Classified

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

MAS LEDtube VLE 1500mm UO 23W 840 T8

MASTER Value LEDtube T8
Signify N.V.

EPD HUB
Publishing date 2024-02-13

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Signify N.V.
Address	High Tech Campus 48, 5656 AE Eindhoven, The Netherlands
Contact details	sustainability@signify.com
Website	https://www.signify.com/global

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Electrical product
Category of EPD	Pre-verified EPD
Scope of the EPD	Cradle to gate with options, A4-B7, and modules C1-C4, D
EPD author	Sustainability Signify
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☑ Internal certification ☐External verification

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 lighting products may not be comparable if they do not comply with EN 15804 and if they are not compared in a lighting context.

PRODUCT

Product name	MAS LEDtube VLE 1500mm UO 23W 840 T8
Additional labels	MASTER Value LEDtube T8
Product reference	929002998002
Place of production	China
Period for data	2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	Not applicable

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit of 3700 lumens over 60000 hours
Declared unit mass	0.275 kg
GWP-fossil, A1-A3 (kgCO2e)	2.63E+00
GWP-total, A1-A3 (kgCO2e)	2.55E+00
Secondary material, inputs (%)	6.77
Secondary material, outputs (%)	53.6
Total energy use, A1-A3 (kWh)	10.4
Total water use, A1-A3 (m3e)	-4.29E-02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Signify is the world leader in lighting for professionals, consumers and lighting for the Internet of Things. Our energy efficient lighting products, systems and services enable our customers to enjoy a superior quality of light, and make people's lives safer and more comfortable, businesses more productive and cities more liveable.

For more information, please visit: https://www.signify.com/global

PRODUCT DESCRIPTION

A high-performance LED solution, the professional MASTER Value LED tube is ideal for replacing T8 fluorescent lamps using EM ballast or installing directly on the mains. This product provides an optimal combination of value and performance – for use in all general lighting, office, industry, retail, and hospitality applications. The unique design of this LED T8 tube light offers wide compatibility, safety and fast installation, as well as instant energy savings.

For more information, please visit: https://www.lighting.philips.com/link/7389584/fam/aa/en

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	9.553	APAC
Minerals	71.181	APAC
Fossil materials	19.266	APAC
Bio-based materials	0	Not applicable

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	0.0177

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Product
Mass per declared unit	0.275 kg
Functional unit	1 unit of 3700 lumens over 60000 hours
Reference service life	60000 hours

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0.1 % (1000 ppm).

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

Modules not relevant = MNR.

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, electricity, and waste formed in the production processes at the manufacturing facilities are included in this stage.

The product is made of metals, plastics, and electronic components. All components are transported to the production facility, where the main manufacturing processes primarily are associated with assembly. The finished product is packaged with polyethylene, cardboard, and/or paper as packaging material before being sent to customers. Manufacturing loss, ancillaries and wastes are calculated according to the data that each manufacturing site is sharing with Signify. The total annual amount of waste in kg is allocated to the total annual production in kg at the specific manufacturing site responsible for the production of the studied product. Thus, it is possible to allocate it according to the weight of the product analysed in this study. Some of the wastes are due to ancillary materials used during manufacturing while the rest is due to material losses.

TRANSPORT AND ASSEMBLY (A4-A5)

Transport distances were calculated on the base of the supplier location and manufacturing location and then made a cumulative group choosing the conservative scenario. Environmental impacts from installation include waste packaging materials (A5). The impacts of energy consumption and the used ancillary materials during installation are considered negligible.

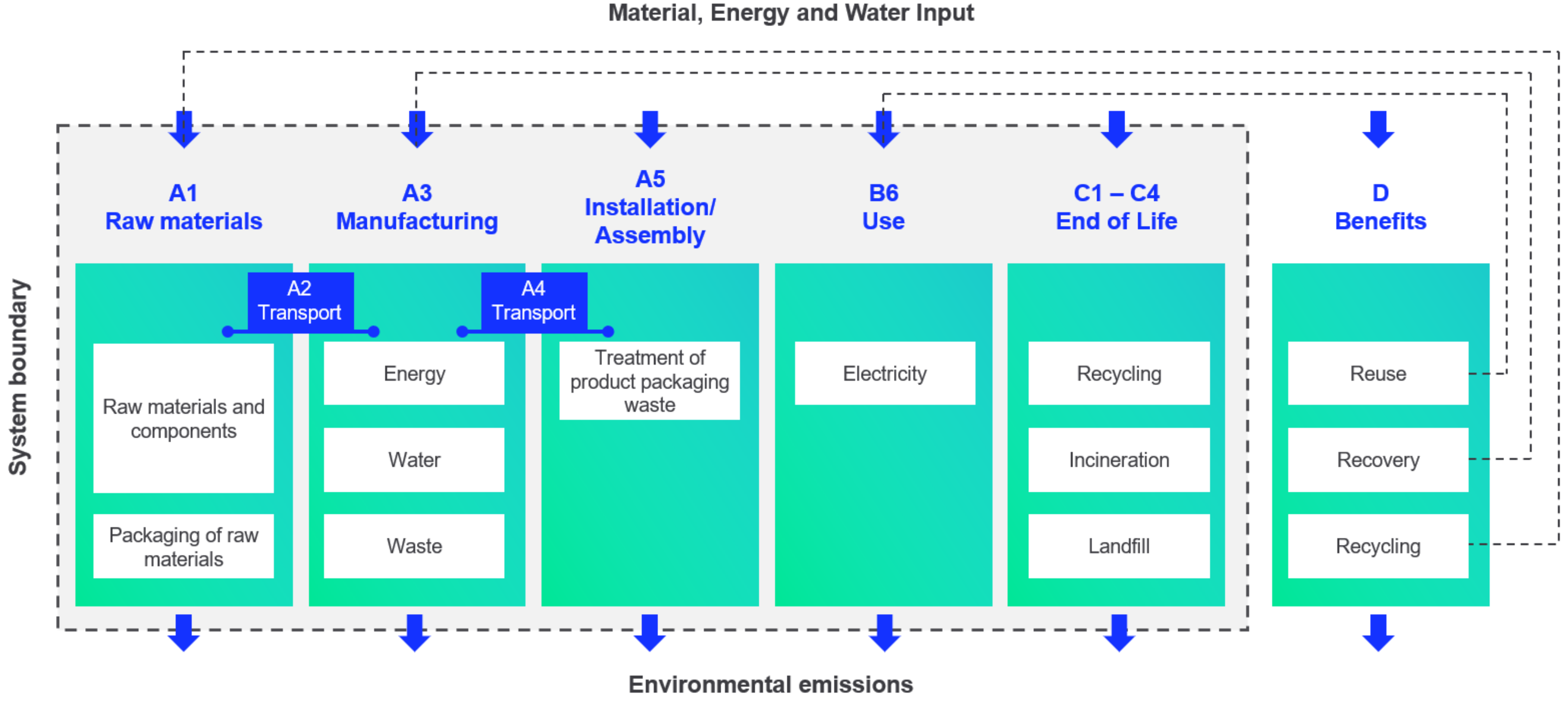
PRODUCT USE AND MAINTENANCE (B1-B7)

During the use phase, the product consumes electricity from Europe's or the rest of the world's electricity grid mix (B6). The total power consumption of the reference product is calculated as follows: Wattage x Reference lifetime = kWh consumed throughout the entire use phase B6.

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. Transportation distance to treatment is assumed as 150 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 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.

SYSTEM BOUNDARY



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.

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, ancillary materials, energy & water consumption, material loss and waste generation at the manufacturing site are attributed to the bill of materials of the products, therefore, they are allocated by partitioning the quantities on the base of the total production in kg throughout the year. Thus, allocation has been done in the following ways:

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

This EPD is created with a most conservative scenario in A1-A3 in terms of material composition.

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	Not applicable

This EPD is product and factory specific and does not contain average calculations. It is created with a most conservative scenario in A1-A3 in terms of material composition.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. EcoInvent 3.8 database was used as the source of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

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	2.11E+00	5.88E-02	3.73E-01	2.55E+00	5.90E-02	6.67E-02	MNR	MNR	MNR	MNR	MNR	1.01E+03	MNR	MNR	4.25E-03	5.00E-02	2.98E-02	-1.53E-01
GWP – fossil	kg CO_2e	2.14E+00	5.87E-02	4.36E-01	2.63E+00	5.89E-02	2.13E-03	MNR	MNR	MNR	MNR	MNR	1.01E+03	MNR	MNR	4.25E-03	5.00E-02	2.98E-02	-1.53E-01
GWP – biogenic	kg CO_2e	-2.84E-02	0.00E+00	-6.46E-02	-9.30E-02	0.00E+00	6.46E-02	MNR	MNR	MNR	MNR	MNR	-4.44E-16	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	-4.03E-04
GWP – LULUC	kg CO_2e	3.41E-03	2.17E-05	1.75E-03	5.18E-03	4.30E-05	7.60E-07	MNR	MNR	MNR	MNR	MNR	2.12E+00	MNR	MNR	1.57E-06	3.08E-06	4.17E-06	-1.79E-04
Ozone depletion pot.	kg CFC_{-11}e	1.99E-07	1.35E-08	2.15E-08	2.34E-07	1.17E-08	1.73E-10	MNR	MNR	MNR	MNR	MNR	3.40E-05	MNR	MNR	9.78E-10	2.40E-10	5.51E-10	-5.01E-09
Acidification potential	mol H^+e	2.04E-02	2.49E-04	2.42E-03	2.31E-02	1.91E-03	1.59E-05	MNR	MNR	MNR	MNR	MNR	5.12E+00	MNR	MNR	1.80E-05	2.05E-05	2.21E-05	-3.95E-03
EP-freshwater[2)]	kg Pe	2.76E-04	4.81E-07	8.73E-05	3.64E-04	2.10E-07	1.95E-08	MNR	MNR	MNR	MNR	MNR	5.29E-02	MNR	MNR	3.48E-08	6.10E-08	1.95E-07	-1.53E-05
EP-marine	kg Ne	2.81E-03	7.39E-05	2.16E-03	5.05E-03	4.71E-04	7.20E-06	MNR	MNR	MNR	MNR	MNR	8.65E-01	MNR	MNR	5.35E-06	7.46E-06	4.75E-05	-2.40E-04
EP-terrestrial	mol Ne	3.26E-02	8.16E-04	5.96E-03	3.93E-02	5.23E-03	7.35E-05	MNR	MNR	MNR	MNR	MNR	9.64E+00	MNR	MNR	5.90E-05	7.88E-05	8.16E-05	-3.20E-03
POCP (“smog”)[3)]	kg NMVOCe	1.09E-02	2.61E-04	2.04E-03	1.32E-02	1.36E-03	1.82E-05	MNR	MNR	MNR	MNR	MNR	2.60E+00	MNR	MNR	1.89E-05	2.00E-05	2.95E-05	-9.02E-04
ADP-minerals & metals[4)]	kg Sbe	5.58E-04	1.38E-07	1.60E-06	5.60E-04	8.14E-08	5.31E-09	MNR	MNR	MNR	MNR	MNR	4.72E-03	MNR	MNR	9.97E-09	4.76E-08	9.45E-09	-1.09E-04
ADP-fossil resources	MJ	2.75E+01	8.82E-01	4.87E+00	3.33E+01	7.39E-01	1.54E-02	MNR	MNR	MNR	MNR	MNR	1.31E+04	MNR	MNR	6.38E-02	2.62E-02	4.54E-02	-1.68E+00
Water use[5)]	m^3e depr.	8.94E-01	3.95E-03	5.28E-01	1.43E+00	2.19E-03	3.14E-03	MNR	MNR	MNR	MNR	MNR	2.76E+02	MNR	MNR	2.86E-04	2.18E-03	2.79E-03	-5.04E-02

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, PEF

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	1.33E-07	6.77E-09	4.09E-08	1.81E-07	1.83E-09	1.40E-10	MNR	MNR	MNR	MNR	MNR	3.89E-05	MNR	MNR	4.90E-10	1.89E-10	3.74E-10	-1.54E-08
Ionizing radiation[6)]	kBq U235e	2.27E-01	4.20E-03	1.55E-02	2.47E-01	3.40E-03	4.86E-05	MNR	MNR	MNR	MNR	MNR	1.47E+02	MNR	MNR	3.04E-04	1.48E-04	2.18E-04	-1.44E-02
Ecotoxicity (freshwater)	CTUe	2.04E+02	7.94E-01	4.27E+01	2.48E+02	4.68E-01	6.65E-02	MNR	MNR	MNR	MNR	MNR	1.99E+04	MNR	MNR	5.74E-02	1.58E-01	2.30E+00	-2.90E+01
Human toxicity, cancer	CTUh	2.98E-09	1.95E-11	4.70E-10	3.47E-09	3.53E-11	6.14E-12	MNR	MNR	MNR	MNR	MNR	3.04E-07	MNR	MNR	1.41E-12	5.54E-12	7.02E-11	-5.06E-10
Human tox. non-cancer	CTUh	1.04E-07	7.86E-10	1.27E-08	1.17E-07	3.00E-10	2.38E-10	MNR	MNR	MNR	MNR	MNR	1.12E-05	MNR	MNR	5.69E-11	2.07E-10	4.62E-09	-5.50E-08
SQP[7)]	-	1.40E+01	1.02E+00	9.45E+00	2.45E+01	1.02E-01	1.00E-02	MNR	MNR	MNR	MNR	MNR	2.13E+03	MNR	MNR	7.36E-02	2.50E-02	8.17E-02	-1.52E+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	3.11E+00	9.94E-03	1.81E+00	4.93E+00	5.08E-03	3.69E-04	MNR	MNR	MNR	MNR	MNR	1.70E+03	MNR	MNR	7.19E-04	1.96E-03	1.24E-03	-2.14E-01
Renew. PER as material	MJ	2.62E-01	0.00E+00	6.35E-01	8.98E-01	0.00E+00	-6.35E-01	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renew. PER	MJ	3.38E+00	9.94E-03	2.44E+00	5.83E+00	5.08E-03	-6.35E-01	MNR	MNR	MNR	MNR	MNR	1.70E+03	MNR	MNR	7.19E-04	1.96E-03	1.24E-03	-2.14E-01
Non-re. PER as energy	MJ	2.70E+01	8.82E-01	4.79E+00	3.26E+01	7.39E-01	1.54E-02	MNR	MNR	MNR	MNR	MNR	1.31E+04	MNR	MNR	6.38E-02	2.62E-02	4.54E-02	-1.68E+00
Non-re. PER as material	MJ	7.30E-01	0.00E+00	1.65E-02	7.47E-01	0.00E+00	-1.65E-02	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	0.00E+00	-2.39E-01	-2.39E-01	0.00E+00
Total use of non-re. PER	MJ	2.77E+01	8.82E-01	4.80E+00	3.34E+01	7.39E-01	-1.02E-03	MNR	MNR	MNR	MNR	MNR	1.31E+04	MNR	MNR	6.38E-02	-2.13E-01	-1.94E-01	-1.68E+00
Secondary materials	kg	1.86E-02	2.45E-04	6.21E-03	2.51E-02	3.38E-04	1.68E-05	MNR	MNR	MNR	MNR	MNR	1.21E+00	MNR	MNR	1.77E-05	1.63E-05	6.47E-05	9.53E-03
Renew. secondary fuels	MJ	1.91E-03	2.47E-06	3.10E-04	2.22E-03	9.05E-07	1.48E-07	MNR	MNR	MNR	MNR	MNR	8.39E-03	MNR	MNR	1.79E-07	7.12E-07	8.60E-07	-9.26E-05
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	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	2.32E-02	1.14E-04	-6.63E-02	-4.29E-02	4.71E-05	1.25E-05	MNR	MNR	MNR	MNR	MNR	7.72E+00	MNR	MNR	8.27E-06	8.21E-05	5.69E-05	-2.15E-03

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	2.19E-01	1.17E-03	4.34E-02	2.63E-01	1.01E-03	1.63E-03	MNR	MNR	MNR	MNR	MNR	8.47E+01	MNR	MNR	8.47E-05	9.44E-05	3.07E-03	-2.02E-02
Non-hazardous waste	kg	5.20E+00	1.92E-02	5.04E-01	5.73E+00	8.21E-03	5.38E-03	MNR	MNR	MNR	MNR	MNR	2.27E+03	MNR	MNR	1.39E-03	3.71E-02	1.46E-01	-1.32E+00
Radioactive waste	kg	7.57E-05	5.90E-06	7.34E-06	8.89E-05	5.23E-06	5.08E-08	MNR	MNR	MNR	MNR	MNR	4.05E-02	MNR	MNR	4.27E-07	7.37E-08	0.00E+00	-4.70E-06

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	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	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	0.00E+00	1.27E-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	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	8.64E-02	8.64E-02	0.00E+00	0.00E+00	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	0.00E+00	4.50E-01	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_2e	2.09E+00	5.81E-02	4.29E-01	2.58E+00	5.85E-02	2.02E-03	MNR	MNR	MNR	MNR	MNR	9.87E+02	MNR	MNR	4.21E-03	5.00E-02	4.64E-02	-1.49E-01
Ozone depletion Pot.	kg $CFC_{-11}e$	2.04E-07	1.07E-08	1.80E-08	2.32E-07	9.26E-09	1.46E-10	MNR	MNR	MNR	MNR	MNR	2.84E-05	MNR	MNR	7.75E-10	2.03E-10	4.44E-10	-4.16E-09
Acidification	kg SO_2e	1.71E-02	1.93E-04	1.92E-03	1.92E-02	1.53E-03	1.14E-05	MNR	MNR	MNR	MNR	MNR	4.27E+00	MNR	MNR	1.40E-05	1.54E-05	1.67E-05	-3.46E-03
Eutrophication	kg PO_4^3e	8.17E-03	4.40E-05	1.65E-03	9.87E-03	1.71E-04	9.03E-06	MNR	MNR	MNR	MNR	MNR	1.86E+00	MNR	MNR	3.19E-06	8.50E-06	2.35E-04	-8.09E-04
POCP (“smog”)	kg C_2H_4e	1.74E-03	7.54E-06	1.44E-04	1.89E-03	3.94E-05	3.07E-07	MNR	MNR	MNR	MNR	MNR	1.71E-01	MNR	MNR	5.46E-07	4.74E-07	4.93E-06	-1.37E-04
ADP-elements	kg Sbe	5.57E-04	1.33E-07	1.51E-06	5.59E-04	8.00E-08	4.25E-09	MNR	MNR	MNR	MNR	MNR	4.71E-03	MNR	MNR	9.65E-09	4.65E-08	8.69E-09	-1.09E-04
ADP-fossil	MJ	2.75E+01	8.82E-01	4.87E+00	3.32E+01	7.39E-01	1.54E-02	MNR	MNR	MNR	MNR	MNR	1.31E+04	MNR	MNR	6.38E-02	2.62E-02	4.54E-02	-1.68E+00

APPENDIX (PEP ECOPASSPORT ALIGNED)

This section represents the scaling method for the **B6 module**, following the PEP EcoPassport PSR for luminaries (PSR-0014-ed2.0-EN-2023 07 13). The GWP results were scaled from the product Functional Unit to the PEP EcoPassport Functional Unit, based on the lumen output (O_{lum}) and reference service life (*RSL*) of the product.

To calculate the Scaled Impact (SI_{pep}), we have followed the below methods:

1. Calculate the GWP scaling factor (*GSF*), which is the ratio of the PEP EcoPassport Functional Unit (FU_{pep}) and product Functional Unit (FU_p).

$$GSF = \frac{FU_{pep}}{FU_p} = \frac{1{,}000}{O_{lum}} * \frac{35{,}000}{RSL}$$

2. Calculate the Total Scaling factor by multiplying the GSF by the control scaling factor (*CSF*), where the CSF is determined according the relevant light management functions (e.g. if the luminaire has a presence detection system), as presented in Table A1.

$$TSF = GSF * CSF$$

Table A1: Light management function (PEP EcoPassport aligned)

Scenario	Abbrev.	CSF
No control	NC	1
Daylight dependency factor	DD	0.75
Presence sensing	PS	0.75
Daylight dependency and presence sensing	DD+PS	0.55

3. Using this GWP scaling factor, we calculate the Scaled Impact (*SI*) and results are shown in Table A2.

$$SI_{PEP} = GWP_{base} * TSF$$

As described in the EPD, calculations are made based on dataset describing electricity available on the low voltage level in Europe for year 2022 (source Ecoinvent 3.8 database). This value should be adjusted depending on specific project requirements. Please refer to this publication or contact Signify directly for more information.

Table A2 Scaled GWP per scaling factor (PEP EcoPassport aligned)

Flux [lm]	Power [W]	Efficacy [lm/W]	Total Scaling Factor (TSF) *				Scaled Impacts (GWP100 B6 - kg CO2eq.)			
			NC	DD	PS	DD+PS	NC	DD	PS	DD+PS
3700.0	23.0	160.9	0.158	0.118	0.118	0.087	159.6	119.2	119.2	87.9

** Note that if the product is non-dimmable, only the values for "NC (No Control)" are valid; if the driver type is PSU, only the values for "NC (No Control)"and "PS (presence sensing)" for are valid.*