

ENVIRONMENTAL PRODUCT DECLARATION

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

Philips TownTune Asymmetric Lyre DTD

BDP273

Signify N.V.



EPD HUB

Publishing 2024-07-02

The Signify logo, consisting of a green circle with a white 'S' inside, followed by the word 'ignify' in a green sans-serif font.

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: <input checked="" type="checkbox"/> Internal certification <input type="checkbox"/> 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	Philips TownTune Asymmetric Lyre DTD
Additional labels	BDP273 LED30-4S/740 DW50 DR-GO CLO DDF1
Product reference	912300024209
Place of production	Spain
Period for data	2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit
Declared unit mass	10.005 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	9,07E+01
GWP-total, A1-A3 (kgCO ₂ e)	9,06E+01
Secondary material, inputs (%)	54.3
Secondary material, outputs (%)	61.7
Total energy use, A1-A3 (kWh)	314
Total water use, A1-A3 (m ³ e)	0.58

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

Designed to enhance existing and scalable urban spaces, the Philips TownTune family offers all the latest lighting innovations in terms of performance, quality of light and connectivity. The family consists of four solutions: a Central Post Top (CPT), an Asymmetric Spigot Post Top / Side Entry version (ASY), a version with an extending Lyre post top bracket (Lyre), and a Central Post Top with a Conical Comfort Bowl (CCB). Each TownTune luminaire can be customized with a choice of different shapes on top of the housing, plus there’s the option to add a decorative ring, which comes in two colors (excluding CCB). Design options that enable you to create your very own lighting signature and bring a distinctive identity to districts and cities. In addition, every luminaire in the TownTune family is uniquely identifiable, thanks to the Signify Service tag app. By simply scanning a QR code, placed inside the door of the mast or directly on the luminaire, you can instantly access the configuration of the luminaire. This makes maintenance and programming operations faster and easier and enables you to create your digital library of lighting assets and spare parts. TownTune also uses the Philips LEDGINE-O lighting platform, ensuring you always have the right amount and direction of light on your street. Furthermore, thanks to being system ready (SR), TownTune is also future proof. A solution that’s ready to be paired with

Philips TownTune Asymmetric Lyre DTD-BDP273

both standalone and advanced control and lighting software applications such as Interact City.

For more information, please visit

<https://www.lighting.philips.com/link/BDP273/fam/aa/en>

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	73.51	EUR, ASIA
Minerals	0.01	EU
Fossil materials	26.48	EUR, ASIA
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	0.059

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Product
Mass per declared unit	10.00527 kg
Functional unit	1 unit of 2117 lumens over 100000 hours
Reference service life	100000 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 Signify's manufacturing facilities are included in this stage.

The product is made of metals, plastics, and electronic components. All components are transported to Signify's 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 luminaire.

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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 INSTALLATION (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)

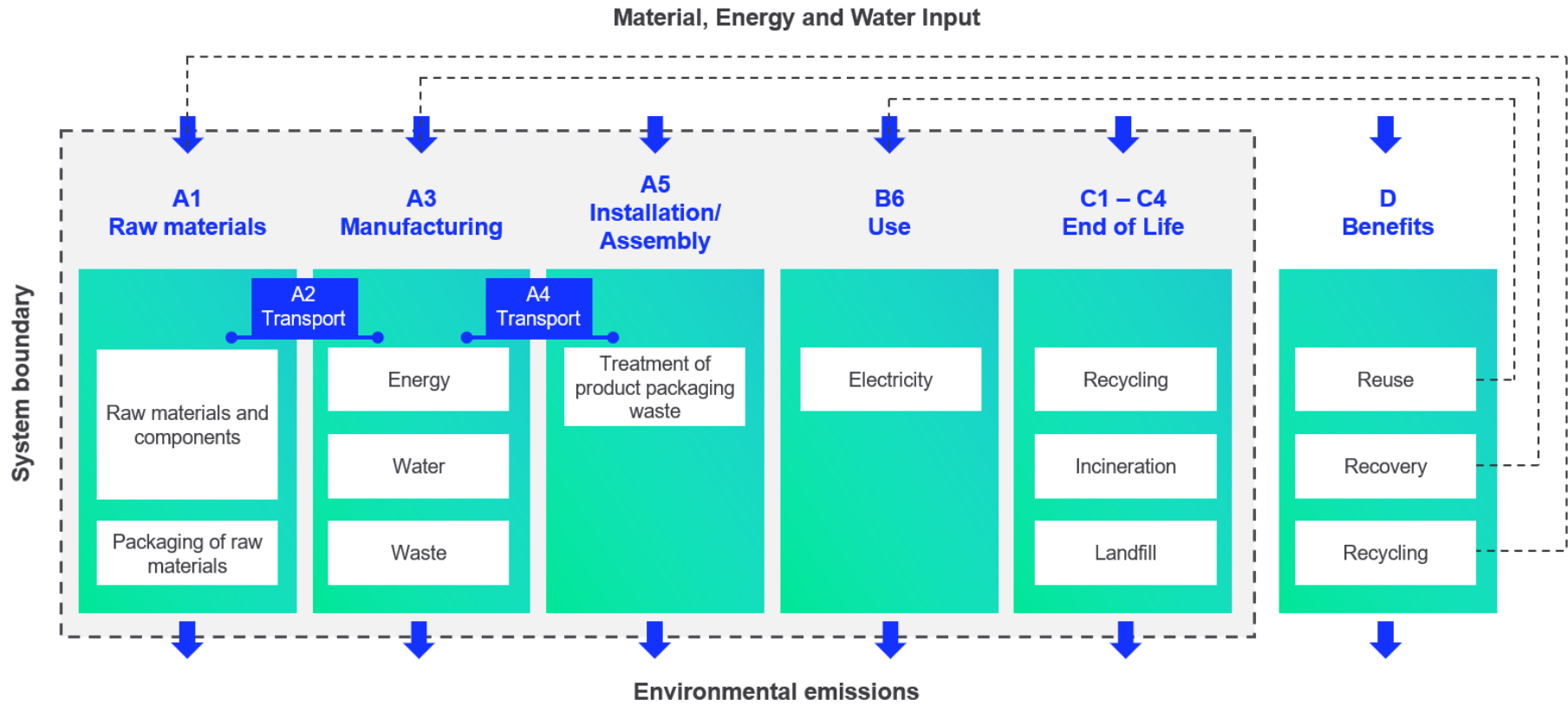
During the use phase, the product consumes electricity from Europe's electricity grid mix (B6). The total power consumption of the reference product is calculated as follows: Wattage x Reference lifetime = kWh consumed throughout the entire use phase B6.

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
No allocation	No allocation
No allocation	Allocated by mass or volume
Allocated by mass or volume	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 ₂ e	8,83E+01	1,91E+00	3,34E-01	9,06E+01	1,91E+00	2,22E-01	MNR	MNR	MNR	MNR	MNR	7,45E+02	MNR	MNR	1,40E-01	2,69E+00	1,70E+00	-1,67E+01
GWP – fossil	kg CO ₂ e	8,82E+01	1,91E+00	5,43E-01	9,07E+01	1,91E+00	8,22E-03	MNR	MNR	MNR	MNR	MNR	7,43E+02	MNR	MNR	1,40E-01	2,69E+00	1,63E+00	-1,67E+01
GWP – biogenic	kg CO ₂ e	-7,07E-02	0,00E+00	-2,14E-01	-2,84E-01	7,37E-04	2,14E-01	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	0,00E+00	7,07E-02	-5,34E-03
GWP – LULUC	kg CO ₂ e	1,50E-01	7,06E-04	3,98E-03	1,55E-01	7,03E-04	2,32E-06	MNR	MNR	MNR	MNR	MNR	1,74E+00	MNR	MNR	5,16E-05	2,14E-04	1,22E-04	-2,61E-03
Ozone depletion pot.	kg CFC ₁₁ e	4,98E-06	4,38E-07	6,21E-08	5,48E-06	4,39E-07	5,70E-10	MNR	MNR	MNR	MNR	MNR	3,77E-05	MNR	MNR	3,22E-08	2,02E-08	1,43E-08	-4,50E-07
Acidification potential	mol H ⁺ e	6,05E-01	8,27E-03	2,36E-03	6,16E-01	8,07E-03	4,99E-05	MNR	MNR	MNR	MNR	MNR	4,24E+00	MNR	MNR	5,93E-04	2,16E-03	8,04E-04	-2,10E-01
EP-freshwater ²⁾	kg Pe	6,19E-03	1,56E-05	2,53E-05	6,23E-03	1,56E-05	6,28E-08	MNR	MNR	MNR	MNR	MNR	7,87E-02	MNR	MNR	1,15E-06	6,99E-06	3,73E-06	-1,12E-03
EP-marine	kg Ne	9,08E-02	2,45E-03	8,08E-04	9,41E-02	2,40E-03	2,22E-05	MNR	MNR	MNR	MNR	MNR	5,63E-01	MNR	MNR	1,76E-04	6,06E-04	7,29E-04	-1,95E-02
EP-terrestrial	mol Ne	9,64E-01	2,70E-02	6,06E-03	9,97E-01	2,65E-02	2,28E-04	MNR	MNR	MNR	MNR	MNR	6,40E+00	MNR	MNR	1,94E-03	6,64E-03	2,96E-03	-2,30E-01
POCP (“smog”) ³⁾	kg NMVOCe	3,04E-01	8,60E-03	3,09E-03	3,16E-01	8,47E-03	5,66E-05	MNR	MNR	MNR	MNR	MNR	1,75E+00	MNR	MNR	6,22E-04	1,73E-03	8,82E-04	-6,69E-02
ADP-minerals & metals ⁴⁾	kg Sbe	2,79E-03	4,46E-06	3,09E-06	2,80E-03	4,47E-06	1,80E-08	MNR	MNR	MNR	MNR	MNR	6,94E-03	MNR	MNR	3,28E-07	1,55E-05	3,26E-07	-1,57E-03
ADP-fossil resources	MJ	1,08E+03	2,86E+01	7,84E+00	1,12E+03	2,86E+01	4,88E-02	MNR	MNR	MNR	MNR	MNR	1,58E+04	MNR	MNR	2,10E+00	2,19E+00	1,40E+00	-1,64E+02
Water use ⁵⁾	m ³ e depr.	3,29E+01	1,28E-01	3,75E-01	3,34E+01	1,28E-01	1,04E-02	MNR	MNR	MNR	MNR	MNR	4,32E+02	MNR	MNR	9,41E-03	1,30E-01	1,07E-01	-1,40E+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, 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	6,41E-06	2,19E-07	4,67E-08	6,68E-06	2,20E-07	4,48E-10	MNR	MNR	MNR	MNR	MNR	1,39E-05	MNR	MNR	1,61E-08	2,45E-08	1,11E-08	-1,07E-06
Ionizing radiation ⁶⁾	kBq U235e	5,04E+00	1,36E-01	2,83E-02	5,20E+00	1,36E-01	1,60E-04	MNR	MNR	MNR	MNR	MNR	4,28E+02	MNR	MNR	1,00E-02	1,24E-02	6,95E-03	-9,66E-01

Ecotoxicity (freshwater)	CTUe	3,93E+03	2,57E+01	1,65E+01	3,98E+03	2,58E+01	2,49E-01	MNR	MNR	MNR	MNR	MNR	1,08E+04	MNR	MNR	1,89E+00	1,32E+01	6,68E+02	-6,64E+02
Human toxicity, cancer	CTUh	2,51E-07	6,35E-10	4,09E-10	2,52E-07	6,33E-10	1,81E-11	MNR	MNR	MNR	MNR	MNR	3,52E-07	MNR	MNR	4,65E-11	4,60E-10	1,30E-09	-8,80E-09
Human tox. non-cancer	CTUh	3,86E-06	2,54E-08	7,82E-09	3,89E-06	2,55E-08	7,16E-10	MNR	MNR	MNR	MNR	MNR	1,16E-05	MNR	MNR	1,87E-09	1,86E-08	6,43E-08	-1,19E-06
SQP ⁷⁾	-	2,87E+02	3,29E+01	2,09E+01	3,41E+02	3,30E+01	3,00E-02	MNR	MNR	MNR	MNR	MNR	2,86E+03	MNR	MNR	2,42E+00	3,37E+00	1,87E+00	-5,19E+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 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	8,36E+01	3,22E-01	6,55E+00	9,05E+01	3,23E-01	1,30E-03	MNR	MNR	MNR	MNR	MNR	3,22E+03	MNR	MNR	2,37E-02	2,80E-01	6,15E-02	-4,74E+00
Renew. PER as material	MJ	8,66E-01	0,00E+00	2,03E+00	2,89E+00	0,00E+00	-2,03E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	-7,33E-02	-7,92E-01	0,00E+00
Total use of renew. PER	MJ	8,45E+01	3,22E-01	8,58E+00	9,34E+01	3,23E-01	-2,03E+00	MNR	MNR	MNR	MNR	MNR	3,22E+03	MNR	MNR	2,37E-02	2,06E-01	-7,31E-01	-4,74E+00
Non-re. PER as energy	MJ	1,01E+03	2,86E+01	7,26E+00	1,04E+03	2,86E+01	4,88E-02	MNR	MNR	MNR	MNR	MNR	1,58E+04	MNR	MNR	2,10E+00	2,19E+00	1,40E+00	-1,63E+02
Non-re. PER as material	MJ	6,88E+01	0,00E+00	4,12E-02	6,89E+01	0,00E+00	-4,12E-02	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	-3,46E+01	-3,43E+01	5,53E-01
Total use of non-re. PER	MJ	1,07E+03	2,86E+01	7,30E+00	1,11E+03	2,86E+01	7,63E-03	MNR	MNR	MNR	MNR	MNR	1,58E+04	MNR	MNR	2,10E+00	-3,24E+01	-3,29E+01	-1,63E+02
Secondary materials	kg	5,43E+00	7,96E-03	6,11E-02	5,50E+00	7,95E-03	5,46E-05	MNR	MNR	MNR	MNR	MNR	1,63E+00	MNR	MNR	5,84E-04	2,19E-03	3,54E-03	6,91E-01
Renew. secondary fuels	MJ	4,84E-02	8,00E-05	4,22E-03	5,27E-02	8,02E-05	6,20E-07	MNR	MNR	MNR	MNR	MNR	1,32E-02	MNR	MNR	5,89E-06	1,08E-04	2,87E-05	-1,34E-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	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	5,64E-01	3,70E-03	8,89E-03	5,77E-01	3,71E-03	8,99E-05	MNR	MNR	MNR	MNR	MNR	1,36E+01	MNR	MNR	2,72E-04	4,60E-03	2,40E-03	-6,69E-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	1,42E+01	3,79E-02	3,74E-02	1,43E+01	3,80E-02	3,57E-03	MNR	MNR	MNR	MNR	MNR	5,68E+01	MNR	MNR	2,79E-03	1,32E-02	3,75E-02	-2,59E+00
Non-hazardous waste	kg	1,37E+02	6,22E-01	7,17E-01	1,38E+02	6,24E-01	6,26E-02	MNR	MNR	MNR	MNR	MNR	3,59E+03	MNR	MNR	4,58E-02	1,40E+00	3,76E+00	-6,17E+01
Radioactive waste	kg	2,02E-03	1,91E-04	1,74E-05	2,23E-03	1,92E-04	1,35E-07	MNR	MNR	MNR	MNR	MNR	1,15E-01	MNR	MNR	1,41E-05	7,40E-06	0,00E+00	-3,57E-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	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	5,13E+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	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	1,04E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	5,54E-01	5,54E-01	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	2,36E+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 ₂ e	8,61E+01	1,89E+00	5,52E-01	8,85E+01	1,89E+00	7,88E-03	MNR	MNR	MNR	MNR	MNR	7,36E+02	MNR	MNR	1,39E-01	2,68E+00	1,78E+00	-1,64E+01
Ozone depletion Pot.	kg CFC ₁₁ e	4,40E-06	3,47E-07	5,20E-08	4,80E-06	3,47E-07	4,89E-10	MNR	MNR	MNR	MNR	MNR	3,27E-05	MNR	MNR	2,55E-08	1,68E-08	1,17E-08	-3,81E-07
Acidification	kg SO ₂ e	5,11E-01	6,43E-03	1,86E-03	5,19E-01	6,27E-03	3,60E-05	MNR	MNR	MNR	MNR	MNR	3,60E+00	MNR	MNR	4,61E-04	1,69E-03	6,10E-04	-1,83E-01
Eutrophication	kg PO ₄ ³ e	1,86E-01	1,44E-03	1,05E-03	1,88E-01	1,43E-03	2,80E-05	MNR	MNR	MNR	MNR	MNR	2,77E+00	MNR	MNR	1,05E-04	7,18E-04	5,37E-03	-4,68E-02
POCP (“smog”)	kg C ₂ H ₄ e	3,41E-02	2,49E-04	2,36E-04	3,46E-02	2,45E-04	1,02E-06	MNR	MNR	MNR	MNR	MNR	1,47E-01	MNR	MNR	1,80E-05	5,80E-05	7,88E-05	-8,52E-03
ADP-elements	kg Sbe	2,77E-03	4,32E-06	2,93E-06	2,77E-03	4,33E-06	1,43E-08	MNR	MNR	MNR	MNR	MNR	6,92E-03	MNR	MNR	3,18E-07	1,55E-05	2,89E-07	-1,57E-03
ADP-fossil	MJ	1,07E+03	2,86E+01	7,83E+00	1,10E+03	2,86E+01	4,88E-02	MNR	MNR	MNR	MNR	MNR	1,58E+04	MNR	MNR	2,10E+00	2,19E+00	1,40E+00	-1,64E+02

APPENDIX (EPD HUB 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 a reference variant of a product family, based on various light management scenarios and power inputs of the luminaires within the same product family

To calculate the Scaled Impact (*SI*), we have followed the below methods:

1. Calculate the power scaling factor (PSF), which is the ratio of the power input of the variant in questions P_{in} and the power input of the base variant P_{base} .

$$PSF = \frac{P_{in}}{P_{base}}$$

2. Calculate the Total Scaling factor by multiplying the PSF by the control scaling factor (CSF), where the CSF is determined according the relevant control factor scenario (e.g. if the luminaire has a presence detection system). The presented controls factors values in Table A1 are based on BS EN 15193-1:2017. Please refer to this publication or contact Signify directly for more information.

$$TSF = PSF * CSF$$

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. Lastly, the GWP of the base variant is then scaled by the TSF.

$$\text{Scaled Impact} = \text{GWP}_{\text{case}} * \text{TSF}$$

Table A2 Scaled GWP per scaling factor (EPD Hub aligned)

Configuration	Flux [lm]	Power [W]	Efficacy [lm/W]	PSF	Total Scaling Factor (TSF)				Scaled Impacts (GWP100 B6 - kg CO2eq.)			
					NC	DD	PS	DD+PS	NC	DD	PS	DD+PS
BDP270,271,272,273 LED8-4S/740	624.0	5.9	105.8	0.311	0.311	0.233	0.233	0.171	231.7	173.6	173.6	127.4
BDP270,271,272,273 LED10-4S/740	780.0	7.1	109.9	0.374	0.374	0.28	0.28	0.206	278.6	208.6	208.6	153.5
BDP270,271,272,273 LED12-4S/740	936.0	7.9	118.5	0.416	0.416	0.312	0.312	0.229	309.9	232.4	232.4	170.6
BDP270,271,272,273 LED14-4S/740	1092.0	9.1	120.0	0.479	0.479	0.359	0.359	0.263	356.9	267.5	267.5	195.9
BDP270,271,272,273 LED16-4S/740	1248.0	10.2	122.4	0.537	0.537	0.403	0.403	0.295	400.1	300.2	300.2	219.8
BDP270,271,272,273 LED18-4S/740	1404.0	11.4	123.2	0.6	0.6	0.45	0.45	0.33	447.0	335.2	335.2	245.8
BDP270,271,272,273 LED20-4S/740	1560.0	12.6	123.8	0.663	0.663	0.497	0.497	0.365	493.9	370.3	370.3	271.9
BDP270,271,272,273 LED22-4S/740	1694.0	13.8	122.8	0.726	0.726	0.544	0.544	0.399	540.9	405.3	405.3	297.3
BDP270,271,272,273 LED24-4S/740	1848.0	15.2	121.6	0.8	0.8	0.6	0.6	0.44	596.0	447.0	447.0	327.8
BDP270,271,272,273 LED27-4S/740	2079.0	17.0	122.3	0.895	0.895	0.671	0.671	0.492	666.8	499.9	499.9	366.5
BDP270,271,272,273 LED30-4S/740	2310.0	19.0	121.6	1.0	1.0	0.75	0.75	0.55	745.0	558.8	558.8	409.8
BDP270,271,272,273 LED34-4S/740	2618.0	19.8	132.2	1.042	1.042	0.782	0.782	0.573	776.3	582.6	582.6	426.9

BDP270,271,272,273 LED35-4S/740	2695.0	20.5	131.5	1.079	1.079	0.809	0.809	0.593	803.9	602.7	602.7	441.8
BDP270,271,272,273 LED39-4S/740	3003.0	22.5	133.5	1.184	1.184	0.888	0.888	0.651	882.1	661.6	661.6	485.0
BDP270,271,272,273 LED40-4S/740	3080.0	23.5	131.1	1.237	1.237	0.928	0.928	0.68	921.6	691.4	691.4	506.6
BDP270,271,272,273 LED44-4S/740	3388.0	26.0	130.3	1.368	1.368	1.026	1.026	0.752	1019.2	764.4	764.4	560.2
BDP270,271,272,273 LED45-4S/740	3465.0	26.5	130.8	1.395	1.395	1.046	1.046	0.767	1039.3	779.3	779.3	571.4
BDP270,271,272,273 LED50-4S/740	3850.0	28.5	135.1	1.5	1.5	1.125	1.125	0.825	1117.5	838.1	838.1	614.6
BDP270,271,272,273 LED55-4S/740	4312.0	31.5	136.9	1.658	1.658	1.244	1.244	0.912	1235.2	926.8	926.8	679.4
BDP270,271,272,273 LED59-4S/740	4620.0	34.0	135.9	1.789	1.789	1.342	1.342	0.984	1332.8	999.8	999.8	733.1
BDP270,271,272,273 LED64-4S/740	4864.0	37.0	131.5	1.947	1.947	1.46	1.46	1.071	1450.5	1087.7	1087.7	797.9
BDP270,271,272,273 LED69-4S/740	5320.0	40.0	133.0	2.105	2.105	1.579	1.579	1.158	1568.2	1176.4	1176.4	862.7
BDP270,271,272,273 LED74-4S/740	5624.0	43.5	129.3	2.289	2.289	1.717	1.717	1.259	1705.3	1279.2	1279.2	938.0
BDP270,271,272,273 LED79-4S/740	5928.0	44.5	133.2	2.342	2.342	1.756	1.756	1.288	1744.8	1308.2	1308.2	959.6
BDP270,271,272,273 LED84-4S/740	6384.0	48.0	133.0	2.526	2.526	1.894	1.894	1.389	1881.9	1411.0	1411.0	1034.8
BDP270,271,272,273 LED90-4S/740	6840.0	52.0	131.5	2.737	2.737	2.053	2.053	1.505	2039.1	1529.5	1529.5	1121.2
BDP270,271,272,273 LED94-4S/740	7144.0	54.0	132.3	2.842	2.842	2.132	2.132	1.563	2117.3	1588.3	1588.3	1164.4
BDP270,271,272,273 LED109-4S/740	8250.0	63.0	131.0	3.316	3.316	2.487	2.487	1.824	2470.4	1852.8	1852.8	1358.9
BDP270,271,272,273 LED120-4S/740	9000.0	71.0	126.8	3.737	3.737	2.803	2.803	2.055	2784.1	2088.2	2088.2	1531.0
BDP270,271,272,273 LED130-4S/740	9750.0	77.0	126.6	4.053	4.053	3.04	3.04	2.229	3019.5	2264.8	2264.8	1660.6
BDP270,271,272,273 LED6-4S/722	468.0	5.9	79.3	0.311	0.311	0.233	0.233	0.171	231.7	173.6	173.6	127.4
BDP270,271,272,273 LED8-4S/722	624.0	7.4	84.3	0.389	0.389	0.292	0.292	0.214	289.8	217.5	217.5	159.4
BDP270,271,272,273 LED10-4S/722	770.0	9.1	84.6	0.479	0.479	0.359	0.359	0.263	356.9	267.5	267.5	195.9
BDP270,271,272,273 LED12-4S/722	936.0	10.2	91.8	0.537	0.537	0.403	0.403	0.295	400.1	300.2	300.2	219.8
BDP270,271,272,273 LED14-4S/722	1092.0	11.6	94.1	0.611	0.611	0.458	0.458	0.336	455.2	341.2	341.2	250.3
BDP270,271,272,273 LED16-4S/722	1232.0	13.4	91.9	0.705	0.705	0.529	0.529	0.388	525.2	394.1	394.1	289.1
BDP270,271,272,273 LED18-4S/722	1386.0	15.0	92.4	0.789	0.789	0.592	0.592	0.434	587.8	441.0	441.0	323.3

BDP270,271,272,273 LED20-4S/722	1540.0	16.8	91.7	0.884	0.884	0.663	0.663	0.486	658.6	493.9	493.9	362.1
BDP270,271,272,273 LED22-4S/722	1694.0	18.6	91.1	0.979	0.979	0.734	0.734	0.538	729.4	546.8	546.8	400.8
BDP270,271,272,273 LED24-4S/722	1848.0	20.5	90.1	1.079	1.079	0.809	0.809	0.593	803.9	602.7	602.7	441.8
BDP270,271,272,273 LED27-4S/722	2079.0	21.0	99.0	1.105	1.105	0.829	0.829	0.608	823.2	617.6	617.6	453.0
BDP270,271,272,273 LED30-4S/722	2310.0	23.0	100.4	1.211	1.211	0.908	0.908	0.666	902.2	676.5	676.5	496.2
BDP270,271,272,273 LED34-4S/722	2618.0	26.5	98.8	1.395	1.395	1.046	1.046	0.767	1039.3	779.3	779.3	571.4
BDP270,271,272,273 LED35-4S/722	2695.0	27.5	98.0	1.447	1.447	1.085	1.085	0.796	1078.0	808.3	808.3	593.0
BDP270,271,272,273 LED39-4S/722	2964.0	30.5	97.2	1.605	1.605	1.204	1.204	0.883	1195.7	897.0	897.0	657.8
BDP270,271,272,273 LED40-4S/722	3040.0	31.5	96.5	1.658	1.658	1.244	1.244	0.912	1235.2	926.8	926.8	679.4
BDP270,271,272,273 LED44-4S/722	3344.0	35.0	95.5	1.842	1.842	1.382	1.382	1.013	1372.3	1029.6	1029.6	754.7
BDP270,271,272,273 LED45-4S/722	3420.0	36.0	95.0	1.895	1.895	1.421	1.421	1.042	1411.8	1058.6	1058.6	776.3
BDP270,271,272,273 LED50-4S/722	3800.0	38.5	98.7	2.026	2.026	1.519	1.519	1.114	1509.4	1131.7	1131.7	829.9
BDP270,271,272,273 LED55-4S/722	4256.0	42.5	100.1	2.237	2.237	1.678	1.678	1.23	1666.6	1250.1	1250.1	916.4
BDP270,271,272,273 LED59-4S/722	4560.0	46.0	99.1	2.421	2.421	1.816	1.816	1.332	1803.6	1352.9	1352.9	992.3
BDP270,271,272,273 LED64-4S/722	4800.0	50.0	96.0	2.632	2.632	1.974	1.974	1.448	1960.8	1470.6	1470.6	1078.8
BDP270,271,272,273 LED69-4S/722	5250.0	55.0	95.5	2.895	2.895	2.171	2.171	1.592	2156.8	1617.4	1617.4	1186.0
BDP270,271,272,273 LED74-4S/722	5550.0	59.0	94.1	3.105	3.105	2.329	2.329	1.708	2313.2	1735.1	1735.1	1272.5
BDP270,271,272,273 LED79-4S/722	6000.0	61.0	98.4	3.211	3.211	2.408	2.408	1.766	2392.2	1794.0	1794.0	1315.7
BDP270,271,272,273 LED84-4S/722	6300.0	65.0	96.9	3.421	3.421	2.566	2.566	1.882	2548.6	1911.7	1911.7	1402.1
BDP270,271,272,273 LED90-4S/722	6750.0	70.0	96.4	3.684	3.684	2.763	2.763	2.026	2744.6	2058.4	2058.4	1509.4
BDP270,271,272,273 LED94-4S/722	7050.0	74.0	95.3	3.895	3.895	2.921	2.921	2.142	2901.8	2176.1	2176.1	1595.8
BDP270,271,272,273 LED6-4S/840	468.0	5.3	88.3	0.279	0.279	0.209	0.209	0.153	207.9	155.7	155.7	114.0
BDP270,271,272,273 LED8-4S/840	624.0	6.6	94.5	0.347	0.347	0.26	0.26	0.191	258.5	193.7	193.7	142.3
BDP270,271,272,273 LED10-4S/840	780.0	7.9	98.7	0.416	0.416	0.312	0.312	0.229	309.9	232.4	232.4	170.6
BDP270,271,272,273 LED12-4S/840	936.0	9.0	104.0	0.474	0.474	0.356	0.356	0.261	353.1	265.2	265.2	194.4

BDP270,271,272,273 LED14-4S/840	1092.0	10.2	107.1	0.537	0.537	0.403	0.403	0.295	400.1	300.2	300.2	219.8
BDP270,271,272,273 LED16-4S/840	1248.0	11.6	107.6	0.611	0.611	0.458	0.458	0.336	455.2	341.2	341.2	250.3
BDP270,271,272,273 LED18-4S/840	1386.0	13.0	106.6	0.684	0.684	0.513	0.513	0.376	509.6	382.2	382.2	280.1
BDP270,271,272,273 LED20-4S/840	1540.0	14.4	106.9	0.758	0.758	0.568	0.568	0.417	564.7	423.2	423.2	310.7
BDP270,271,272,273 LED22-4S/840	1694.0	16.0	105.9	0.842	0.842	0.632	0.632	0.463	627.3	470.8	470.8	344.9
BDP270,271,272,273 LED24-4S/840	1848.0	17.4	106.2	0.916	0.916	0.687	0.687	0.504	682.4	511.8	511.8	375.5
BDP270,271,272,273 LED27-4S/840	2079.0	18.0	115.5	0.947	0.947	0.71	0.71	0.521	705.5	528.9	528.9	388.1
BDP270,271,272,273 LED30-4S/840	2310.0	20.0	115.5	1.053	1.053	0.79	0.79	0.579	784.5	588.6	588.6	431.4
BDP270,271,272,273 LED34-4S/840	2618.0	22.5	116.4	1.184	1.184	0.888	0.888	0.651	882.1	661.6	661.6	485.0
BDP270,271,272,273 LED35-4S/840	2695.0	23.5	114.7	1.237	1.237	0.928	0.928	0.68	921.6	691.4	691.4	506.6
BDP270,271,272,273 LED39-4S/840	3003.0	26.5	113.3	1.395	1.395	1.046	1.046	0.767	1039.3	779.3	779.3	571.4
BDP270,271,272,273 LED40-4S/840	3080.0	27.0	114.1	1.421	1.421	1.066	1.066	0.782	1058.6	794.2	794.2	582.6
BDP270,271,272,273 LED44-4S/840	3344.0	30.0	111.5	1.579	1.579	1.184	1.184	0.868	1176.4	882.1	882.1	646.7
BDP270,271,272,273 LED45-4S/840	3420.0	30.5	112.1	1.605	1.605	1.204	1.204	0.883	1195.7	897.0	897.0	657.8
BDP270,271,272,273 LED50-4S/840	3800.0	34.5	110.1	1.816	1.816	1.362	1.362	0.999	1352.9	1014.7	1014.7	744.3
BDP270,271,272,273 LED55-4S/840	4256.0	36.5	116.6	1.921	1.921	1.441	1.441	1.057	1431.1	1073.5	1073.5	787.5
BDP270,271,272,273 LED59-4S/840	4560.0	39.5	115.4	2.079	2.079	1.559	1.559	1.143	1548.9	1161.5	1161.5	851.5
BDP270,271,272,273 LED64-4S/840	4864.0	43.0	113.1	2.263	2.263	1.697	1.697	1.245	1685.9	1264.3	1264.3	927.5
BDP270,271,272,273 LED69-4S/840	5320.0	46.5	114.4	2.447	2.447	1.835	1.835	1.346	1823.0	1367.1	1367.1	1002.8
BDP270,271,272,273 LED74-4S/840	5550.0	50.0	111.0	2.632	2.632	1.974	1.974	1.448	1960.8	1470.6	1470.6	1078.8
BDP270,271,272,273 LED79-4S/840	6080.0	52.0	116.9	2.737	2.737	2.053	2.053	1.505	2039.1	1529.5	1529.5	1121.2
BDP270,271,272,273 LED84-4S/840	6384.0	56.0	114.0	2.947	2.947	2.21	2.21	1.621	2195.5	1646.4	1646.4	1207.6
BDP270,271,272,273 LED90-4S/840	6750.0	60.0	112.5	3.158	3.158	2.368	2.368	1.737	2352.7	1764.2	1764.2	1294.1
BDP270,271,272,273 LED94-4S/840	7050.0	63.0	111.9	3.316	3.316	2.487	2.487	1.824	2470.4	1852.8	1852.8	1358.9
BDP270,271,272,273 LED109-4S/840	8250.0	74.0	111.5	3.895	3.895	2.921	2.921	2.142	2901.8	2176.1	2176.1	1595.8

BDP270,271,272,273 LED120-4S/840	9000.0	85.0	105.9	4.474	4.474	3.356	3.356	2.461	3333.1	2500.2	2500.2	1833.4
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* 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.

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 a reference variant of a product family, based on various light management functions, the lumen output (O_{lum}) and reference service life (RSL) of each product within the same product family.

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

1. Calculate the power scaling factor (PSF), which is the ratio of the power input of the variant in questions P_{in} and the power input of the base variant P_{base} .

$$PSF = \frac{P_{in}}{P_{base}}$$

- Using this scaled GWP, we then can apply the PEP Ecopassport method for calculating the environmental impact of the functional unit for a luminary (1000 lumens over 35000 hours), applied to B6, where the Functional Unit application considers the lumen output (Olum) and reference service lifetime (RSL) of the product to estimate the final environmental impact. The scaled impact (SIpep) is presented in Table A4.

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

- Calculate the GWP scaling factor (PGSF), by multiplying the PSF by the GSF.

$$PGSF = PSF * GSF$$

- Calculate the Total Scaling factor by multiplying the PSF by the control scaling factor (CSF), where the CSF is determined according the relevant control factor scenario (e.g. if the luminaire has a presence detection system), as presented in Table A1.

$$TSF = PGSF * CSF$$

Table A3: Light management functions (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

5. Lastly, the GWP of the base variant is then scaled by the TSF.

$$Scaled\ GWP = GWP_{case} * TSF$$

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. Presented controls factors and functional unit conversion values are based on the PEP EcoPassport PSR for luminaries (PSR-0014-ed2.0-EN-2023 07 13). Please refer to this publication or contact Signify directly for more information.

Table A4 Scale impact per scaling factor (PEP EcoPassport aligned)

Configuration	Flux [lm]	Power [W]	Efficacy [lm/W]	PSF	Total Scaling Factor (TSF)				Scaled Impacts (GWP100 B6 - kg CO2eq.)			
					NC	DD	PS	DD+PS	NC	DD	PS	DD+PS
BDP270,271,272,273 LED8-4S/740	624.0	5.9	105.8	0.311	0.174	0.13	0.13	0.096	129.6	96.9	96.9	71.5
BDP270,271,272,273 LED10-4S/740	780.0	7.1	109.9	0.374	0.168	0.126	0.126	0.092	125.2	93.9	93.9	68.5
BDP270,271,272,273 LED12-4S/740	936.0	7.9	118.5	0.416	0.156	0.117	0.117	0.086	116.2	87.2	87.2	64.1
BDP270,271,272,273 LED14-4S/740	1092.0	9.1	120.0	0.479	0.154	0.115	0.115	0.085	114.7	85.7	85.7	63.3
BDP270,271,272,273 LED16-4S/740	1248.0	10.2	122.4	0.537	0.151	0.113	0.113	0.083	112.5	84.2	84.2	61.8
BDP270,271,272,273 LED18-4S/740	1404.0	11.4	123.2	0.6	0.15	0.112	0.112	0.082	111.8	83.4	83.4	61.1
BDP270,271,272,273 LED20-4S/740	1560.0	12.6	123.8	0.663	0.149	0.112	0.112	0.082	111.0	83.4	83.4	61.1
BDP270,271,272,273 LED22-4S/740	1694.0	13.8	122.8	0.726	0.15	0.112	0.112	0.082	111.8	83.4	83.4	61.1
BDP270,271,272,273 LED24-4S/740	1848.0	15.2	121.6	0.8	0.152	0.114	0.114	0.084	113.2	84.9	84.9	62.6
BDP270,271,272,273 LED27-4S/740	2079.0	17.0	122.3	0.895	0.151	0.113	0.113	0.083	112.5	84.2	84.2	61.8
BDP270,271,272,273 LED30-4S/740	2310.0	19.0	121.6	1.0	0.152	0.114	0.114	0.084	113.2	84.9	84.9	62.6
BDP270,271,272,273 LED34-4S/740	2618.0	19.8	132.2	1.042	0.139	0.104	0.104	0.076	103.6	77.5	77.5	56.6
BDP270,271,272,273 LED35-4S/740	2695.0	20.5	131.5	1.079	0.14	0.105	0.105	0.077	104.3	78.2	78.2	57.4
BDP270,271,272,273 LED39-4S/740	3003.0	22.5	133.5	1.184	0.138	0.104	0.104	0.076	102.8	77.5	77.5	56.6

BDP270,271,272,273 LED40-4S/740	3080.0	23.5	131.1	1.237	0.141	0.106	0.106	0.078	105.0	79.0	79.0	58.1
BDP270,271,272,273 LED44-4S/740	3388.0	26.0	130.3	1.368	0.141	0.106	0.106	0.078	105.0	79.0	79.0	58.1
BDP270,271,272,273 LED45-4S/740	3465.0	26.5	130.8	1.395	0.141	0.106	0.106	0.078	105.0	79.0	79.0	58.1
BDP270,271,272,273 LED50-4S/740	3850.0	28.5	135.1	1.5	0.136	0.102	0.102	0.075	101.3	76.0	76.0	55.9
BDP270,271,272,273 LED55-4S/740	4312.0	31.5	136.9	1.658	0.135	0.101	0.101	0.074	100.6	75.2	75.2	55.1
BDP270,271,272,273 LED59-4S/740	4620.0	34.0	135.9	1.789	0.136	0.102	0.102	0.075	101.3	76.0	76.0	55.9
BDP270,271,272,273 LED64-4S/740	4864.0	37.0	131.5	1.947	0.14	0.105	0.105	0.077	104.3	78.2	78.2	57.4
BDP270,271,272,273 LED69-4S/740	5320.0	40.0	133.0	2.105	0.138	0.104	0.104	0.076	102.8	77.5	77.5	56.6
BDP270,271,272,273 LED74-4S/740	5624.0	43.5	129.3	2.289	0.142	0.106	0.106	0.078	105.8	79.0	79.0	58.1
BDP270,271,272,273 LED79-4S/740	5928.0	44.5	133.2	2.342	0.138	0.104	0.104	0.076	102.8	77.5	77.5	56.6
BDP270,271,272,273 LED84-4S/740	6384.0	48.0	133.0	2.526	0.138	0.104	0.104	0.076	102.8	77.5	77.5	56.6
BDP270,271,272,273 LED90-4S/740	6840.0	52.0	131.5	2.737	0.14	0.105	0.105	0.077	104.3	78.2	78.2	57.4
BDP270,271,272,273 LED94-4S/740	7144.0	54.0	132.3	2.842	0.139	0.104	0.104	0.076	103.6	77.5	77.5	56.6
BDP270,271,272,273 LED109-4S/740	8250.0	63.0	131.0	3.316	0.141	0.106	0.106	0.078	105.0	79.0	79.0	58.1
BDP270,271,272,273 LED120-4S/740	9000.0	71.0	126.8	3.737	0.145	0.109	0.109	0.08	108.0	81.2	81.2	59.6
BDP270,271,272,273 LED130-4S/740	9750.0	77.0	126.6	4.053	0.145	0.109	0.109	0.08	108.0	81.2	81.2	59.6
BDP270,271,272,273 LED6-4S/722	468.0	5.9	79.3	0.311	0.233	0.175	0.175	0.128	173.6	130.4	130.4	95.4
BDP270,271,272,273 LED8-4S/722	624.0	7.4	84.3	0.389	0.218	0.164	0.164	0.12	162.4	122.2	122.2	89.4
BDP270,271,272,273 LED10-4S/722	770.0	9.1	84.6	0.479	0.218	0.164	0.164	0.12	162.4	122.2	122.2	89.4
BDP270,271,272,273 LED12-4S/722	936.0	10.2	91.8	0.537	0.201	0.151	0.151	0.111	149.7	112.5	112.5	82.7
BDP270,271,272,273 LED14-4S/722	1092.0	11.6	94.1	0.611	0.196	0.147	0.147	0.108	146.0	109.5	109.5	80.5
BDP270,271,272,273 LED16-4S/722	1232.0	13.4	91.9	0.705	0.2	0.15	0.15	0.11	149.0	111.8	111.8	82.0
BDP270,271,272,273 LED18-4S/722	1386.0	15.0	92.4	0.789	0.199	0.149	0.149	0.109	148.3	111.0	111.0	81.2
BDP270,271,272,273 LED20-4S/722	1540.0	16.8	91.7	0.884	0.201	0.151	0.151	0.111	149.7	112.5	112.5	82.7
BDP270,271,272,273 LED22-4S/722	1694.0	18.6	91.1	0.979	0.202	0.152	0.152	0.111	150.5	113.2	113.2	82.7

BDP270,271,272,273 LED24-4S/722	1848.0	20.5	90.1	1.079	0.204	0.153	0.153	0.112	152.0	114.0	114.0	83.4
BDP270,271,272,273 LED27-4S/722	2079.0	21.0	99.0	1.105	0.186	0.14	0.14	0.102	138.6	104.3	104.3	76.0
BDP270,271,272,273 LED30-4S/722	2310.0	23.0	100.4	1.211	0.183	0.137	0.137	0.101	136.3	102.1	102.1	75.2
BDP270,271,272,273 LED34-4S/722	2618.0	26.5	98.8	1.395	0.186	0.14	0.14	0.102	138.6	104.3	104.3	76.0
BDP270,271,272,273 LED35-4S/722	2695.0	27.5	98.0	1.447	0.188	0.141	0.141	0.103	140.1	105.0	105.0	76.7
BDP270,271,272,273 LED39-4S/722	2964.0	30.5	97.2	1.605	0.19	0.143	0.143	0.105	141.6	106.5	106.5	78.2
BDP270,271,272,273 LED40-4S/722	3040.0	31.5	96.5	1.658	0.191	0.143	0.143	0.105	142.3	106.5	106.5	78.2
BDP270,271,272,273 LED44-4S/722	3344.0	35.0	95.5	1.842	0.193	0.145	0.145	0.106	143.8	108.0	108.0	79.0
BDP270,271,272,273 LED45-4S/722	3420.0	36.0	95.0	1.895	0.194	0.146	0.146	0.107	144.5	108.8	108.8	79.7
BDP270,271,272,273 LED50-4S/722	3800.0	38.5	98.7	2.026	0.187	0.14	0.14	0.103	139.3	104.3	104.3	76.7
BDP270,271,272,273 LED55-4S/722	4256.0	42.5	100.1	2.237	0.184	0.138	0.138	0.101	137.1	102.8	102.8	75.2
BDP270,271,272,273 LED59-4S/722	4560.0	46.0	99.1	2.421	0.186	0.14	0.14	0.102	138.6	104.3	104.3	76.0
BDP270,271,272,273 LED64-4S/722	4800.0	50.0	96.0	2.632	0.192	0.144	0.144	0.106	143.0	107.3	107.3	79.0
BDP270,271,272,273 LED69-4S/722	5250.0	55.0	95.5	2.895	0.193	0.145	0.145	0.106	143.8	108.0	108.0	79.0
BDP270,271,272,273 LED74-4S/722	5550.0	59.0	94.1	3.105	0.196	0.147	0.147	0.108	146.0	109.5	109.5	80.5
BDP270,271,272,273 LED79-4S/722	6000.0	61.0	98.4	3.211	0.187	0.14	0.14	0.103	139.3	104.3	104.3	76.7
BDP270,271,272,273 LED84-4S/722	6300.0	65.0	96.9	3.421	0.19	0.143	0.143	0.105	141.6	106.5	106.5	78.2
BDP270,271,272,273 LED90-4S/722	6750.0	70.0	96.4	3.684	0.191	0.143	0.143	0.105	142.3	106.5	106.5	78.2
BDP270,271,272,273 LED94-4S/722	7050.0	74.0	95.3	3.895	0.193	0.145	0.145	0.106	143.8	108.0	108.0	79.0
BDP270,271,272,273 LED6-4S/840	468.0	5.3	88.3	0.279	0.209	0.157	0.157	0.115	155.7	117.0	117.0	85.7
BDP270,271,272,273 LED8-4S/840	624.0	6.6	94.5	0.347	0.195	0.146	0.146	0.107	145.3	108.8	108.8	79.7
BDP270,271,272,273 LED10-4S/840	780.0	7.9	98.7	0.416	0.187	0.14	0.14	0.103	139.3	104.3	104.3	76.7
BDP270,271,272,273 LED12-4S/840	936.0	9.0	104.0	0.474	0.177	0.133	0.133	0.097	131.9	99.1	99.1	72.3
BDP270,271,272,273 LED14-4S/840	1092.0	10.2	107.1	0.537	0.172	0.129	0.129	0.095	128.1	96.1	96.1	70.8
BDP270,271,272,273 LED16-4S/840	1248.0	11.6	107.6	0.611	0.171	0.128	0.128	0.094	127.4	95.4	95.4	70.0

BDP270,271,272,273 LED18-4S/840	1386.0	13.0	106.6	0.684	0.173	0.13	0.13	0.095	128.9	96.9	96.9	70.8
BDP270,271,272,273 LED20-4S/840	1540.0	14.4	106.9	0.758	0.172	0.129	0.129	0.095	128.1	96.1	96.1	70.8
BDP270,271,272,273 LED22-4S/840	1694.0	16.0	105.9	0.842	0.174	0.13	0.13	0.096	129.6	96.9	96.9	71.5
BDP270,271,272,273 LED24-4S/840	1848.0	17.4	106.2	0.916	0.173	0.13	0.13	0.095	128.9	96.9	96.9	70.8
BDP270,271,272,273 LED27-4S/840	2079.0	18.0	115.5	0.947	0.159	0.119	0.119	0.087	118.5	88.7	88.7	64.8
BDP270,271,272,273 LED30-4S/840	2310.0	20.0	115.5	1.053	0.16	0.12	0.12	0.088	119.2	89.4	89.4	65.6
BDP270,271,272,273 LED34-4S/840	2618.0	22.5	116.4	1.184	0.158	0.118	0.118	0.087	117.7	87.9	87.9	64.8
BDP270,271,272,273 LED35-4S/840	2695.0	23.5	114.7	1.237	0.161	0.121	0.121	0.089	119.9	90.1	90.1	66.3
BDP270,271,272,273 LED39-4S/840	3003.0	26.5	113.3	1.395	0.163	0.122	0.122	0.09	121.4	90.9	90.9	67.0
BDP270,271,272,273 LED40-4S/840	3080.0	27.0	114.1	1.421	0.161	0.121	0.121	0.089	119.9	90.1	90.1	66.3
BDP270,271,272,273 LED44-4S/840	3344.0	30.0	111.5	1.579	0.165	0.124	0.124	0.091	122.9	92.4	92.4	67.8
BDP270,271,272,273 LED45-4S/840	3420.0	30.5	112.1	1.605	0.164	0.123	0.123	0.09	122.2	91.6	91.6	67.0
BDP270,271,272,273 LED50-4S/840	3800.0	34.5	110.1	1.816	0.167	0.125	0.125	0.092	124.4	93.1	93.1	68.5
BDP270,271,272,273 LED55-4S/840	4256.0	36.5	116.6	1.921	0.158	0.118	0.118	0.087	117.7	87.9	87.9	64.8
BDP270,271,272,273 LED59-4S/840	4560.0	39.5	115.4	2.079	0.16	0.12	0.12	0.088	119.2	89.4	89.4	65.6
BDP270,271,272,273 LED64-4S/840	4864.0	43.0	113.1	2.263	0.163	0.122	0.122	0.09	121.4	90.9	90.9	67.0
BDP270,271,272,273 LED69-4S/840	5320.0	46.5	114.4	2.447	0.161	0.121	0.121	0.089	119.9	90.1	90.1	66.3
BDP270,271,272,273 LED74-4S/840	5550.0	50.0	111.0	2.632	0.166	0.124	0.124	0.091	123.7	92.4	92.4	67.8
BDP270,271,272,273 LED79-4S/840	6080.0	52.0	116.9	2.737	0.158	0.118	0.118	0.087	117.7	87.9	87.9	64.8
BDP270,271,272,273 LED84-4S/840	6384.0	56.0	114.0	2.947	0.162	0.122	0.122	0.089	120.7	90.9	90.9	66.3
BDP270,271,272,273 LED90-4S/840	6750.0	60.0	112.5	3.158	0.164	0.123	0.123	0.09	122.2	91.6	91.6	67.0
BDP270,271,272,273 LED94-4S/840	7050.0	63.0	111.9	3.316	0.165	0.124	0.124	0.091	122.9	92.4	92.4	67.8
BDP270,271,272,273 LED109-4S/840	8250.0	74.0	111.5	3.895	0.165	0.124	0.124	0.091	122.9	92.4	92.4	67.8
BDP270,271,272,273 LED120-4S/840	9000.0	85.0	105.9	4.474	0.174	0.13	0.13	0.096	129.6	96.9	96.9	71.5

** 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.*

ANNEX

USE PHASE (B6) VALUES FOR DIFFERENT COUNTRY MIX

The table in this annex is useful for conversion and comparison of B6 values with other energy country mix. The Global Warming Potential Total (GWP tot) value is illustrated for each country. The value refers to 1 kwh.

Example on how to use the table:

This EPD was done according to a specific customer use location that can be read in the paragraph **PRODUCT USE AND MAINTENANCE (B1-B7)**.

If for example the EPD was done according to EU energy mix and you want to see how the GWP total changes according to a Finland country energy mix, you can take the original value in the results table here highlighted in yellow:

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 ²¹	kg CO _{2e}	5,88E+00	2,61E-01	-1,25E-01	6,02E+00	3,02E-01	5,41E-01	MND	MND	MND	MND	MND	4,06E+02	MND	MNR	1,77E-02	2,62E-01	1,88E-01	-1,09E+01

Divide that value according to the EU value from the following table (EU = 3,96E-01) and then multiplying for the Finland value from the same table (FINLAND = 2,70E-01).

Thus, the calculation of this example would be:

$$\text{New B6 GWP tot for Finland} = (4,06E+02 / 3,96E-01) \times 2,70E-01 = 2,76 E+02$$

Country	GWP tot (kg CO2 eq. per kwh)
AUSTRALIA	9,59E-01
AUSTRIA	3,37E-01
BELGIUM	2,63E-01
CHINA	1,14E+00
DENMARK	2,91E-01
EU	3,96E-01
FINLAND	2,70E-01
FRANCE	8,77E-02
GERMANY	5,32E-01
HUNGARY	4,67E-01
IRELAND	4,26E-01
ITALY	3,94E-01
LATAM	3,50E-01
NAM	4,83E-01
NETHERLANDS	5,88E-01
NORWAY	2,59E-02
POLAND	1,05E+00

PORTUGAL	4,22E-01
ROW	7,32E-01
SPAIN	3,34E-01
SWEDEN	4,95E-02
SWITZERLAND	5,38E-02
UK	3,17E-01

Source Ecoinvent 3.8