ENVIRONMENTAL PRODUCT DECLARATION

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

Philips Luma gen2 micro
BGP702
Signify N.V.

EPD HUB
Publishing 2024-05-29

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	Philips LUMA GEN2 MICRO
Additional labels	BGP702
Product reference	910925867227
Place of production	Poland
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
Declared unit mass	8.534 kg
GWP-fossil, A1-A3 (kgCO2e)	7.43E+01
GWP-total, A1-A3 (kgCO2e)	7.28E+01
Secondary material, inputs (%)	54.6
Secondary material, outputs (%)	63.8
Total energy use, A1-A3 (kWh)	251
Net fresh water use, A1-A3 (m3)	0.42

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

Luma gen2 is the next generation of the Luma LED luminaire family, fully optimized to become your long-term lighting and innovation partner. While keeping the distinctive design characteristics of the first generation, Luma gen2 gives you the benefits of the latest technologies thanks to its future-proof System Ready architecture, use of optimized Ledgine LED and optical platform ensuring best in class lighting performance in a broad range of applications. It also offers improved serviceability. Installation has also become easier and faster, and thanks to the Service tag, you have access to all relevant documentations onsite. Also, the cable feed-through has been redesigned and access to the gear components is easy thanks to top down tool-less access. Luma gen2 also offers all connectivity and dimming options available today and thanks to being System Ready, it can also to be paired with lighting management systems such as Interact City or existing and upcoming sensor innovations. The Luma gen2 has been developed to optimize and simplify spare part repair and maintenance work using a new plug & play GearFlex module containing all electrical components in an easy to handle and accessible box inside the housing. As a company conscious about the impact of light on the environment and biodiversity, we also equipped the Luma gen2 with dedicated light recipes that help with maintaining the optimal ecosystems for bats or preserve a dark night sky.

Philips Luma gen2

For more information, please visit
https://www.lighting.philips.com/link/BBP333/fam/aa/en

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	74.71	EU , APAC
Minerals	8.44	EU
Fossil materials	16.86	EU , 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	0.285

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 unit
Mass per declared unit	8.534 kg
Functional unit	5400 Lumens over 100000 hours
Reference service life	100000

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. 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.

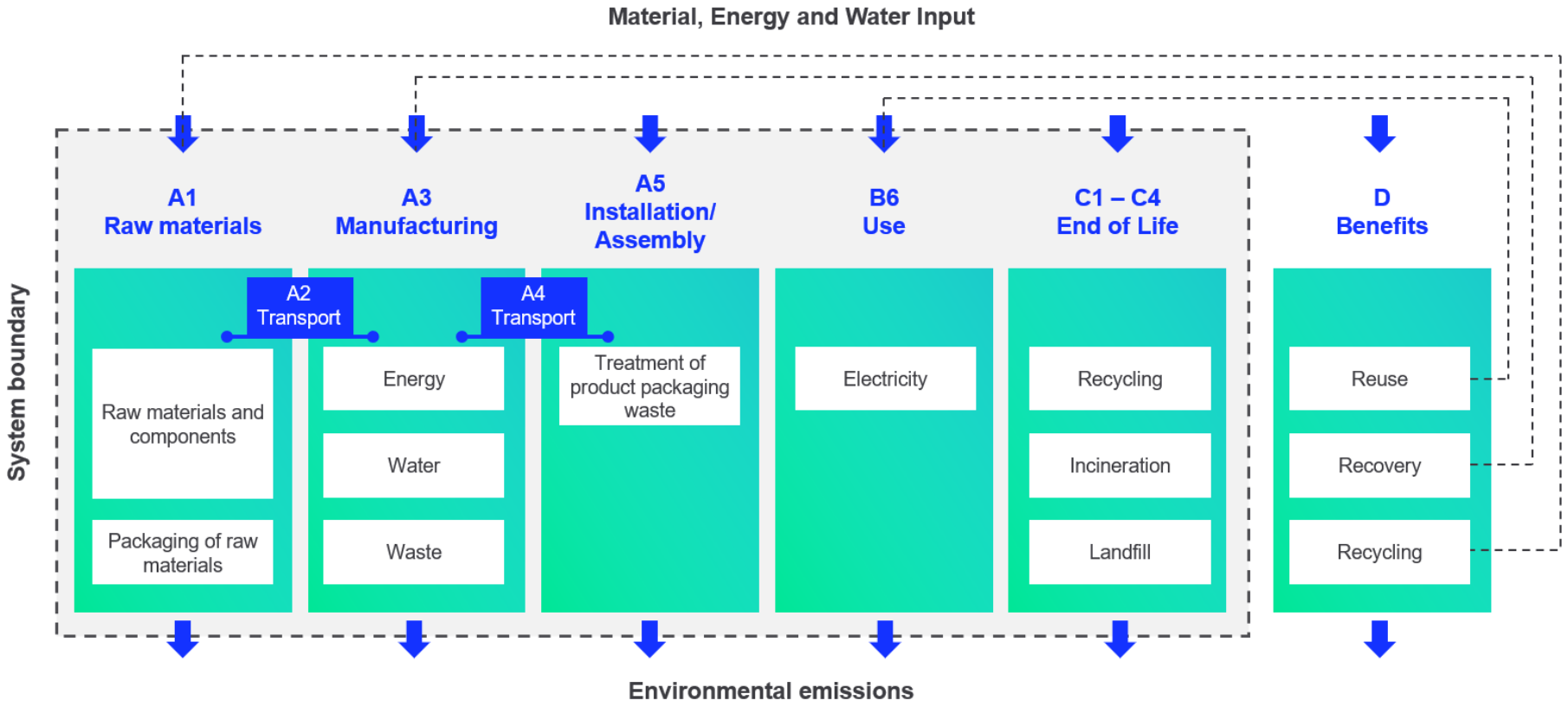
PRODUCT USE AND MAINTENANCE (B1-B7)

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_2e	7,08E+01	1,74E+00	1,82E-01	7,28E+01	1,74E+00	1,08E+00	MNR	MNR	MNR	MNR	MNR	1,51E+03	MNR	MNR	1,20E-01	1,45E+00	7,80E-01	-1,38E+01
GWP – fossil	kg CO_2e	7,13E+01	1,74E+00	1,20E+00	7,43E+01	1,74E+00	4,88E-02	MNR	MNR	MNR	MNR	MNR	1,50E+03	MNR	MNR	1,20E-01	1,45E+00	7,80E-01	-1,38E+01
GWP – biogenic	kg CO_2e	-5,95E-01	0,00E+00	-1,02E+00	-1,62E+00	6,72E-04	1,03E+00	MNR	MNR	MNR	MNR	MNR	-1,78E-15	MNR	MNR	0,00E+00	0,00E+00	0,00E+00	-3,76E-03
GWP – LULUC	kg CO_2e	1,18E-01	7,33E-04	6,12E-03	1,24E-01	6,41E-04	9,48E-06	MNR	MNR	MNR	MNR	MNR	3,51E+00	MNR	MNR	4,43E-05	1,88E-04	1,07E-04	-1,89E-03
Ozone depletion pot.	kg CFC_{-11}e	5,59E-06	3,92E-07	1,40E-07	6,12E-06	3,99E-07	2,73E-09	MNR	MNR	MNR	MNR	MNR	7,63E-05	MNR	MNR	2,76E-08	1,60E-08	1,16E-08	-3,76E-07
Acidification potential	mol H^+e	4,73E-01	1,46E-02	5,21E-03	4,92E-01	7,35E-03	2,18E-04	MNR	MNR	MNR	MNR	MNR	8,58E+00	MNR	MNR	5,08E-04	1,70E-03	5,80E-04	-1,67E-01
EP-freshwater[2)]	kg Pe	4,06E-03	1,30E-05	5,44E-05	4,13E-03	1,42E-05	2,87E-07	MNR	MNR	MNR	MNR	MNR	1,59E-01	MNR	MNR	9,83E-07	6,02E-06	2,77E-06	-9,30E-04
EP-marine	kg Ne	7,57E-02	3,91E-03	2,21E-03	8,18E-02	2,19E-03	9,30E-05	MNR	MNR	MNR	MNR	MNR	1,14E+00	MNR	MNR	1,51E-04	4,37E-04	4,81E-04	-1,61E-02
EP-terrestrial	mol Ne	7,99E-01	4,33E-02	1,45E-02	8,56E-01	2,41E-02	9,64E-04	MNR	MNR	MNR	MNR	MNR	1,29E+01	MNR	MNR	1,67E-03	4,86E-03	2,02E-03	-1,90E-01
POCP ("smog")[3)]	kg NMVOCe	2,44E-01	1,25E-02	4,39E-03	2,61E-01	7,71E-03	2,41E-04	MNR	MNR	MNR	MNR	MNR	3,54E+00	MNR	MNR	5,33E-04	1,28E-03	6,15E-04	-5,49E-02
ADP-minerals & metals[4)]	kg Sbe	2,41E-03	3,83E-06	6,87E-06	2,42E-03	4,07E-06	8,95E-08	MNR	MNR	MNR	MNR	MNR	1,40E-02	MNR	MNR	2,81E-07	1,34E-05	2,38E-07	-1,03E-03
ADP-fossil resources	MJ	8,20E+02	2,55E+01	1,57E+01	8,62E+02	2,61E+01	2,15E-01	MNR	MNR	MNR	MNR	MNR	3,20E+04	MNR	MNR	1,80E+00	1,80E+00	1,13E+00	-1,35E+02
Water use[5)]	m^3e depr.	2,46E+01	1,09E-01	5,40E-01	2,53E+01	1,17E-01	5,03E-02	MNR	MNR	MNR	MNR	MNR	8,73E+02	MNR	MNR	8,07E-03	7,93E-02	7,60E-02	-1,11E+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	5,35E-06	1,79E-07	9,84E-08	5,63E-06	2,00E-07	2,00E-09	MNR	MNR	MNR	MNR	MNR	2,82E-05	MNR	MNR	1,38E-08	2,02E-08	9,34E-09	-8,39E-07
Ionizing radiation[6)]	kBq U235e	3,98E+00	1,21E-01	4,65E-02	4,15E+00	1,24E-01	7,66E-04	MNR	MNR	MNR	MNR	MNR	8,65E+02	MNR	MNR	8,59E-03	1,09E-02	5,73E-03	-8,11E-01
Ecotoxicity (freshwater)	CTUe	3,04E+03	2,20E+01	4,77E+01	3,11E+03	2,35E+01	1,43E+00	MNR	MNR	MNR	MNR	MNR	2,17E+04	MNR	MNR	1,62E+00	9,66E+00	5,74E+02	-4,98E+02
Human toxicity, cancer	CTUh	2,06E-07	6,45E-10	1,19E-09	2,08E-07	5,76E-10	6,81E-11	MNR	MNR	MNR	MNR	MNR	7,12E-07	MNR	MNR	3,99E-11	3,20E-10	8,26E-10	-5,14E-09
Human tox. non-cancer	CTUh	2,89E-06	2,11E-08	1,57E-08	2,92E-06	2,32E-08	2,85E-09	MNR	MNR	MNR	MNR	MNR	2,34E-05	MNR	MNR	1,61E-09	1,33E-08	5,15E-08	-8,01E-07
SQP[7)]	-	3,01E+02	2,61E+01	3,59E+01	3,63E+02	3,00E+01	1,18E-01	MNR	MNR	MNR	MNR	MNR	5,78E+03	MNR	MNR	2,08E+00	2,92E+00	1,61E+00	-3,81E+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	7,33E+01	2,73E-01	1,25E+01	8,61E+01	2,94E-01	6,93E-03	MNR	MNR	MNR	MNR	MNR	6,51E+03	MNR	MNR	2,03E-02	2,42E-01	4,89E-02	-3,34E+00
Renew. PER as material	MJ	5,85E+00	0,00E+00	9,09E+00	1,49E+01	0,00E+00	-9,09E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	-1,22E-01	-2,27E-01	0,00E+00
Total use of renew. PER	MJ	7,91E+01	2,73E-01	2,16E+01	1,01E+02	2,94E-01	-9,08E+00	MNR	MNR	MNR	MNR	MNR	6,51E+03	MNR	MNR	2,03E-02	1,20E-01	-1,78E-01	-3,34E+00
Non-re. PER as energy	MJ	7,78E+02	2,55E+01	1,53E+01	8,19E+02	2,61E+01	2,15E-01	MNR	MNR	MNR	MNR	MNR	3,19E+04	MNR	MNR	1,80E+00	1,80E+00	1,13E+00	-1,35E+02
Non-re. PER as material	MJ	3,95E+01	0,00E+00	8,66E-02	3,96E+01	0,00E+00	-8,66E-02	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	-1,58E+01	-1,61E+01	0,00E+00
Total use of non-re. PER	MJ	8,18E+02	2,55E+01	1,54E+01	8,59E+02	2,61E+01	1,28E-01	MNR	MNR	MNR	MNR	MNR	3,19E+04	MNR	MNR	1,80E+00	-1,40E+01	-1,49E+01	-1,35E+02
Secondary materials	kg	4,66E+00	7,65E-03	6,67E-01	5,33E+00	7,24E-03	2,55E-04	MNR	MNR	MNR	MNR	MNR	3,29E+00	MNR	MNR	5,01E-04	1,74E-03	3,08E-03	5,81E-01
Renew. secondary fuels	MJ	9,74E-02	6,63E-05	4,68E-02	1,44E-01	7,31E-05	4,06E-06	MNR	MNR	MNR	MNR	MNR	2,67E-02	MNR	MNR	5,05E-06	8,96E-05	2,31E-05	-8,54E-04
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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	4,07E-01	3,09E-03	1,26E-02	4,22E-01	3,38E-03	8,34E-04	MNR	MNR	MNR	MNR	MNR	2,75E+01	MNR	MNR	2,34E-04	2,73E-03	1,37E-03	-5,31E-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	1,19E+01	3,39E-02	8,25E-02	1,20E+01	3,46E-02	1,91E-03	MNR	MNR	MNR	MNR	MNR	1,15E+02	MNR	MNR	2,39E-03	1,17E-02	3,05E-02	-2,17E+00
Non-hazardous waste	kg	1,15E+02	5,20E-01	1,18E+00	1,17E+02	5,68E-01	6,73E-01	MNR	MNR	MNR	MNR	MNR	7,26E+03	MNR	MNR	3,93E-02	9,09E-01	3,06E+00	-4,85E+01
Radioactive waste	kg	1,67E-03	1,72E-04	2,77E-05	1,87E-03	1,74E-04	3,67E-07	MNR	MNR	MNR	MNR	MNR	2,33E-01	MNR	MNR	1,21E-05	6,69E-06	0,00E+00	-2,99E-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	4,88E+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	5,57E-01	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	2,92E-01	2,92E-01	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	1,23E+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	6,96E+01	1,72E+00	1,24E+00	7,26E+01	1,72E+00	4,75E-02	MNR	MNR	MNR	MNR	MNR	1,49E+03	MNR	MNR	1,19E-01	1,45E+00	8,80E-01	-1,36E+01
Ozone depletion Pot.	kg CFC_{-11}e	4,58E-06	3,10E-07	1,19E-07	5,01E-06	3,16E-07	2,38E-09	MNR	MNR	MNR	MNR	MNR	6,61E-05	MNR	MNR	2,19E-08	1,32E-08	9,43E-09	-3,19E-07
Acidification	kg SO_2e	3,97E-01	1,15E-02	3,89E-03	4,12E-01	5,71E-03	1,59E-04	MNR	MNR	MNR	MNR	MNR	7,28E+00	MNR	MNR	3,95E-04	1,34E-03	4,45E-04	-1,45E-01
Eutrophication	kg PO_4^3e	1,42E-01	1,85E-03	2,68E-03	1,47E-01	1,30E-03	1,19E-04	MNR	MNR	MNR	MNR	MNR	5,60E+00	MNR	MNR	9,00E-05	5,15E-04	3,38E-03	-3,85E-02
POCP (“smog”)	kg C_2H_4e	2,55E-02	3,61E-04	3,28E-04	2,61E-02	2,23E-04	4,88E-06	MNR	MNR	MNR	MNR	MNR	2,98E-01	MNR	MNR	1,54E-05	4,78E-05	5,61E-05	-6,83E-03
ADP-elements	kg Sbe	2,39E-03	3,71E-06	6,18E-06	2,40E-03	3,94E-06	7,04E-08	MNR	MNR	MNR	MNR	MNR	1,40E-02	MNR	MNR	2,73E-07	1,34E-05	2,15E-07	-1,02E-03
ADP-fossil	MJ	8,16E+02	2,55E+01	1,56E+01	8,57E+02	2,61E+01	2,15E-01	MNR	MNR	MNR	MNR	MNR	3,19E+04	MNR	MNR	1,80E+00	1,80E+00	1,13E+00	-1,35E+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 refernce variant of a product family, based on various light management scenarios and power inputs of the luminaires within the same product familiy

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.

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

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
BGP702 LED8-4S/740	728.000	5.6	130.0	0.147	0.147	0.111	0.111	0.081	222.5	166.9	166.9	122.4
BGP702 LED8-4S/730	728.000	5.9	123.4	0.155	0.155	0.116	0.116	0.085	234.4	175.8	175.8	128.9
BGP702 LED8-4S/727	728.000	6.5	112.0	0.171	0.171	0.128	0.128	0.094	258.3	193.7	193.7	142.1
BGP702 LED8-4S/830	728.000	6.5	112.0	0.171	0.171	0.128	0.128	0.094	258.3	193.7	193.7	142.1
BGP702 LED8-4S/722	728.000	7.1	102.5	0.187	0.187	0.140	0.140	0.103	282.1	211.6	211.6	155.2
BGP702 LED6-4S/830	546.000	5.1	107.1	0.134	0.134	0.101	0.101	0.074	202.7	152.0	152.0	111.5
BGP702 LED6-4S/722	546.000	5.6	97.5	0.147	0.147	0.111	0.111	0.081	222.5	166.9	166.9	122.4
BGP702 LED10-4S/740	910.000	6.8	133.8	0.179	0.179	0.134	0.134	0.098	270.2	202.7	202.7	148.6
BGP702 LED10-4S/730	910.000	7.1	128.2	0.187	0.187	0.140	0.140	0.103	282.1	211.6	211.6	155.2
BGP702 LED10-4S/727	910.000	7.9	115.2	0.208	0.208	0.156	0.156	0.114	313.9	235.4	235.4	172.7
BGP702 LED10-4S/830	910.000	7.7	118.2	0.203	0.203	0.152	0.152	0.111	306.0	229.5	229.5	168.3

BGP702 LED10-4S/722	910.000	8.5	107.1	0.224	0.224	0.168	0.168	0.123	337.8	253.3	253.3	185.8
BGP702 LED12-4S/740	1092.000	7.8	140.0	0.205	0.205	0.154	0.154	0.113	309.9	232.5	232.5	170.5
BGP702 LED12-4S/730	1092.000	8.2	133.2	0.216	0.216	0.162	0.162	0.119	325.8	244.4	244.4	179.2
BGP702 LED12-4S/727	1092.000	9.1	120.0	0.239	0.239	0.180	0.180	0.132	361.6	271.2	271.2	198.9
BGP702 LED12-4S/830	1092.000	9.1	120.0	0.239	0.239	0.180	0.180	0.132	361.6	271.2	271.2	198.9
BGP702 LED12-4S/722	1092.000	10.2	107.1	0.268	0.268	0.201	0.201	0.148	405.3	304.0	304.0	222.9
BGP702 LED14-4S/740	1274.000	9.0	141.6	0.237	0.237	0.178	0.178	0.130	357.6	268.2	268.2	196.7
BGP702 LED14-4S/730	1274.000	9.5	134.1	0.250	0.250	0.188	0.188	0.138	377.5	283.1	283.1	207.6
BGP702 LED14-4S/727	1274.000	10.6	120.2	0.279	0.279	0.209	0.209	0.153	421.2	315.9	315.9	231.7
BGP702 LED14-4S/830	1274.000	10.6	120.2	0.279	0.279	0.209	0.209	0.153	421.2	315.9	315.9	231.7
BGP702 LED14-4S/722	1274.000	11.6	109.8	0.305	0.305	0.229	0.229	0.168	460.9	345.7	345.7	253.5
BGP702 LED16-4S/740	1456.000	10.2	142.7	0.268	0.268	0.201	0.201	0.148	405.3	304.0	304.0	222.9
BGP702 LED16-4S/730	1456.000	10.8	134.8	0.284	0.284	0.213	0.213	0.156	429.2	321.9	321.9	236.0
BGP702 LED16-4S/727	1456.000	11.8	123.4	0.311	0.311	0.233	0.233	0.171	468.9	351.7	351.7	257.9
BGP702 LED16-4S/830	1456.000	11.8	123.4	0.311	0.311	0.233	0.233	0.171	468.9	351.7	351.7	257.9
BGP702 LED16-4S/722	1456.000	13.4	108.7	0.353	0.353	0.264	0.264	0.194	532.5	399.4	399.4	292.9
BGP702 LED18-4S/740	1638.000	11.4	143.7	0.300	0.300	0.225	0.225	0.165	453.0	339.8	339.8	249.2
BGP702 LED18-4S/730	1638.000	12.0	136.5	0.316	0.316	0.237	0.237	0.174	476.8	357.6	357.6	262.3
BGP702 LED18-4S/727	1638.000	13.4	122.2	0.353	0.353	0.264	0.264	0.194	532.5	399.4	399.4	292.9
BGP702 LED18-4S/830	1638.000	13.4	122.2	0.353	0.353	0.264	0.264	0.194	532.5	399.4	399.4	292.9

BGP702 LED18-4S/722	1638.000	15.0	109.2	0.395	0.395	0.296	0.296	0.217	596.1	447.0	447.0	327.8
BGP702 LED20-4S/740	1820.000	12.6	144.4	0.332	0.332	0.249	0.249	0.182	500.7	375.5	375.5	275.4
BGP702 LED20-4S/730	1820.000	13.4	135.8	0.353	0.353	0.264	0.264	0.194	532.5	399.4	399.4	292.9
BGP702 LED20-4S/727	1820.000	15.0	121.3	0.395	0.395	0.296	0.296	0.217	596.1	447.0	447.0	327.8
BGP702 LED20-4S/830	1820.000	14.2	128.2	0.374	0.374	0.280	0.280	0.206	564.3	423.2	423.2	310.3
BGP702 LED20-4S/722	1820.000	15.8	115.2	0.416	0.416	0.312	0.312	0.229	627.8	470.9	470.9	345.3
BGP702 LED22-4S/740	2002.000	13.8	145.1	0.363	0.363	0.272	0.272	0.200	548.4	411.3	411.3	301.6
BGP702 LED22-4S/730	2002.000	14.0	143.0	0.368	0.368	0.276	0.276	0.203	556.3	417.2	417.2	306.0
BGP702 LED22-4S/727	2002.000	15.6	128.3	0.411	0.411	0.308	0.308	0.226	619.9	464.9	464.9	340.9
BGP702 LED22-4S/830	2002.000	15.6	128.3	0.411	0.411	0.308	0.308	0.226	619.9	464.9	464.9	340.9
BGP702 LED22-4S/722	2002.000	17.4	115.1	0.458	0.458	0.343	0.343	0.252	691.4	518.6	518.6	380.3
BGP702 LED24-4S/740	2184.000	14.4	151.7	0.379	0.379	0.284	0.284	0.208	572.2	429.2	429.2	314.7
BGP702 LED24-4S/730	2184.000	15.2	143.7	0.400	0.400	0.300	0.300	0.220	604.0	453.0	453.0	332.2
BGP702 LED24-4S/727	2184.000	17.0	128.5	0.447	0.447	0.336	0.336	0.246	675.5	506.6	506.6	371.5
BGP702 LED24-4S/830	2184.000	17.0	128.5	0.447	0.447	0.336	0.336	0.246	675.5	506.6	506.6	371.5
BGP702 LED24-4S/722	2184.000	19.0	114.9	0.500	0.500	0.375	0.375	0.275	755.0	566.3	566.3	415.3
BGP702 LED27-4S/740	2457.000	16.2	151.7	0.426	0.426	0.320	0.320	0.234	643.7	482.8	482.8	354.1
BGP702 LED27-4S/730	2457.000	17.0	144.5	0.447	0.447	0.336	0.336	0.246	675.5	506.6	506.6	371.5
BGP702 LED27-4S/727	2457.000	19.0	129.3	0.500	0.500	0.375	0.375	0.275	755.0	566.3	566.3	415.3
BGP702 LED27-4S/830	2457.000	19.0	129.3	0.500	0.500	0.375	0.375	0.275	755.0	566.3	566.3	415.3

BGP702 LED27-4S/722	2457.000	21.0	117.0	0.553	0.553	0.414	0.414	0.304	834.5	625.9	625.9	459.0
BGP702 LED30-4S/740	2730.000	17.8	153.4	0.468	0.468	0.351	0.351	0.258	707.3	530.5	530.5	389.0
BGP702 LED30-4S/730	2730.000	19.0	143.7	0.500	0.500	0.375	0.375	0.275	755.0	566.3	566.3	415.3
BGP702 LED30-4S/727	2730.000	21.0	130.0	0.553	0.553	0.414	0.414	0.304	834.5	625.9	625.9	459.0
BGP702 LED30-4S/830	2730.000	21.0	130.0	0.553	0.553	0.414	0.414	0.304	834.5	625.9	625.9	459.0
BGP702 LED30-4S/722	2730.000	23.5	116.2	0.618	0.618	0.464	0.464	0.340	933.8	700.4	700.4	513.6
BGP702 LED35-4S/740	3185.000	21.0	151.7	0.553	0.553	0.414	0.414	0.304	834.5	625.9	625.9	459.0
BGP702 LED35-4S/730	3185.000	22.0	144.8	0.579	0.579	0.434	0.434	0.318	874.2	655.7	655.7	480.8
BGP702 LED35-4S/727	3185.000	24.5	130.0	0.645	0.645	0.484	0.484	0.355	973.6	730.2	730.2	535.5
BGP702 LED35-4S/830	3185.000	24.5	130.0	0.645	0.645	0.484	0.484	0.355	973.6	730.2	730.2	535.5
BGP702 LED35-4S/722	3185.000	28.0	113.8	0.737	0.737	0.553	0.553	0.405	1112.6	834.5	834.5	611.9
BGP702 LED40-4S/740	3640.000	24.0	151.7	0.632	0.632	0.474	0.474	0.347	953.7	715.3	715.3	524.5
BGP702 LED40-4S/730	3640.000	25.5	142.7	0.671	0.671	0.503	0.503	0.369	1013.3	760.0	760.0	557.3
BGP702 LED40-4S/727	3640.000	28.5	127.7	0.750	0.750	0.563	0.563	0.413	1132.5	849.4	849.4	622.9
BGP702 LED40-4S/830	3640.000	28.5	127.7	0.750	0.750	0.563	0.563	0.413	1132.5	849.4	849.4	622.9
BGP702 LED40-4S/722	3600.000	32.0	112.5	0.842	0.842	0.632	0.632	0.463	1271.6	953.7	953.7	699.4
BGP702 LED45-4S/740	4095.000	27.0	151.7	0.711	0.711	0.533	0.533	0.391	1072.9	804.7	804.7	590.1
BGP702 LED45-4S/730	4095.000	28.5	143.7	0.750	0.750	0.563	0.563	0.413	1132.5	849.4	849.4	622.9
BGP702 LED45-4S/727	4050.000	32.5	124.6	0.855	0.855	0.641	0.641	0.470	1291.4	968.6	968.6	710.3
BGP702 LED45-4S/830	4050.000	32.5	124.6	0.855	0.855	0.641	0.641	0.470	1291.4	968.6	968.6	710.3

BGP702 LED45-4S/722	4050.000	36.5	111.0	0.961	0.961	0.720	0.720	0.528	1450.4	1087.8	1087.8	797.7
BGP702 LED50-4S/740	4500.000	30.0	150.0	0.789	0.789	0.592	0.592	0.434	1192.1	894.1	894.1	655.7
BGP702 LED50-4S/730	4500.000	32.0	140.6	0.842	0.842	0.632	0.632	0.463	1271.6	953.7	953.7	699.4
BGP702 LED50-4S/727	4500.000	36.5	123.3	0.961	0.961	0.720	0.720	0.528	1450.4	1087.8	1087.8	797.7
BGP702 LED50-4S/830	4500.000	36.5	123.3	0.961	0.961	0.720	0.720	0.528	1450.4	1087.8	1087.8	797.7
BGP702 LED50-4S/722	4500.000	41.0	109.8	1.079	1.079	0.809	0.809	0.593	1629.2	1221.9	1221.9	896.1
BGP702 LED55-4S/740	5040.000	33.5	150.4	0.882	0.882	0.661	0.661	0.485	1331.2	998.4	998.4	732.2
BGP702 LED55-4S/730	5040.000	35.5	142.0	0.934	0.934	0.701	0.701	0.514	1410.7	1058.0	1058.0	775.9
BGP702 LED55-4S/727	5040.000	40.5	124.4	1.066	1.066	0.799	0.799	0.586	1609.3	1207.0	1207.0	885.1
BGP702 LED55-4S/830	5040.000	40.5	124.4	1.066	1.066	0.799	0.799	0.586	1609.3	1207.0	1207.0	885.1
BGP702 LED55-4S/722	5040.000	45.5	110.8	1.197	1.197	0.898	0.898	0.659	1808.0	1356.0	1356.0	994.4
BGP702 LED60-4S/740	5400.000	37.0	145.9	0.974	0.974	0.730	0.730	0.536	1470.3	1102.7	1102.7	808.6
BGP702 LED60-4S/730	5400.000	39.5	136.7	1.039	1.039	0.780	0.780	0.572	1569.6	1177.2	1177.2	863.3
BGP702 LED60-4S/727	5400.000	44.5	121.3	1.171	1.171	0.878	0.878	0.644	1768.3	1326.2	1326.2	972.6
BGP702 LED60-4S/830	5400.000	44.5	121.3	1.171	1.171	0.878	0.878	0.644	1768.3	1326.2	1326.2	972.6
BGP702 LED60-4S/722	5340.000	51.0	104.7	1.342	1.342	1.007	1.007	0.738	2026.6	1519.9	1519.9	1114.6
BGP702 LED65-4S/740	5940.000	40.5	146.7	1.066	1.066	0.799	0.799	0.586	1609.3	1207.0	1207.0	885.1
BGP702 LED65-4S/730	5940.000	43.0	138.1	1.132	1.132	0.849	0.849	0.622	1708.7	1281.5	1281.5	939.8
BGP702 LED65-4S/727	5874.000	49.0	119.9	1.289	1.289	0.967	0.967	0.709	1947.1	1460.3	1460.3	1070.9
BGP702 LED65-4S/830	5874.000	49.0	119.9	1.289	1.289	0.967	0.967	0.709	1947.1	1460.3	1460.3	1070.9

BGP702 LED65-4S/722	5874.000	56.0	104.9	1.474	1.474	1.105	1.105	0.811	2225.3	1668.9	1668.9	1223.9
BGP702 LED70-4S/740	6300.000	43.5	144.8	1.145	1.145	0.859	0.859	0.630	1728.6	1296.4	1296.4	950.7
BGP702 LED70-4S/730	6300.000	46.5	135.5	1.224	1.224	0.918	0.918	0.673	1847.8	1385.8	1385.8	1016.3
BGP702 LED70-4S/727	6230.000	53.0	117.5	1.395	1.395	1.046	1.046	0.767	2106.1	1579.5	1579.5	1158.3
BGP702 LED70-4S/830	6230.000	53.0	117.5	1.395	1.395	1.046	1.046	0.767	2106.1	1579.5	1579.5	1158.3
BGP702 LED75-4S/740	6840.000	47.0	145.5	1.237	1.237	0.928	0.928	0.680	1867.6	1400.7	1400.7	1027.2
BGP702 LED75-4S/730	6764.000	51.0	132.6	1.342	1.342	1.007	1.007	0.738	2026.6	1519.9	1519.9	1114.6
BGP702 LED75-4S/727	6764.000	58.0	116.6	1.526	1.526	1.145	1.145	0.839	2304.7	1728.6	1728.6	1267.6
BGP702 LED75-4S/830	6764.000	58.0	116.6	1.526	1.526	1.145	1.145	0.839	2304.7	1728.6	1728.6	1267.6
BGP702 LED80-4S/740	7120.000	51.0	139.6	1.342	1.342	1.007	1.007	0.738	2026.6	1519.9	1519.9	1114.6
BGP702 LED80-4S/730	7120.000	55.0	129.5	1.447	1.447	1.086	1.086	0.796	2185.5	1639.1	1639.1	1202.0
BGP702 LED85-4S/740	7654.000	55.0	139.2	1.447	1.447	1.086	1.086	0.796	2185.5	1639.1	1639.1	1202.0
BGP702 LED85-4S/730	7654.000	59.0	129.7	1.553	1.553	1.164	1.164	0.854	2344.5	1758.4	1758.4	1289.5
BGP702 LED90-4S/740	8010.000	59.0	135.8	1.553	1.553	1.164	1.164	0.854	2344.5	1758.4	1758.4	1289.5

** 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.*

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 refernce 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 familiy.

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}.

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

2. 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.

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

3. Calculate the GWP scaling factor (P*GSF*), by multiplying the PSF by the GSF.

$$PGSF = PSF * GSF$$

4. 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
BGP702 LED8-4S/740	728	5.6	130.0	0.147	0.071	0.053	0.053	0.039	107.0	80.2	80.2	58.8
BGP702 LED8-4S/730	728	5.9	123.4	0.155	0.075	0.056	0.056	0.041	112.7	84.5	84.5	62.0
BGP702 LED8-4S/727	728	6.5	112.0	0.171	0.082	0.062	0.062	0.045	124.2	93.1	93.1	68.3
BGP702 LED8-4S/830	728	6.5	112.0	0.171	0.082	0.062	0.062	0.045	124.2	93.1	93.1	68.3

Philips Luma gen2

BGP702 LED8-4S/722	728	7.1	102.5	0.187	0.090	0.067	0.067	0.049	135.6	101.7	101.7	74.6
BGP702 LED6-4S/830	546	5.1	107.1	0.134	0.086	0.065	0.065	0.047	129.9	97.4	97.4	71.4
BGP702 LED6-4S/722	546	5.6	97.5	0.147	0.094	0.071	0.071	0.052	142.6	107.0	107.0	78.5
BGP702 LED10-4S/740	910	6.8	133.8	0.179	0.069	0.052	0.052	0.038	103.9	77.9	77.9	57.2
BGP702 LED10-4S/730	910	7.1	128.2	0.187	0.072	0.054	0.054	0.040	108.5	81.4	81.4	59.7
BGP702 LED10-4S/727	910	7.9	115.2	0.208	0.080	0.060	0.060	0.044	120.7	90.6	90.6	66.4
BGP702 LED10-4S/830	910	7.7	118.2	0.203	0.078	0.058	0.058	0.043	117.7	88.3	88.3	64.7
BGP702 LED10-4S/722	910	8.5	107.1	0.224	0.086	0.065	0.065	0.047	129.9	97.4	97.4	71.4
BGP702 LED12-4S/740	1092	7.8	140.0	0.205	0.066	0.049	0.049	0.036	99.3	74.5	74.5	54.6
BGP702 LED12-4S/730	1092	8.2	133.2	0.216	0.069	0.052	0.052	0.038	104.4	78.3	78.3	57.4
BGP702 LED12-4S/727	1092	9.1	120.0	0.239	0.077	0.058	0.058	0.042	115.9	86.9	86.9	63.7
BGP702 LED12-4S/830	1092	9.1	120.0	0.239	0.077	0.058	0.058	0.042	115.9	86.9	86.9	63.7
BGP702 LED12-4S/722	1092	10.2	107.1	0.268	0.086	0.065	0.065	0.047	129.9	97.4	97.4	71.4
BGP702 LED14-4S/740	1274	9	141.6	0.237	0.065	0.049	0.049	0.036	98.3	73.7	73.7	54.0
BGP702 LED14-4S/730	1274	9.5	134.1	0.250	0.069	0.052	0.052	0.038	103.7	77.8	77.8	57.0
BGP702 LED14-4S/727	1274	10.6	120.2	0.279	0.077	0.057	0.057	0.042	115.7	86.8	86.8	63.6
BGP702 LED14-4S/830	1274	10.6	120.2	0.279	0.077	0.057	0.057	0.042	115.7	86.8	86.8	63.6
BGP702 LED14-4S/722	1274	11.6	109.8	0.305	0.084	0.063	0.063	0.046	126.6	95.0	95.0	69.6
BGP702 LED16-4S/740	1456	10.2	142.7	0.268	0.065	0.048	0.048	0.035	97.4	73.1	73.1	53.6
BGP702 LED16-4S/730	1456	10.8	134.8	0.284	0.068	0.051	0.051	0.038	103.2	77.4	77.4	56.7

BGP702 LED16-4S/727	1456	11.8	123.4	0.311	0.075	0.056	0.056	0.041	112.7	84.5	84.5	62.0
BGP702 LED16-4S/830	1456	11.8	123.4	0.311	0.075	0.056	0.056	0.041	112.7	84.5	84.5	62.0
BGP702 LED16-4S/722	1456	13.4	108.7	0.353	0.085	0.064	0.064	0.047	128.0	96.0	96.0	70.4
BGP702 LED18-4S/740	1638	11.4	143.7	0.300	0.064	0.048	0.048	0.035	96.8	72.6	72.6	53.2
BGP702 LED18-4S/730	1638	12	136.5	0.316	0.067	0.051	0.051	0.037	101.9	76.4	76.4	56.0
BGP702 LED18-4S/727	1638	13.4	122.2	0.353	0.075	0.057	0.057	0.041	113.8	85.3	85.3	62.6
BGP702 LED18-4S/830	1638	13.4	122.2	0.353	0.075	0.057	0.057	0.041	113.8	85.3	85.3	62.6
BGP702 LED18-4S/722	1638	15	109.2	0.395	0.084	0.063	0.063	0.046	127.4	95.5	95.5	70.0
BGP702 LED20-4S/740	1820	12.6	144.4	0.332	0.064	0.048	0.048	0.035	96.3	72.2	72.2	53.0
BGP702 LED20-4S/730	1820	13.4	135.8	0.353	0.068	0.051	0.051	0.037	102.4	76.8	76.8	56.3
BGP702 LED20-4S/727	1820	15	121.3	0.395	0.076	0.057	0.057	0.042	114.6	86.0	86.0	63.0
BGP702 LED20-4S/830	1820	14.2	128.2	0.374	0.072	0.054	0.054	0.040	108.5	81.4	81.4	59.7
BGP702 LED20-4S/722	1820	15.8	115.2	0.416	0.080	0.060	0.060	0.044	120.7	90.6	90.6	66.4
BGP702 LED22-4S/740	2002	13.8	145.1	0.363	0.063	0.048	0.048	0.035	95.9	71.9	71.9	52.7
BGP702 LED22-4S/730	2002	14	143.0	0.368	0.064	0.048	0.048	0.035	97.3	72.9	72.9	53.5
BGP702 LED22-4S/727	2002	15.6	128.3	0.411	0.072	0.054	0.054	0.039	108.4	81.3	81.3	59.6
BGP702 LED22-4S/830	2002	15.6	128.3	0.411	0.072	0.054	0.054	0.039	108.4	81.3	81.3	59.6
BGP702 LED22-4S/722	2002	17.4	115.1	0.458	0.080	0.060	0.060	0.044	120.9	90.7	90.7	66.5
BGP702 LED24-4S/740	2184	14.4	151.7	0.379	0.061	0.046	0.046	0.033	91.7	68.8	68.8	50.4
BGP702 LED24-4S/730	2184	15.2	143.7	0.400	0.064	0.048	0.048	0.035	96.8	72.6	72.6	53.2

BGP702 LED24-4S/727	2184	17	128.5	0.447	0.072	0.054	0.054	0.039	108.3	81.2	81.2	59.5
BGP702 LED24-4S/830	2184	17	128.5	0.447	0.072	0.054	0.054	0.039	108.3	81.2	81.2	59.5
BGP702 LED24-4S/722	2184	19	114.9	0.500	0.080	0.060	0.060	0.044	121.0	90.7	90.7	66.5
BGP702 LED27-4S/740	2457	16.2	151.7	0.426	0.061	0.046	0.046	0.033	91.7	68.8	68.8	50.4
BGP702 LED27-4S/730	2457	17	144.5	0.447	0.064	0.048	0.048	0.035	96.2	72.2	72.2	52.9
BGP702 LED27-4S/727	2457	19	129.3	0.500	0.071	0.053	0.053	0.039	107.5	80.7	80.7	59.2
BGP702 LED27-4S/830	2457	19	129.3	0.500	0.071	0.053	0.053	0.039	107.5	80.7	80.7	59.2
BGP702 LED27-4S/722	2457	21	117.0	0.553	0.079	0.059	0.059	0.043	118.9	89.2	89.2	65.4
BGP702 LED30-4S/740	2730	17.8	153.4	0.468	0.060	0.045	0.045	0.033	90.7	68.0	68.0	49.9
BGP702 LED30-4S/730	2730	19	143.7	0.500	0.064	0.048	0.048	0.035	96.8	72.6	72.6	53.2
BGP702 LED30-4S/727	2730	21	130.0	0.553	0.071	0.053	0.053	0.039	107.0	80.2	80.2	58.8
BGP702 LED30-4S/830	2730	21	130.0	0.553	0.071	0.053	0.053	0.039	107.0	80.2	80.2	58.8
BGP702 LED30-4S/722	2730	23.5	116.2	0.618	0.079	0.059	0.059	0.044	119.7	89.8	89.8	65.8
BGP702 LED35-4S/740	3185	21	151.7	0.553	0.061	0.046	0.046	0.033	91.7	68.8	68.8	50.4
BGP702 LED35-4S/730	3185	22	144.8	0.579	0.064	0.048	0.048	0.035	96.1	72.1	72.1	52.8
BGP702 LED35-4S/727	3185	24.5	130.0	0.645	0.071	0.053	0.053	0.039	107.0	80.2	80.2	58.8
BGP702 LED35-4S/830	3185	24.5	130.0	0.645	0.071	0.053	0.053	0.039	107.0	80.2	80.2	58.8
BGP702 LED35-4S/722	3185	28	113.8	0.737	0.081	0.061	0.061	0.045	122.3	91.7	91.7	67.2
BGP702 LED40-4S/740	3640	24	151.7	0.632	0.061	0.046	0.046	0.033	91.7	68.8	68.8	50.4
BGP702 LED40-4S/730	3640	25.5	142.7	0.671	0.065	0.048	0.048	0.035	97.4	73.1	73.1	53.6

BGP702 LED40-4S/727	3640	28.5	127.7	0.750	0.072	0.054	0.054	0.040	108.9	81.7	81.7	59.9
BGP702 LED40-4S/830	3640	28.5	127.7	0.750	0.072	0.054	0.054	0.040	108.9	81.7	81.7	59.9
BGP702 LED40-4S/722	3600	32	112.5	0.842	0.082	0.061	0.061	0.045	123.6	92.7	92.7	68.0
BGP702 LED45-4S/740	4095	27	151.7	0.711	0.061	0.046	0.046	0.033	91.7	68.8	68.8	50.4
BGP702 LED45-4S/730	4095	28.5	143.7	0.750	0.064	0.048	0.048	0.035	96.8	72.6	72.6	53.2
BGP702 LED45-4S/727	4050	32.5	124.6	0.855	0.074	0.055	0.055	0.041	111.6	83.7	83.7	61.4
BGP702 LED45-4S/830	4050	32.5	124.6	0.855	0.074	0.055	0.055	0.041	111.6	83.7	83.7	61.4
BGP702 LED45-4S/722	4050	36.5	111.0	0.961	0.083	0.062	0.062	0.046	125.3	94.0	94.0	68.9
BGP702 LED50-4S/740	4500	30	150.0	0.789	0.061	0.046	0.046	0.034	92.7	69.5	69.5	51.0
BGP702 LED50-4S/730	4500	32	140.6	0.842	0.065	0.049	0.049	0.036	98.9	74.2	74.2	54.4
BGP702 LED50-4S/727	4500	36.5	123.3	0.961	0.075	0.056	0.056	0.041	112.8	84.6	84.6	62.0
BGP702 LED50-4S/830	4500	36.5	123.3	0.961	0.075	0.056	0.056	0.041	112.8	84.6	84.6	62.0
BGP702 LED50-4S/722	4500	41	109.8	1.079	0.084	0.063	0.063	0.046	126.7	95.0	95.0	69.7
BGP702 LED55-4S/740	5040	33.5	150.4	0.882	0.061	0.046	0.046	0.034	92.4	69.3	69.3	50.8
BGP702 LED55-4S/730	5040	35.5	142.0	0.934	0.065	0.049	0.049	0.036	98.0	73.5	73.5	53.9
BGP702 LED55-4S/727	5040	40.5	124.4	1.066	0.074	0.056	0.056	0.041	111.8	83.8	83.8	61.5
BGP702 LED55-4S/830	5040	40.5	124.4	1.066	0.074	0.056	0.056	0.041	111.8	83.8	83.8	61.5
BGP702 LED55-4S/722	5040	45.5	110.8	1.197	0.083	0.062	0.062	0.046	125.6	94.2	94.2	69.1
BGP702 LED60-4S/740	5400	37	145.9	0.974	0.063	0.047	0.047	0.035	95.3	71.5	71.5	52.4
BGP702 LED60-4S/730	5400	39.5	136.7	1.039	0.067	0.051	0.051	0.037	101.7	76.3	76.3	56.0

BGP702 LED60-4S/727	5400	44.5	121.3	1.171	0.076	0.057	0.057	0.042	114.6	86.0	86.0	63.0
BGP702 LED60-4S/830	5400	44.5	121.3	1.171	0.076	0.057	0.057	0.042	114.6	86.0	86.0	63.0
BGP702 LED60-4S/722	5340	51	104.7	1.342	0.088	0.066	0.066	0.048	132.8	99.6	99.6	73.1
BGP702 LED65-4S/740	5940	40.5	146.7	1.066	0.063	0.047	0.047	0.035	94.8	71.1	71.1	52.2
BGP702 LED65-4S/730	5940	43	138.1	1.132	0.067	0.050	0.050	0.037	100.7	75.5	75.5	55.4
BGP702 LED65-4S/727	5874	49	119.9	1.289	0.077	0.058	0.058	0.042	116.0	87.0	87.0	63.8
BGP702 LED65-4S/830	5874	49	119.9	1.289	0.077	0.058	0.058	0.042	116.0	87.0	87.0	63.8
BGP702 LED65-4S/722	5874	56	104.9	1.474	0.088	0.066	0.066	0.048	132.6	99.4	99.4	72.9
BGP702 LED70-4S/740	6300	43.5	144.8	1.145	0.064	0.048	0.048	0.035	96.0	72.0	72.0	52.8
BGP702 LED70-4S/730	6300	46.5	135.5	1.224	0.068	0.051	0.051	0.037	102.7	77.0	77.0	56.5
BGP702 LED70-4S/727	6230	53	117.5	1.395	0.078	0.059	0.059	0.043	118.3	88.7	88.7	65.1
BGP702 LED70-4S/830	6230	53	117.5	1.395	0.078	0.059	0.059	0.043	118.3	88.7	88.7	65.1
BGP702 LED75-4S/740	6840	47	145.5	1.237	0.063	0.047	0.047	0.035	95.6	71.7	71.7	52.6
BGP702 LED75-4S/730	6764	51	132.6	1.342	0.069	0.052	0.052	0.038	104.9	78.6	78.6	57.7
BGP702 LED75-4S/727	6764	58	116.6	1.526	0.079	0.059	0.059	0.043	119.3	89.4	89.4	65.6
BGP702 LED75-4S/830	6764	58	116.6	1.526	0.079	0.059	0.059	0.043	119.3	89.4	89.4	65.6
BGP702 LED80-4S/740	7120	51	139.6	1.342	0.066	0.049	0.049	0.036	99.6	74.7	74.7	54.8
BGP702 LED80-4S/730	7120	55	129.5	1.447	0.071	0.053	0.053	0.039	107.4	80.6	80.6	59.1
BGP702 LED85-4S/740	7654	55	139.2	1.447	0.066	0.050	0.050	0.036	99.9	75.0	75.0	55.0
BGP702 LED85-4S/730	7654	59	129.7	1.553	0.071	0.053	0.053	0.039	107.2	80.4	80.4	59.0

BGP702 LED90-4S/740	8010	59	135.8	1.553	0.068	0.051	0.051	0.037	102.4	76.8	76.8	56.3

** 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 highlighed 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[1)]	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 multilplying for the Finland value from the same table (FINLAND = 2,70E-01).

Thus, the calculation of this example would be:

New B6 GWP tot for Finland = (4,06E+02 / 3,96E-01) x 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