00E+00
Materials for energy rec	kg	9.65E-03	0.00E+00	0.00E+00	9.65E-03	0.00E+00	0.00E+00	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	4.33E-01	0.00E+00	7.43E-01	1.18E+00	0.00E+00	4.97E-01	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	0.00E+00	0.00E+00	4.74E+00	0.00E+00	0.00E+00
Exported energy: Electricity	MJ	0.00E+00	0.00E+00	3.13E-01	3.13E-01	0.00E+00	2.09E-01	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	0.00E+00	0.00E+00	1.99E+00	0.00E+00	0.00E+00
Exported energy: Heat	MJ	0.00E+00	0.00E+00	4.25E-01	4.25E-01	0.00E+00	2.62E-01	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	0.00E+00	0.00E+00	2.74E+00	0.00E+00	0.00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	9.63E+01	4.09E-01	5.00E+00	1.02E+02	3.87E+00	4.92E-01	MNR	MNR	MNR	MNR	MNR	1.42E+03	MNR	0.00E+00	2.54E-01	1.13E+00	1.11E+00	-9.38E+01
Ozone depletion Pot.	kg CFC ₁₁ e	3.27E-06	6.22E-09	1.23E-07	3.40E-06	4.65E-08	5.05E-09	MNR	MNR	MNR	MNR	MNR	8.43E-06	MNR	0.00E+00	2.85E-09	1.57E-09	1.20E-09	-3.21E-07
Acidification	kg SO ₂ e	5.62E-01	8.45E-04	1.46E-02	5.78E-01	1.11E-02	1.65E-03	MNR	MNR	MNR	MNR	MNR	6.15E+00	MNR	0.00E+00	6.51E-04	1.35E-03	4.56E-04	-8.57E-01
Eutrophication	kg PO ₄ ³ e	1.69E-01	1.87E-04	4.88E-02	2.18E-01	2.12E-03	3.52E-04	MNR	MNR	MNR	MNR	MNR	7.17E-01	MNR	0.00E+00	1.58E-04	2.27E-04	8.35E-04	-5.36E-02
POCP ("smog")	kg C ₂ H ₄ e	5.58E-02	7.91E-05	2.37E-03	5.82E-02	8.65E-04	1.27E-04	MNR	MNR	MNR	MNR	MNR	3.36E-01	MNR	0.00E+00	5.83E-05	8.09E-05	1.25E-04	-5.04E-02
ADP-elements	kg Sbe	2.15E-03	1.27E-06	2.92E-05	2.18E-03	8.24E-06	4.28E-06	MNR	MNR	MNR	MNR	MNR	8.10E-03	MNR	0.00E+00	8.17E-07	7.94E-06	1.98E-07	-8.59E-04
ADP-fossil	MJ	1.02E+03	5.64E+00	1.11E+02	1.14E+03	5.29E+01	4.12E+00	MNR	MNR	MNR	MNR	MNR	1.53E+04	MNR	0.00E+00	3.53E+00	1.79E+00	1.24E+00	-8.65E+02

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	9.68E+01	4.11E-01	5.00E+00	1.02E+02	3.89E+00	3.55E-01	MNR	MNR	MNR	MNR	MNR	1.43E+03	MNR	0.00E+00	2.55E-01	1.13E+00	7.26E-01	-9.45E+01

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

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation – A3 (Energy data source)

1. Energy supply, electricity transformation and distribution, distrib of high voltage, Market for electricity, high voltage, United Kingdom, ecoinvent 3.10.1, 0.25 kgCO₂e/kWh
2. Energy supply, industrial gas fuels production, natural gas, Market for natural gas, low pressure, United Kingdom, ecoinvent 3.10.1, 0.37 kgCO₂e/m³

Transport scenario documentation - A4

1. Market for transport, freight, aircraft, medium haul, 178 km
2. Market for transport, freight, sea, bulk carrier for dry goods, 1783 km
3. Market for transport, freight, lorry 16-32 metric ton, EURO6, 1290 km

Installation scenario documentation - A5 (Energy data source)

1. Energy supply, electricity transformation and distribution, distribution low voltage, Market group for electricity, low voltage, Europe, 0.9, kWh

Installation scenario documentation - A5 (Waste materials data source)

1. Packaging film production, low density polyethylene, 1.0686, kg
2. Kraft paper production, 0.0092, kg

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

1. Energy supply, electricity transformation and distribution, distribution low voltage, Market group for electricity, low voltage, World, 1960.0, kWh

TRANSPORT SCENARIO DOCUMENTATION - A4

Scenario parameter	Value
Capacity utilization (including empty return) %	50 %
Bulk density of transported products / kg/m ³	0.00E+00
Volume capacity utilization factor (factor: =1 or <1 or ≥1 for compressed or nested packaged products)	1

INSTALLATION SCENARIO DOCUMENTATION - A5

Scenario parameter	Value
Ancillary materials for installation (specified by material) / kg or other units as appropriate	0
Water use / m ³	0
Other resource use / kg	0
Direct emissions to ambient air, soil and water / kg	0

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

Scenario information	Value
Ancillary materials specified by material / kg or units as appropriate	Not applicable
Net fresh water consumption / m ³	0
Power output of equipment / kW	0.049
Characteristic performance, e.g., energy efficiency, emissions, variation of performance with capacity utilization, etc. / Units as appropriate	125 Lm/W
Further assumptions for scenario development, e.g., frequency and period of use, number of occupants / Units as appropriate	4,000 annual operating hours

END OF LIFE SCENARIO DOCUMENTATION

Scenario information	Value
Collection process – kg collected separately	8.6
Collection process – kg collected with mixed waste	0
Recovery process – kg for re-use	0
Recovery process – kg for recycling	5.04E+00
Recovery process – kg for energy recovery	0
Disposal (total) – kg for final deposition	3.38E+00
Scenario assumptions e.g. transportation	Lorry, 16-32 metric ton, EURO5; 150 km

APPENDIX: SCALING TABLE

Of the core impact category results presented above, the total global warming potential (GWP - total) was calculated for other variants of the SPARTAN linear. These results are tabulated below and present the non-linear scaling factors for which the product (A1-A3) and operational energy use (B6) stages vary.

Variant	Luminous output	Power	Life cycle stage and Impact category	
			A1-A3 GWP Total /kg CO2 e	B6 GWP Total /kg CO2 e
Zone 1				
SPXWL84: Standard	Up to 3524	24 W	0.77	0.49
SPXWL84: High Output	Up to 7048	49 W	0.63	1.00
SPXWL84: Low voltage	Up to 3524	24 W	0.63	0.49
SPXWL168: Standard	Up to 6130	49 W	1 (ref)	1 (ref)
SPXWL168: High Output	Up to 14096	96 W	0.82	1.96
Zone 2				
SPZWL84: Standard	Up to 3524	24 W	0.77	0.49
SPZWL84: High Output	Up to 7048	49 W	0.63	1.00
SPZWL84: Low Voltage	Up to 3524	24 W	0.62	0.49
SPZWL168: High Output	Up to 14096	96 W	0.82	1.96

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