

# ENVIRONMENTAL PRODUCT DECLARATION

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

Philips Copenhagen City LED gen2 small

BRS/BPS/BDS/BSS761

Signify N.V.



## GENERAL INFORMATION

### MANUFACTURER

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

### 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 Copenhagen City gen2 LED Small
Additional labels	BRS761 LED40/830 II MDW GR CLOLS850 C10K
Product reference	919008635353
Place of production	Denmark
Period for data	2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	%

### ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit of 3200 lumens over 100000 hours
Declared unit mass	5.0162 kg
GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)	6,81E+01
GWP-total, A1-A3 (kgCO <sub>2</sub> e)	6,62E+01
Secondary material, inputs (%)	12.8
Secondary material, outputs (%)	42
Total energy use, A1-A3 (kWh)	297
Total water use, A1-A3 (m <sup>3</sup> e)	0.59

## 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

The original Copenhagen luminaire was co-designed with Copenhagen’s Office of City Architecture in the 1960s with the aim of enhancing the aesthetic appeal of the city through lighting. This timeless luminaire design comes in two types: Copenhagen City LED Gen2 is for city and residential areas where light comfort is important; Copenhagen LED Gen2 delivers high performance for road lighting applications. The second generation of Copenhagen City LED offers a very comfortable light distribution with minimum glare, enabled by a round LED engine, which follows the shape of the luminaire. The opal canopy option provides even more ways to enhance the impact of lighting. It is also perfect for city branding as it can be used to create both static and dynamic uplight with any color of light. The luminaire comes with a variety of suspensions and optics, offering maximum freedom in lighting design for downtown and residential areas. A variety of dedicated brackets are also available to enable you to create a consistent lighting design across multiple applications. It is also available with one or two Zhaga-D4i (ZD4i) System Ready (SR) sockets, which makes the luminaire future ready. This means Copenhagen City LED Gen2 is ready to pair with advanced control and lighting software applications such as Interact, or sensors such as the Philips Outdoor Sensor Bundle (OSB). And because the top SR socket is integrated into the canopy, it has no impact on the beautiful, clean design Philips Copenhagen City gen2 LED Small-BRS/BPS/BDS/BSS761

of the luminaire. Furthermore, every Copenhagen City LED Gen2 BRS761, BRS762 and BRS763 luminaire 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 a digital library of lighting assets and spare parts.

For more information, please visit <https://www.lighting.philips.com/link/BDS761/fam/aa/en>

### PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	43.82	EUR, ASIA
Minerals	19.94	EU
Fossil materials	36.24	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	0.388

### FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Product
Mass per declared unit	5.0162 kg
Functional unit	1 unit of 3200 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.

Philips Copenhagen City gen2 LED Small-BRS/BPS/BDS/BSS761

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)

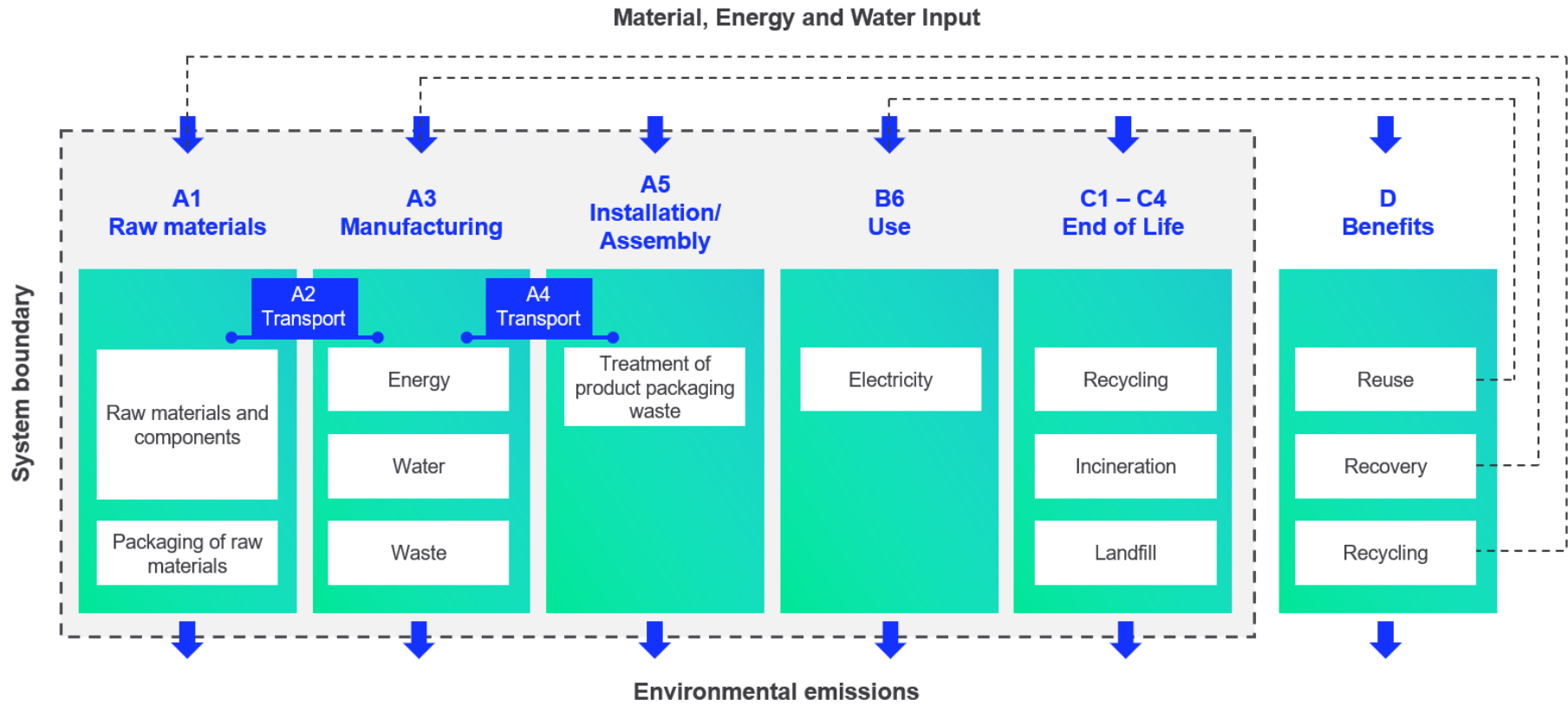
During the use phase, the product consumes electricity from Europe's electricity grid mix (B6). The total power consumption of the reference product is calculated as follows: Wattage x Reference lifetime = kWh consumed throughout the entire use phase B6.

## 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 <sup>1)</sup>	kg CO <sub>2</sub> e	5,56E+01	1,13E+00	9,48E+00	6,62E+01	1,13E+00	1,46E+00	MNR	MNR	MNR	MNR	MNR	1,31E+03	MNR	MNR	4,51E-02	2,06E+00	1,09E+00	-2,18E+01
GWP – fossil	kg CO <sub>2</sub> e	5,61E+01	1,13E+00	1,09E+01	6,81E+01	1,13E+00	4,36E-02	MNR	MNR	MNR	MNR	MNR	1,30E+03	MNR	MNR	4,50E-02	2,06E+00	1,09E+00	-2,18E+01
GWP – biogenic	kg CO <sub>2</sub> e	-6,16E-01	0,00E+00	-1,41E+00	-2,03E+00	4,36E-04	1,41E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	0,00E+00	0,00E+00	-7,24E-03
GWP – LULUC	kg CO <sub>2</sub> e	7,09E-02	4,28E-04	2,77E-02	9,90E-02	4,16E-04	1,54E-05	MNR	MNR	MNR	MNR	MNR	3,05E+00	MNR	MNR	1,66E-05	1,07E-04	5,44E-05	-3,88E-03
Ozone depletion pot.	kg CFC <sub>11</sub> e	2,42E-06	2,59E-07	7,54E-07	3,44E-06	2,60E-07	3,75E-09	MNR	MNR	MNR	MNR	MNR	6,62E-05	MNR	MNR	1,04E-08	9,63E-09	7,90E-09	-6,09E-07
Acidification potential	mol H <sup>+</sup> e	5,07E-01	5,67E-03	2,24E-02	5,36E-01	4,78E-03	3,29E-04	MNR	MNR	MNR	MNR	MNR	7,45E+00	MNR	MNR	1,91E-04	1,02E-03	4,23E-04	-3,33E-01
EP-freshwater <sup>2)</sup>	kg Pe	3,02E-03	9,10E-06	1,94E-04	3,22E-03	9,24E-06	4,13E-07	MNR	MNR	MNR	MNR	MNR	1,38E-01	MNR	MNR	3,69E-07	3,21E-06	8,58E-07	-1,63E-03
EP-marine	kg Ne	6,24E-02	1,63E-03	7,73E-03	7,18E-02	1,42E-03	1,46E-04	MNR	MNR	MNR	MNR	MNR	9,88E-01	MNR	MNR	5,67E-05	3,32E-04	2,32E-04	-2,70E-02
EP-terrestrial	mol Ne	6,98E-01	1,80E-02	6,55E-02	7,82E-01	1,57E-02	1,50E-03	MNR	MNR	MNR	MNR	MNR	1,12E+01	MNR	MNR	6,25E-04	3,55E-03	1,74E-03	-3,27E-01
POCP (“smog”) <sup>3)</sup>	kg NMVOCe	2,17E-01	5,60E-03	2,78E-02	2,50E-01	5,01E-03	3,73E-04	MNR	MNR	MNR	MNR	MNR	3,08E+00	MNR	MNR	2,00E-04	9,02E-04	4,72E-04	-9,53E-02
ADP-minerals & metals <sup>4)</sup>	kg Sbe	5,36E-03	2,62E-06	4,74E-05	5,41E-03	2,65E-06	1,18E-07	MNR	MNR	MNR	MNR	MNR	1,22E-02	MNR	MNR	1,06E-07	4,89E-06	1,72E-07	-3,77E-03
ADP-fossil resources	MJ	6,60E+02	1,69E+01	1,80E+02	8,57E+02	1,70E+01	3,22E-01	MNR	MNR	MNR	MNR	MNR	2,78E+04	MNR	MNR	6,76E-01	1,10E+00	6,79E-01	-2,15E+02
Water use <sup>5)</sup>	m <sup>3</sup> e depr.	2,14E+01	7,49E-02	3,31E+00	2,48E+01	7,58E-02	6,85E-02	MNR	MNR	MNR	MNR	MNR	7,58E+02	MNR	MNR	3,03E-03	9,22E-02	6,30E-02	-2,08E+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 PO<sub>4</sub>e; 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	4,33E-06	1,27E-07	3,78E-07	4,84E-06	1,30E-07	2,95E-09	MNR	MNR	MNR	MNR	MNR	2,45E-05	MNR	MNR	5,19E-09	9,43E-09	5,35E-09	-1,41E-06
Ionizing radiation <sup>6)</sup>	kBq U235e	2,89E+00	8,03E-02	2,15E-01	3,18E+00	8,07E-02	1,06E-03	MNR	MNR	MNR	MNR	MNR	7,51E+02	MNR	MNR	3,22E-03	6,60E-03	3,01E-03	-1,30E+00

Ecotoxicity (freshwater)	CTUe	2,98E+03	1,51E+01	1,47E+02	3,14E+03	1,52E+01	1,62E+00	MNR	MNR	MNR	MNR	MNR	1,89E+04	MNR	MNR	6,08E-01	7,01E+00	1,51E+02	-1,25E+03
Human toxicity, cancer	CTUh	1,39E-07	3,83E-10	5,77E-09	1,46E-07	3,75E-10	1,20E-10	MNR	MNR	MNR	MNR	MNR	6,18E-07	MNR	MNR	1,49E-11	2,57E-10	1,82E-09	-2,22E-08
Human tox. non-cancer	CTUh	3,39E-06	1,48E-08	8,03E-08	3,49E-06	1,51E-08	4,74E-09	MNR	MNR	MNR	MNR	MNR	2,03E-05	MNR	MNR	6,02E-10	1,03E-08	1,21E-07	-2,60E-06
SQP <sup>7)</sup>	-	2,79E+02	1,90E+01	1,53E+02	4,51E+02	1,95E+01	1,99E-01	MNR	MNR	MNR	MNR	MNR	5,02E+03	MNR	MNR	7,79E-01	1,19E+00	9,91E-01	-8,35E+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 <sup>8)</sup>	MJ	7,24E+01	1,88E-01	2,08E+02	2,81E+02	1,91E-01	8,52E-03	MNR	MNR	MNR	MNR	MNR	5,65E+03	MNR	MNR	7,62E-03	1,17E-01	2,24E-02	-6,46E+00
Renew. PER as material	MJ	7,17E+00	0,00E+00	1,34E+01	2,06E+01	0,00E+00	-1,34E+01	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	-5,07E-01	-9,42E-01	0,00E+00
Total use of renew. PER	MJ	7,96E+01	1,88E-01	2,21E+02	3,01E+02	1,91E-01	-1,34E+01	MNR	MNR	MNR	MNR	MNR	5,65E+03	MNR	MNR	7,62E-03	-3,91E-01	-9,20E-01	-6,46E+00
Non-re. PER as energy	MJ	5,95E+02	1,69E+01	1,78E+02	7,90E+02	1,70E+01	3,22E-01	MNR	MNR	MNR	MNR	MNR	2,77E+04	MNR	MNR	6,76E-01	1,10E+00	6,80E-01	-2,15E+02
Non-re. PER as material	MJ	6,67E+01	0,00E+00	2,79E-01	6,69E+01	0,00E+00	-2,79E-01	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	-3,10E+01	-3,16E+01	0,00E+00
Total use of non-re. PER	MJ	6,61E+02	1,69E+01	1,79E+02	8,57E+02	1,70E+01	4,24E-02	MNR	MNR	MNR	MNR	MNR	2,77E+04	MNR	MNR	6,76E-01	-2,99E+01	-3,09E+01	-2,15E+02
Secondary materials	kg	6,41E-01	4,76E-03	4,20E-01	1,07E+00	4,71E-03	3,59E-04	MNR	MNR	MNR	MNR	MNR	2,86E+00	MNR	MNR	1,88E-04	8,97E-04	1,42E-03	9,67E-01
Renew. secondary fuels	MJ	4,70E-02	4,67E-05	2,60E-02	7,31E-02	4,75E-05	4,00E-06	MNR	MNR	MNR	MNR	MNR	2,32E-02	MNR	MNR	1,90E-06	4,70E-05	1,49E-05	-1,41E-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 <sup>3</sup>	5,08E-01	2,16E-03	7,82E-02	5,88E-01	2,20E-03	5,64E-04	MNR	MNR	MNR	MNR	MNR	2,39E+01	MNR	MNR	8,76E-05	3,34E-03	1,71E-03	-1,06E-01

8) PER = Primary energy resources.

### END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
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Hazardous waste	kg	1,04E+01	2,24E-02	3,78E-01	1,08E+01	2,25E-02	2,46E-02	MNR	MNR	MNR	MNR	MNR	9,96E+01	MNR	MNR	8,97E-04	5,27E-03	7,43E-02	-3,59E+00
Non-hazardous waste	kg	1,29E+02	3,63E-01	5,74E+00	1,35E+02	3,69E-01	3,82E-01	MNR	MNR	MNR	MNR	MNR	6,30E+03	MNR	MNR	1,47E-02	1,05E+00	2,00E+00	-1,01E+02
Radioactive waste	kg	1,28E-03	1,13E-04	1,21E-04	1,52E-03	1,13E-04	9,08E-07	MNR	MNR	MNR	MNR	MNR	2,02E-01	MNR	MNR	4,53E-06	2,96E-06	0,00E+00	-4,79E-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	2,11E+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	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	8,72E-01	8,72E-01	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	1,85E+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 <sub>2</sub> e	5,46E+01	1,12E+00	1,09E+01	6,66E+01	1,12E+00	4,13E-02	MNR	MNR	MNR	MNR	MNR	1,29E+03	MNR	MNR	4,46E-02	2,06E+00	1,07E+00	-2,14E+01
Ozone depletion Pot.	kg CFC <sub>11</sub> e	2,09E-06	2,05E-07	6,49E-07	2,94E-06	2,06E-07	3,21E-09	MNR	MNR	MNR	MNR	MNR	5,74E-05	MNR	MNR	8,21E-09	8,19E-09	6,52E-09	-5,16E-07
Acidification	kg SO <sub>2</sub> e	4,33E-01	4,43E-03	1,75E-02	4,55E-01	3,71E-03	2,37E-04	MNR	MNR	MNR	MNR	MNR	6,32E+00	MNR	MNR	1,48E-04	7,82E-04	3,13E-04	-2,90E-01
Eutrophication	kg PO <sub>4</sub> <sup>3</sup> e	1,24E-01	9,13E-04	8,95E-03	1,34E-01	8,46E-04	1,85E-04	MNR	MNR	MNR	MNR	MNR	4,86E+00	MNR	MNR	3,37E-05	3,90E-04	3,76E-03	-7,12E-02
POCP (“smog”)	kg C <sub>2</sub> H <sub>4</sub> e	2,43E-02	1,62E-04	2,07E-03	2,65E-02	1,45E-04	6,67E-06	MNR	MNR	MNR	MNR	MNR	2,58E-01	MNR	MNR	5,78E-06	2,47E-05	2,08E-05	-1,31E-02
ADP-elements	kg Sbe	5,34E-03	2,53E-06	4,61E-05	5,39E-03	2,56E-06	9,38E-08	MNR	MNR	MNR	MNR	MNR	1,21E-02	MNR	MNR	1,02E-07	4,85E-06	1,48E-07	-3,77E-03
ADP-fossil	MJ	6,60E+02	1,69E+01	1,80E+02	8,57E+02	1,70E+01	3,22E-01	MNR	MNR	MNR	MNR	MNR	2,77E+04	MNR	MNR	6,76E-01	1,10E+00	6,79E-01	-2,15E+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
BDS761, BPS761, BRS761, BSS761 LED20/740	1600.0	12.8	125.0	0.388	0.388	0.291	0.291	0.213	508.3	381.2	381.2	279.0
BDS761, BPS761, BRS761, BSS761 LED30/740	2400.0	18.8	127.7	0.57	0.57	0.428	0.428	0.314	746.7	560.7	560.7	411.3
BDS761, BPS761, BRS761, BSS761 LED40/740	3200.0	25.0	128.0	0.758	0.758	0.568	0.568	0.417	993.0	744.1	744.1	546.3
BDS761, BPS761, BRS761, BSS761 LED50/740	4100.0	29.5	139.0	0.894	0.894	0.67	0.67	0.492	1171.1	877.7	877.7	644.5
BDS761, BPS761, BRS761, BSS761 LED60/740	4860.0	35.0	138.9	1.061	1.061	0.796	0.796	0.584	1389.9	1042.8	1042.8	765.0
BDS761, BPS761, BRS761, BSS761 LED70/740	5670.0	41.0	138.3	1.242	1.242	0.932	0.932	0.683	1627.0	1220.9	1220.9	894.7
BDS761, BPS761, BRS761, BSS761 LED80/740	6480.0	46.0	140.9	1.394	1.394	1.045	1.045	0.767	1826.1	1368.9	1368.9	1004.8
BDS761, BPS761, BRS761, BSS761 LED90/740	7290.0	52.0	140.2	1.576	1.576	1.182	1.182	0.867	2064.6	1548.4	1548.4	1135.8
BDS761, BPS761, BRS761, BSS761 LED100/740	8000.0	58.0	137.9	1.758	1.758	1.318	1.318	0.967	2303.0	1726.6	1726.6	1266.8
BDS761, BPS761, BRS761, BSS761 LED110/740	8800.0	63.0	139.7	1.909	1.909	1.432	1.432	1.05	2500.8	1875.9	1875.9	1375.5
BDS761, BPS761, BRS761, BSS761 LED120/740	9600.0	69.0	139.1	2.091	2.091	1.568	1.568	1.15	2739.2	2054.1	2054.1	1506.5
BDS761, BPS761, BRS761, BSS761 LED130/740	10400.0	75.0	138.7	2.273	2.273	1.705	1.705	1.25	2977.6	2233.6	2233.6	1637.5

BDS761, BPS761, BRS761, BSS761 LED20/830	1600.0	16.0	100.0	0.485	0.485	0.364	0.364	0.267	635.4	476.8	476.8	349.8
BDS761, BPS761, BRS761, BSS761 LED30/830	2400.0	24.0	100.0	0.727	0.727	0.545	0.545	0.4	952.4	714.0	714.0	524.0
<b>BDS761, BPS761, BRS761, BSS761 LED40/830</b>	<b>3200.0</b>	<b>33.0</b>	<b>97.0</b>	<b>1.0</b>	<b>1.0</b>	<b>0.75</b>	<b>0.75</b>	<b>0.55</b>	<b>1310.0</b>	<b>982.5</b>	<b>982.5</b>	<b>720.5</b>
BDS761, BPS761, BRS761, BSS761 LED50/830	4050.0	37.5	108.0	1.136	1.136	0.852	0.852	0.625	1488.2	1116.1	1116.1	818.8
BDS761, BPS761, BRS761, BSS761 LED60/830	4860.0	45.0	108.0	1.364	1.364	1.023	1.023	0.75	1786.8	1340.1	1340.1	982.5
BDS761, BPS761, BRS761, BSS761 LED70/830	5600.0	53.0	105.7	1.606	1.606	1.205	1.205	0.883	2103.9	1578.6	1578.6	1156.7
BDS761, BPS761, BRS761, BSS761 LED80/830	6400.0	59.0	108.5	1.788	1.788	1.341	1.341	0.983	2342.3	1756.7	1756.7	1287.7
BDS761, BPS761, BRS761, BSS761 LED90/830	7200.0	66.0	109.1	2.0	2.0	1.5	1.5	1.1	2620.0	1965.0	1965.0	1441.0
BDS761, BPS761, BRS761, BSS761 LED100/830	8000.0	74.0	108.1	2.242	2.242	1.682	1.682	1.233	2937.0	2203.4	2203.4	1615.2
BDS761, BPS761, BRS761, BSS761 LED110/830	8690.0	81.0	107.3	2.455	2.455	1.841	1.841	1.35	3216.0	2411.7	2411.7	1768.5
BDS761, BPS761, BRS761, BSS761 LED120/830	9480.0	89.0	106.5	2.697	2.697	2.023	2.023	1.483	3533.1	2650.1	2650.1	1942.7
BDS761, BPS761, BRS761, BSS761 LED130/830	10270.0	97.0	105.9	2.939	2.939	2.204	2.204	1.616	3850.1	2887.2	2887.2	2117.0
BDS761, BPS761, BRS761, BSS761 LED20/722	1600.0	17.2	93.0	0.521	0.521	0.391	0.391	0.287	682.5	512.2	512.2	376.0
BDS761, BPS761, BRS761, BSS761 LED30/722	2400.0	26.0	92.3	0.788	0.788	0.591	0.591	0.433	1032.3	774.2	774.2	567.2
BDS761, BPS761, BRS761, BSS761 LED40/722	3200.0	35.5	90.1	1.076	1.076	0.807	0.807	0.592	1409.6	1057.2	1057.2	775.5
BDS761, BPS761, BRS761, BSS761 LED50/722	4050.0	40.0	101.2	1.212	1.212	0.909	0.909	0.667	1587.7	1190.8	1190.8	873.8
BDS761, BPS761, BRS761, BSS761 LED60/722	4860.0	48.5	100.2	1.47	1.47	1.102	1.102	0.808	1925.7	1443.6	1443.6	1058.5
BDS761, BPS761, BRS761, BSS761 LED70/722	5600.0	57.0	98.2	1.727	1.727	1.295	1.295	0.95	2262.4	1696.4	1696.4	1244.5
BDS761, BPS761, BRS761, BSS761 LED80/722	6400.0	63.0	101.6	1.909	1.909	1.432	1.432	1.05	2500.8	1875.9	1875.9	1375.5
BDS761, BPS761, BRS761, BSS761 LED90/722	7200.0	71.0	101.4	2.152	2.152	1.614	1.614	1.184	2819.1	2114.3	2114.3	1551.0
BDS761, BPS761, BRS761, BSS761 LED100/722	7900.0	80.0	98.8	2.424	2.424	1.818	1.818	1.333	3175.4	2381.6	2381.6	1746.2
BDS761, BPS761, BRS761, BSS761 LED110/722	8690.0	88.0	98.8	2.667	2.667	2.0	2.0	1.467	3493.8	2620.0	2620.0	1921.8
BDS761, BPS761, BRS761, BSS761 LED120/722	9480.0	97.0	97.7	2.939	2.939	2.204	2.204	1.616	3850.1	2887.2	2887.2	2117.0
BDS761, BPS761, BRS761, BSS761 LED130/722	10270.0	106.0	96.9	3.212	3.212	2.409	2.409	1.767	4207.7	3155.8	3155.8	2314.8
BDS761, BPS761, BRS761, BSS761 LED20/727	1600.0	14.8	108.1	0.448	0.448	0.336	0.336	0.246	586.9	440.2	440.2	322.3

BDS761, BPS761, BRS761, BSS761 LED30/727	2400.0	22.0	109.1	0.667	0.667	0.5	0.5	0.367	873.8	655.0	655.0	480.8
BDS761, BPS761, BRS761, BSS761 LED40/727	3200.0	30.0	106.7	0.909	0.909	0.682	0.682	0.5	1190.8	893.4	893.4	655.0
BDS761, BPS761, BRS761, BSS761 LED50/727	4050.0	34.5	117.4	1.045	1.045	0.784	0.784	0.575	1368.9	1027.0	1027.0	753.2
BDS761, BPS761, BRS761, BSS761 LED60/727	4860.0	41.0	118.5	1.242	1.242	0.932	0.932	0.683	1627.0	1220.9	1220.9	894.7
BDS761, BPS761, BRS761, BSS761 LED70/727	5600.0	48.5	115.5	1.47	1.47	1.102	1.102	0.808	1925.7	1443.6	1443.6	1058.5
BDS761, BPS761, BRS761, BSS761 LED80/727	6400.0	54.0	118.5	1.636	1.636	1.227	1.227	0.9	2143.2	1607.4	1607.4	1179.0
BDS761, BPS761, BRS761, BSS761 LED90/727	7200.0	61.0	118.0	1.848	1.848	1.386	1.386	1.016	2420.9	1815.7	1815.7	1331.0
BDS761, BPS761, BRS761, BSS761 LED100/727	7900.0	68.0	116.2	2.061	2.061	1.546	1.546	1.134	2699.9	2025.3	2025.3	1485.5
BDS761, BPS761, BRS761, BSS761 LED110/727	8690.0	75.0	115.9	2.273	2.273	1.705	1.705	1.25	2977.6	2233.6	2233.6	1637.5
BDS761, BPS761, BRS761, BSS761 LED120/727	9480.0	82.0	115.6	2.485	2.485	1.864	1.864	1.367	3255.4	2441.8	2441.8	1790.8
BDS761, BPS761, BRS761, BSS761 LED130/727	10270.0	89.0	115.4	2.697	2.697	2.023	2.023	1.483	3533.1	2650.1	2650.1	1942.7
BDS761, BPS761, BRS761, BSS761 LED20/730	1600.0	13.4	119.4	0.406	0.406	0.304	0.304	0.223	531.9	398.2	398.2	292.1
BDS761, BPS761, BRS761, BSS761 LED30/730	2400.0	19.8	121.2	0.6	0.6	0.45	0.45	0.33	786.0	589.5	589.5	432.3
BDS761, BPS761, BRS761, BSS761 LED40/730	3200.0	27.0	118.5	0.818	0.818	0.613	0.613	0.45	1071.6	803.0	803.0	589.5
BDS761, BPS761, BRS761, BSS761 LED50/730	4050.0	31.0	130.6	0.939	0.939	0.704	0.704	0.516	1230.1	922.2	922.2	676.0
BDS761, BPS761, BRS761, BSS761 LED60/730	4860.0	37.0	131.4	1.121	1.121	0.841	0.841	0.617	1468.5	1101.7	1101.7	808.3
BDS761, BPS761, BRS761, BSS761 LED70/730	5670.0	43.5	130.3	1.318	1.318	0.988	0.988	0.725	1726.6	1294.3	1294.3	949.8
BDS761, BPS761, BRS761, BSS761 LED80/730	6480.0	48.5	133.6	1.47	1.47	1.102	1.102	0.808	1925.7	1443.6	1443.6	1058.5
BDS761, BPS761, BRS761, BSS761 LED90/730	7200.0	55.0	130.9	1.667	1.667	1.25	1.25	0.917	2183.8	1637.5	1637.5	1201.3
BDS761, BPS761, BRS761, BSS761 LED100/730	8000.0	61.0	131.1	1.848	1.848	1.386	1.386	1.016	2420.9	1815.7	1815.7	1331.0
BDS761, BPS761, BRS761, BSS761 LED110/730	8800.0	67.0	131.3	2.03	2.03	1.522	1.522	1.116	2659.3	1993.8	1993.8	1462.0
BDS761, BPS761, BRS761, BSS761 LED120/730	9600.0	73.0	131.5	2.212	2.212	1.659	1.659	1.217	2897.7	2173.3	2173.3	1594.3
BDS761, BPS761, BRS761, BSS761 LED130/730	10270.0	80.0	128.4	2.424	2.424	1.818	1.818	1.333	3175.4	2381.6	2381.6	1746.2
BDS761, BPS761, BRS761, BSS761 LED20/827	1600.0	17.2	93.0	0.521	0.521	0.391	0.391	0.287	682.5	512.2	512.2	376.0
BDS761, BPS761, BRS761, BSS761 LED30/827	2400.0	26.0	92.3	0.788	0.788	0.591	0.591	0.433	1032.3	774.2	774.2	567.2

BDS761, BPS761, BRS761, BSS761 LED40/827	3240.0	32.0	101.2	0.97	0.97	0.728	0.728	0.534	1270.7	953.7	953.7	699.5
BDS761, BPS761, BRS761, BSS761 LED50/827	4050.0	40.0	101.2	1.212	1.212	0.909	0.909	0.667	1587.7	1190.8	1190.8	873.8
BDS761, BPS761, BRS761, BSS761 LED60/827	4860.0	48.5	100.2	1.47	1.47	1.102	1.102	0.808	1925.7	1443.6	1443.6	1058.5
BDS761, BPS761, BRS761, BSS761 LED70/827	5600.0	57.0	98.2	1.727	1.727	1.295	1.295	0.95	2262.4	1696.4	1696.4	1244.5
BDS761, BPS761, BRS761, BSS761 LED80/827	6400.0	63.0	101.6	1.909	1.909	1.432	1.432	1.05	2500.8	1875.9	1875.9	1375.5
BDS761, BPS761, BRS761, BSS761 LED90/827	7200.0	71.0	101.4	2.152	2.152	1.614	1.614	1.184	2819.1	2114.3	2114.3	1551.0
BDS761, BPS761, BRS761, BSS761 LED100/827	7900.0	80.0	98.8	2.424	2.424	1.818	1.818	1.333	3175.4	2381.6	2381.6	1746.2
BDS761, BPS761, BRS761, BSS761 LED110/827	8690.0	88.0	98.8	2.667	2.667	2.0	2.0	1.467	3493.8	2620.0	2620.0	1921.8
BDS761, BPS761, BRS761, BSS761 LED120/827	9480.0	97.0	97.7	2.939	2.939	2.204	2.204	1.616	3850.1	2887.2	2887.2	2117.0
BDS761, BPS761, BRS761, BSS761 LED130/827	10270.0	106.0	96.9	3.212	3.212	2.409	2.409	1.767	4207.7	3155.8	3155.8	2314.8
BDS761, BPS761, BRS761, BSS761 LED20/840	1600.0	15.6	102.6	0.473	0.473	0.355	0.355	0.26	619.6	465.0	465.0	340.6
BDS761, BPS761, BRS761, BSS761 LED30/840	2400.0	23.5	102.1	0.712	0.712	0.534	0.534	0.392	932.7	699.5	699.5	513.5
BDS761, BPS761, BRS761, BSS761 LED40/840	3200.0	31.5	101.6	0.955	0.955	0.716	0.716	0.525	1251.0	938.0	938.0	687.8
BDS761, BPS761, BRS761, BSS761 LED50/840	4050.0	36.0	112.5	1.091	1.091	0.818	0.818	0.6	1429.2	1071.6	1071.6	786.0
BDS761, BPS761, BRS761, BSS761 LED60/840	4860.0	43.5	111.7	1.318	1.318	0.988	0.988	0.725	1726.6	1294.3	1294.3	949.8
BDS761, BPS761, BRS761, BSS761 LED70/840	5600.0	51.0	109.8	1.545	1.545	1.159	1.159	0.85	2024.0	1518.3	1518.3	1113.5
BDS761, BPS761, BRS761, BSS761 LED80/840	6400.0	57.0	112.3	1.727	1.727	1.295	1.295	0.95	2262.4	1696.4	1696.4	1244.5
BDS761, BPS761, BRS761, BSS761 LED90/840	7200.0	64.0	112.5	1.939	1.939	1.454	1.454	1.066	2540.1	1904.7	1904.7	1396.5
BDS761, BPS761, BRS761, BSS761 LED100/840	8000.0	71.0	112.7	2.152	2.152	1.614	1.614	1.184	2819.1	2114.3	2114.3	1551.0
BDS761, BPS761, BRS761, BSS761 LED110/840	8690.0	79.0	110.0	2.394	2.394	1.796	1.796	1.317	3136.1	2352.8	2352.8	1725.3
BDS761, BPS761, BRS761, BSS761 LED120/840	9480.0	86.0	110.2	2.606	2.606	1.954	1.954	1.433	3413.9	2559.7	2559.7	1877.2
BDS761, BPS761, BRS761, BSS761 LED130/840	10270.0	94.0	109.3	2.848	2.848	2.136	2.136	1.566	3730.9	2798.2	2798.2	2051.5

\* 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 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  $P_{base}$ .

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

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 ( $O_{lum}$ ) and reference service lifetime (RSL) of the product to estimate the final environmental impact. The scaled impact ( $SI_{pep}$ ) 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 (PGSF), 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
BDS761, BPS761, BRS761, BSS761 LED20/740	1600.0	12.8	125.0	0.388	0.085	0.064	0.064	0.047	111.4	83.8	83.8	61.6
BDS761, BPS761, BRS761, BSS761 LED30/740	2400.0	18.8	127.7	0.57	0.083	0.062	0.062	0.046	108.7	81.2	81.2	60.3
BDS761, BPS761, BRS761, BSS761 LED40/740	3200.0	25.0	128.0	0.758	0.083	0.062	0.062	0.046	108.7	81.2	81.2	60.3
BDS761, BPS761, BRS761, BSS761 LED50/740	4100.0	29.5	139.0	0.894	0.076	0.057	0.057	0.042	99.6	74.7	74.7	55.0
BDS761, BPS761, BRS761, BSS761 LED60/740	4860.0	35.0	138.9	1.061	0.076	0.057	0.057	0.042	99.6	74.7	74.7	55.0
BDS761, BPS761, BRS761, BSS761 LED70/740	5670.0	41.0	138.3	1.242	0.077	0.058	0.058	0.042	100.9	76.0	76.0	55.0
BDS761, BPS761, BRS761, BSS761 LED80/740	6480.0	46.0	140.9	1.394	0.075	0.056	0.056	0.041	98.2	73.4	73.4	53.7
BDS761, BPS761, BRS761, BSS761 LED90/740	7290.0	52.0	140.2	1.576	0.076	0.057	0.057	0.042	99.6	74.7	74.7	55.0
BDS761, BPS761, BRS761, BSS761 LED100/740	8000.0	58.0	137.9	1.758	0.077	0.058	0.058	0.042	100.9	76.0	76.0	55.0
BDS761, BPS761, BRS761, BSS761 LED110/740	8800.0	63.0	139.7	1.909	0.076	0.057	0.057	0.042	99.6	74.7	74.7	55.0
BDS761, BPS761, BRS761, BSS761 LED120/740	9600.0	69.0	139.1	2.091	0.076	0.057	0.057	0.042	99.6	74.7	74.7	55.0
BDS761, BPS761, BRS761, BSS761 LED130/740	10400.0	75.0	138.7	2.273	0.076	0.057	0.057	0.042	99.6	74.7	74.7	55.0
BDS761, BPS761, BRS761, BSS761 LED20/830	1600.0	16.0	100.0	0.485	0.106	0.08	0.08	0.058	138.9	104.8	104.8	76.0
BDS761, BPS761, BRS761, BSS761 LED30/830	2400.0	24.0	100.0	0.727	0.106	0.08	0.08	0.058	138.9	104.8	104.8	76.0
<b>BDS761, BPS761, BRS761, BSS761 LED40/830</b>	3200.0	33.0	97.0	1.0	0.109	0.082	0.082	0.06	142.8	107.4	107.4	78.6
BDS761, BPS761, BRS761, BSS761 LED50/830	4050.0	37.5	108.0	1.136	0.098	0.074	0.074	0.054	128.4	96.9	96.9	70.7
BDS761, BPS761, BRS761, BSS761 LED60/830	4860.0	45.0	108.0	1.364	0.098	0.074	0.074	0.054	128.4	96.9	96.9	70.7
BDS761, BPS761, BRS761, BSS761 LED70/830	5600.0	53.0	105.7	1.606	0.1	0.075	0.075	0.055	131.0	98.2	98.2	72.0
BDS761, BPS761, BRS761, BSS761 LED80/830	6400.0	59.0	108.5	1.788	0.098	0.074	0.074	0.054	128.4	96.9	96.9	70.7

BDS761, BPS761, BRS761, BSS761 LED90/830	7200.0	66.0	109.1	2.0	0.097	0.073	0.073	0.053	127.1	95.6	95.6	69.4
BDS761, BPS761, BRS761, BSS761 LED100/830	8000.0	74.0	108.1	2.242	0.098	0.074	0.074	0.054	128.4	96.9	96.9	70.7
BDS761, BPS761, BRS761, BSS761 LED110/830	8690.0	81.0	107.3	2.455	0.099	0.074	0.074	0.054	129.7	96.9	96.9	70.7
BDS761, BPS761, BRS761, BSS761 LED120/830	9480.0	89.0	106.5	2.697	0.1	0.075	0.075	0.055	131.0	98.2	98.2	72.0
BDS761, BPS761, BRS761, BSS761 LED130/830	10270.0	97.0	105.9	2.939	0.1	0.075	0.075	0.055	131.0	98.2	98.2	72.0
BDS761, BPS761, BRS761, BSS761 LED20/722	1600.0	17.2	93.0	0.521	0.114	0.086	0.086	0.063	149.3	112.7	112.7	82.5
BDS761, BPS761, BRS761, BSS761 LED30/722	2400.0	26.0	92.3	0.788	0.115	0.086	0.086	0.063	150.6	112.7	112.7	82.5
BDS761, BPS761, BRS761, BSS761 LED40/722	3200.0	35.5	90.1	1.076	0.118	0.088	0.088	0.065	154.6	115.3	115.3	85.2
BDS761, BPS761, BRS761, BSS761 LED50/722	4050.0	40.0	101.2	1.212	0.105	0.079	0.079	0.058	137.5	103.5	103.5	76.0
BDS761, BPS761, BRS761, BSS761 LED60/722	4860.0	48.5	100.2	1.47	0.106	0.08	0.08	0.058	138.9	104.8	104.8	76.0
BDS761, BPS761, BRS761, BSS761 LED70/722	5600.0	57.0	98.2	1.727	0.108	0.081	0.081	0.059	141.5	106.1	106.1	77.3
BDS761, BPS761, BRS761, BSS761 LED80/722	6400.0	63.0	101.6	1.909	0.104	0.078	0.078	0.057	136.2	102.2	102.2	74.7
BDS761, BPS761, BRS761, BSS761 LED90/722	7200.0	71.0	101.4	2.152	0.105	0.079	0.079	0.058	137.5	103.5	103.5	76.0
BDS761, BPS761, BRS761, BSS761 LED100/722	7900.0	80.0	98.8	2.424	0.107	0.08	0.08	0.059	140.2	104.8	104.8	77.3
BDS761, BPS761, BRS761, BSS761 LED110/722	8690.0	88.0	98.8	2.667	0.107	0.08	0.08	0.059	140.2	104.8	104.8	77.3
BDS761, BPS761, BRS761, BSS761 LED120/722	9480.0	97.0	97.7	2.939	0.109	0.082	0.082	0.06	142.8	107.4	107.4	78.6
BDS761, BPS761, BRS761, BSS761 LED130/722	10270.0	106.0	96.9	3.212	0.109	0.082	0.082	0.06	142.8	107.4	107.4	78.6
BDS761, BPS761, BRS761, BSS761 LED20/727	1600.0	14.8	108.1	0.448	0.098	0.074	0.074	0.054	128.4	96.9	96.9	70.7
BDS761, BPS761, BRS761, BSS761 LED30/727	2400.0	22.0	109.1	0.667	0.097	0.073	0.073	0.053	127.1	95.6	95.6	69.4
BDS761, BPS761, BRS761, BSS761 LED40/727	3200.0	30.0	106.7	0.909	0.099	0.074	0.074	0.054	129.7	96.9	96.9	70.7
BDS761, BPS761, BRS761, BSS761 LED50/727	4050.0	34.5	117.4	1.045	0.09	0.068	0.068	0.05	117.9	89.1	89.1	65.5
BDS761, BPS761, BRS761, BSS761 LED60/727	4860.0	41.0	118.5	1.242	0.089	0.067	0.067	0.049	116.6	87.8	87.8	64.2
BDS761, BPS761, BRS761, BSS761 LED70/727	5600.0	48.5	115.5	1.47	0.092	0.069	0.069	0.051	120.5	90.4	90.4	66.8
BDS761, BPS761, BRS761, BSS761 LED80/727	6400.0	54.0	118.5	1.636	0.089	0.067	0.067	0.049	116.6	87.8	87.8	64.2
BDS761, BPS761, BRS761, BSS761 LED90/727	7200.0	61.0	118.0	1.848	0.09	0.068	0.068	0.05	117.9	89.1	89.1	65.5

BDS761, BPS761, BRS761, BSS761 LED100/727	7900.0	68.0	116.2	2.061	0.091	0.068	0.068	0.05	119.2	89.1	89.1	65.5
BDS761, BPS761, BRS761, BSS761 LED110/727	8690.0	75.0	115.9	2.273	0.092	0.069	0.069	0.051	120.5	90.4	90.4	66.8
BDS761, BPS761, BRS761, BSS761 LED120/727	9480.0	82.0	115.6	2.485	0.092	0.069	0.069	0.051	120.5	90.4	90.4	66.8
BDS761, BPS761, BRS761, BSS761 LED130/727	10270.0	89.0	115.4	2.697	0.092	0.069	0.069	0.051	120.5	90.4	90.4	66.8
BDS761, BPS761, BRS761, BSS761 LED20/730	1600.0	13.4	119.4	0.406	0.089	0.067	0.067	0.049	116.6	87.8	87.8	64.2
BDS761, BPS761, BRS761, BSS761 LED30/730	2400.0	19.8	121.2	0.6	0.088	0.066	0.066	0.048	115.3	86.5	86.5	62.9
BDS761, BPS761, BRS761, BSS761 LED40/730	3200.0	27.0	118.5	0.818	0.089	0.067	0.067	0.049	116.6	87.8	87.8	64.2
BDS761, BPS761, BRS761, BSS761 LED50/730	4050.0	31.0	130.6	0.939	0.081	0.061	0.061	0.045	106.1	79.9	79.9	59.0
BDS761, BPS761, BRS761, BSS761 LED60/730	4860.0	37.0	131.4	1.121	0.081	0.061	0.061	0.045	106.1	79.9	79.9	59.0
BDS761, BPS761, BRS761, BSS761 LED70/730	5670.0	43.5	130.3	1.318	0.081	0.061	0.061	0.045	106.1	79.9	79.9	59.0
BDS761, BPS761, BRS761, BSS761 LED80/730	6480.0	48.5	133.6	1.47	0.079	0.059	0.059	0.043	103.5	77.3	77.3	56.3
BDS761, BPS761, BRS761, BSS761 LED90/730	7200.0	55.0	130.9	1.667	0.081	0.061	0.061	0.045	106.1	79.9	79.9	59.0
BDS761, BPS761, BRS761, BSS761 LED100/730	8000.0	61.0	131.1	1.848	0.081	0.061	0.061	0.045	106.1	79.9	79.9	59.0
BDS761, BPS761, BRS761, BSS761 LED110/730	8800.0	67.0	131.3	2.03	0.081	0.061	0.061	0.045	106.1	79.9	79.9	59.0
BDS761, BPS761, BRS761, BSS761 LED120/730	9600.0	73.0	131.5	2.212	0.081	0.061	0.061	0.045	106.1	79.9	79.9	59.0
BDS761, BPS761, BRS761, BSS761 LED130/730	10270.0	80.0	128.4	2.424	0.083	0.062	0.062	0.046	108.7	81.2	81.2	60.3
BDS761, BPS761, BRS761, BSS761 LED20/827	1600.0	17.2	93.0	0.521	0.114	0.086	0.086	0.063	149.3	112.7	112.7	82.5
BDS761, BPS761, BRS761, BSS761 LED30/827	2400.0	26.0	92.3	0.788	0.115	0.086	0.086	0.063	150.6	112.7	112.7	82.5
BDS761, BPS761, BRS761, BSS761 LED40/827	3240.0	32.0	101.2	0.97	0.105	0.079	0.079	0.058	137.5	103.5	103.5	76.0
BDS761, BPS761, BRS761, BSS761 LED50/827	4050.0	40.0	101.2	1.212	0.105	0.079	0.079	0.058	137.5	103.5	103.5	76.0
BDS761, BPS761, BRS761, BSS761 LED60/827	4860.0	48.5	100.2	1.47	0.106	0.08	0.08	0.058	138.9	104.8	104.8	76.0
BDS761, BPS761, BRS761, BSS761 LED70/827	5600.0	57.0	98.2	1.727	0.108	0.081	0.081	0.059	141.5	106.1	106.1	77.3
BDS761, BPS761, BRS761, BSS761 LED80/827	6400.0	63.0	101.6	1.909	0.104	0.078	0.078	0.057	136.2	102.2	102.2	74.7
BDS761, BPS761, BRS761, BSS761 LED90/827	7200.0	71.0	101.4	2.152	0.105	0.079	0.079	0.058	137.5	103.5	103.5	76.0
BDS761, BPS761, BRS761, BSS761 LED100/827	7900.0	80.0	98.8	2.424	0.107	0.08	0.08	0.059	140.2	104.8	104.8	77.3

BDS761, BPS761, BRS761, BSS761 LED110/827	8690.0	88.0	98.8	2.667	0.107	0.08	0.08	0.059	140.2	104.8	104.8	77.3
BDS761, BPS761, BRS761, BSS761 LED120/827	9480.0	97.0	97.7	2.939	0.109	0.082	0.082	0.06	142.8	107.4	107.4	78.6
BDS761, BPS761, BRS761, BSS761 LED130/827	10270.0	106.0	96.9	3.212	0.109	0.082	0.082	0.06	142.8	107.4	107.4	78.6
BDS761, BPS761, BRS761, BSS761 LED20/840	1600.0	15.6	102.6	0.473	0.103	0.077	0.077	0.057	134.9	100.9	100.9	74.7
BDS761, BPS761, BRS761, BSS761 LED30/840	2400.0	23.5	102.1	0.712	0.104	0.078	0.078	0.057	136.2	102.2	102.2	74.7
BDS761, BPS761, BRS761, BSS761 LED40/840	3200.0	31.5	101.6	0.955	0.104	0.078	0.078	0.057	136.2	102.2	102.2	74.7
BDS761, BPS761, BRS761, BSS761 LED50/840	4050.0	36.0	112.5	1.091	0.094	0.07	0.07	0.052	123.1	91.7	91.7	68.1
BDS761, BPS761, BRS761, BSS761 LED60/840	4860.0	43.5	111.7	1.318	0.095	0.071	0.071	0.052	124.4	93.0	93.0	68.1
BDS761, BPS761, BRS761, BSS761 LED70/840	5600.0	51.0	109.8	1.545	0.097	0.073	0.073	0.053	127.1	95.6	95.6	69.4
BDS761, BPS761, BRS761, BSS761 LED80/840	6400.0	57.0	112.3	1.727	0.094	0.07	0.07	0.052	123.1	91.7	91.7	68.1
BDS761, BPS761, BRS761, BSS761 LED90/840	7200.0	64.0	112.5	1.939	0.094	0.07	0.07	0.052	123.1	91.7	91.7	68.1
BDS761, BPS761, BRS761, BSS761 LED100/840	8000.0	71.0	112.7	2.152	0.094	0.07	0.07	0.052	123.1	91.7	91.7	68.1
BDS761, BPS761, BRS761, BSS761 LED110/840	8690.0	79.0	110.0	2.394	0.096	0.072	0.072	0.053	125.8	94.3	94.3	69.4
BDS761, BPS761, BRS761, BSS761 LED120/840	9480.0	86.0	110.2	2.606	0.096	0.072	0.072	0.053	125.8	94.3	94.3	69.4
BDS761, BPS761, BRS761, BSS761 LED130/840	10270.0	94.0	109.3	2.848	0.097	0.073	0.073	0.053	127.1	95.6	95.6	69.4

\* 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 <sup>1)</sup>	kg CO <sub>2</sub> e	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+02
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+02
IRELAND	4,26E+02
ITALY	3,94E-01
LATAM	3,50E-01
NAM	4,83E-01
NETHERLANDS	5,88E-01
NORWAY	2,59E-02

POLAND	1,05E+03
PORTUGAL	4,22E+02
ROW	7,32E-01
SPAIN	3,34E-01
SWEDEN	4,95E-02
SWITZERLAND	5,38E+01
UK	3,17E-01