

ENVIRONMENTAL PRODUCT DECLARATION

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

Copenhagen City LED gen2 small
BDS761/BPS761/BRS761/BSS761
Signify N.V.



GENERAL INFORMATION

MANUFACTURER

Manufacturer	Signify
Address	5600 VB 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	Copenhagen City LED gen2 small
Additional labels	BDS761/BPS761/BRS761/BSS761
Product reference	919008635353
Place of production	DENMARK
Period for data	2024
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	Not applicable

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Unit
Declared unit mass	5.2 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	5.25E+01
GWP-total, A1-A3 (kgCO ₂ e)	4.73E+01
Secondary material, inputs (%)	27.2
Secondary material, outputs (%)	56.5
Total energy use, A1-A3 (kWh)	285
Net fresh water use, A1-A3 (m ³ e)	0.82

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. This timeless luminaire design comes in three types: Copenhagen LED gen2, which delivers high performance for road lighting applications; Copenhagen City LED gen2, which is for city and residential areas where balanced light comfort and cohesive design language are appreciated; Copenhagen City Comfort LED, which caters to the needs of sensitive inner-city areas with high demand for spill light control and high comfort. Copenhagen City LED gen2 offers fully balanced, comfortable lighting effects with reduced glare, enabled by a round LED engine, which follows the shape of the luminaire. The opal canopy option provides provides new opportunities for city branding and ambiance creation as it can be used to create both static (glow effect) and dynamic (RGBW) upright. The luminaire comes with a variety of sizes, suspensions and optics, offering maximum freedom in designing lighting for city center and residential area applications. In order to reduce the carbon footprint of the luminaires, the iconic canopy is made of bio-based plastic and main metal parts manufactured from recycled aluminium. The luminaire is available with one or two Zhaga-D4i (ZD4i) system ready sockets, which makes the luminaire future ready, ready to pair with advanced control and lighting software applications such as Interact. Due to the plastic material usage, the top socket can be

integrated into the canopy without impacting the clean design of the luminaire.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	43.22	EU , APAC
Minerals	19.86	EU
Fossil materials	19.43	EU , APAC
Bio-based materials	17.48	EU

BIOGENIC CARBON CONTENT

Product’s biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.634
Biogenic carbon content in packaging, kg C	0.4

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Unit
Mass per declared unit	5.2 kg
Functional unit	3154 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. Thus, it is possible to allocate it according to the weight of the product analysed in this study. Some of the

waste 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 DENMARK’s electricity grid mix (B6). The total power consumption of the reference product is calculated as follows: $Wattage \times Reference\ lifetime = kWh$ consumed throughout the entire use phase B6.

PRODUCT END OF LIFE (C1-C4, D)

Consumption of energy and natural resources in demolition process is assumed to be negligible. It is assumed that the waste is collected separately and transported to the waste treatment centre. Transportation distance to treatment is assumed as 150 km and the transportation method is assumed to be lorry (C2). According to EN 50693:2019, the sequence of treatment operations occurring to the product shall include de-pollution, fractions separation and preparation (dismantling, crushing, shredding, sorting), recycling, other material recovery, energy recovery and disposal. In this study, the default values from table G.4 of EN 50693 is used for treating materials in different waste treatment methods. Due to the material and energy recovery potential of parts in the lighting system, the end-of-life product is converted into recycled raw materials, while the energy recovered from incineration displaces electricity and heat production (D). The benefits and loads of incineration and recycling are included in Module D.

SYSTEM BOUNDARY



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, ancillary materials, energy & water consumption, material loss and waste generation at the manufacturing site are attributed to the bill of materials of the products, therefore, they are allocated by partitioning the quantities on the base of the total production in kg throughout the year. Thus, allocation has been done in the following ways:

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

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

AVERAGES AND VARIABILITY

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

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

LCA SOFTWARE AND BIBLIOGRAPHY

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

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	3.25E+01	1.13E+00	1.37E+01	4.73E+01	1.13E+00	1.49E+00	MNR	MNR	MNR	MNR	MNR	6.09E+02	MNR	MNR	7.09E-02	3.40E+00	3.39E+00	-6.00E+00
GWP – fossil	kg CO ₂ e	3.63E+01	1.13E+00	1.51E+01	5.25E+01	1.13E+00	3.89E-02	MNR	MNR	MNR	MNR	MNR	6.08E+02	MNR	MNR	7.09E-02	2.08E+00	1.16E+00	-5.99E+00
GWP – biogenic	kg CO ₂ e	-3.54E+00	0.00E+00	-1.45E+00	-4.99E+00	4.38E-04	1.45E+00	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	0.00E+00	1.32E+00	2.22E+00	-5.72E-03
GWP – LULUC	kg CO ₂ e	-2.93E-01	4.29E-04	2.22E-02	-2.71E-01	4.18E-04	1.34E-05	MNR	MNR	MNR	MNR	MNR	1.23E+00	MNR	MNR	2.62E-05	1.07E-04	5.44E-05	-2.78E-03
Ozone depletion pot.	kg CFC-11e	2.16E-06	2.59E-07	1.60E-06	4.02E-06	2.60E-07	3.80E-09	MNR	MNR	MNR	MNR	MNR	1.73E-05	MNR	MNR	1.63E-08	9.62E-09	7.94E-09	-1.81E-07
Acidification potential	mol H ⁺ e	4.16E-01	5.68E-03	5.47E-02	4.76E-01	4.79E-03	3.03E-04	MNR	MNR	MNR	MNR	MNR	2.49E+00	MNR	MNR	3.00E-04	1.02E-03	4.29E-04	-1.78E-01
EP-freshwater ²⁾	kg Pe	2.28E-03	9.12E-06	4.43E-04	2.73E-03	9.27E-06	4.01E-07	MNR	MNR	MNR	MNR	MNR	5.19E-02	MNR	MNR	5.80E-07	3.19E-06	8.62E-07	-6.46E-04
EP-marine	kg Ne	6.14E-02	1.64E-03	1.23E-02	7.53E-02	1.42E-03	1.29E-04	MNR	MNR	MNR	MNR	MNR	4.72E-01	MNR	MNR	8.92E-05	3.32E-04	2.36E-04	-9.51E-03
EP-terrestrial	mol Ne	6.13E-01	1.81E-02	1.18E-01	7.49E-01	1.57E-02	1.34E-03	MNR	MNR	MNR	MNR	MNR	6.18E+00	MNR	MNR	9.84E-04	3.56E-03	1.78E-03	-1.26E-01
POCP (“smog”) ³⁾	kg NMVOCe	1.68E-01	5.61E-03	4.99E-02	2.24E-01	5.03E-03	3.34E-04	MNR	MNR	MNR	MNR	MNR	1.42E+00	MNR	MNR	3.15E-04	9.03E-04	4.81E-04	-3.72E-02
ADP-minerals & metals ⁴⁾	kg Sbe	6.11E-03	2.62E-06	3.41E-04	6.46E-03	2.65E-06	1.24E-07	MNR	MNR	MNR	MNR	MNR	8.17E-03	MNR	MNR	1.66E-07	4.84E-06	1.75E-07	-3.84E-03
ADP-fossil resources	MJ	4.39E+02	1.69E+01	2.49E+02	7.05E+02	1.70E+01	3.00E-01	MNR	MNR	MNR	MNR	MNR	8.64E+03	MNR	MNR	1.06E+00	1.10E+00	6.84E-01	-5.98E+01
Water use ⁵⁾	m ³ e depr.	1.98E+01	7.51E-02	9.13E+00	2.90E+01	7.61E-02	6.98E-02	MNR	MNR	MNR	MNR	MNR	4.58E+02	MNR	MNR	4.76E-03	9.27E-02	6.47E-02	-1.09E+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	2.77E-06	1.28E-07	6.08E-07	3.51E-06	1.30E-07	2.80E-09	MNR	MNR	MNR	MNR	MNR	1.54E-05	MNR	MNR	8.17E-09	9.38E-09	5.39E-09	-5.63E-07
Ionizing radiation ⁶⁾	kBq U235e	2.66E+00	8.05E-02	7.10E-01	3.45E+00	8.10E-02	1.07E-03	MNR	MNR	MNR	MNR	MNR	1.49E+02	MNR	MNR	5.07E-03	6.58E-03	3.01E-03	-3.69E-01
Ecotoxicity (freshwater)	CTUe	2.69E+03	1.51E+01	3.31E+02	3.04E+03	1.53E+01	1.98E+00	MNR	MNR	MNR	MNR	MNR	1.56E+04	MNR	MNR	9.58E-01	7.01E+00	1.48E+02	-9.94E+02
Human toxicity, cancer	CTUh	1.39E-07	3.84E-10	1.11E-08	1.50E-07	3.76E-10	9.65E-11	MNR	MNR	MNR	MNR	MNR	3.89E-07	MNR	MNR	2.35E-11	2.58E-10	1.95E-09	-2.36E-08
Human tox. non-cancer	CTUh	3.11E-06	1.49E-08	3.00E-07	3.43E-06	1.51E-08	3.98E-09	MNR	MNR	MNR	MNR	MNR	1.18E-05	MNR	MNR	9.48E-10	1.03E-08	1.24E-07	-2.39E-06
SQP ⁷⁾	-	2.92E+02	1.91E+01	9.18E+02	1.23E+03	1.96E+01	1.67E-01	MNR	MNR	MNR	MNR	MNR	1.05E+04	MNR	MNR	1.23E+00	1.18E+00	9.93E-01	-5.67E+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	7.00E+01	1.89E-01	3.00E+02	3.70E+02	1.92E-01	9.59E-03	MNR	MNR	MNR	MNR	MNR	7.32E+03	MNR	MNR	1.20E-02	1.16E-01	2.24E-02	-4.60E+00
Renew. PER as material	MJ	9.81E+00	0.00E+00	1.28E+01	2.26E+01	0.00E+00	-1.28E+01	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	0.00E+00	-5.07E-01	-9.30E+00	0.00E+00
Total use of renew. PER	MJ	7.98E+01	1.89E-01	3.13E+02	3.93E+02	1.92E-01	-1.28E+01	MNR	MNR	MNR	MNR	MNR	7.32E+03	MNR	MNR	1.20E-02	-3.92E-01	-9.28E+00	-4.60E+00
Non-re. PER as energy	MJ	4.11E+02	1.69E+01	2.27E+02	6.55E+02	1.70E+01	3.00E-01	MNR	MNR	MNR	MNR	MNR	8.64E+03	MNR	MNR	1.06E+00	1.10E+00	6.84E-01	-5.98E+01
Non-re. PER as material	MJ	2.94E+01	0.00E+00	1.34E-01	2.95E+01	0.00E+00	-1.34E-01	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	0.00E+00	-1.44E+01	-1.50E+01	0.00E+00
Total use of non-re. PER	MJ	4.40E+02	1.69E+01	2.27E+02	6.84E+02	1.70E+01	1.67E-01	MNR	MNR	MNR	MNR	MNR	8.64E+03	MNR	MNR	1.06E+00	-1.33E+01	-1.44E+01	-5.98E+01
Secondary materials	kg	1.42E+00	4.77E-03	1.03E+00	2.45E+00	4.72E-03	3.54E-04	MNR	MNR	MNR	MNR	MNR	2.32E+00	MNR	MNR	2.96E-04	8.94E-04	1.43E-03	3.22E-01
Renew. secondary fuels	MJ	5.67E-02	4.68E-05	6.65E-02	1.23E-01	4.76E-05	5.56E-06	MNR	MNR	MNR	MNR	MNR	1.70E-02	MNR	MNR	2.98E-06	4.68E-05	1.50E-05	-1.21E-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	4.41E-01	2.17E-03	3.80E-01	8.23E-01	2.20E-03	1.13E-03	MNR	MNR	MNR	MNR	MNR	2.25E+01	MNR	MNR	1.38E-04	3.36E-03	1.73E-03	-5.97E-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	6.36E+00	2.25E-02	9.49E-01	7.33E+00	2.25E-02	4.32E-03	MNR	MNR	MNR	MNR	MNR	6.85E+01	MNR	MNR	1.41E-03	5.23E-03	7.59E-02	-1.09E+00
Non-hazardous waste	kg	1.02E+02	3.65E-01	1.44E+01	1.17E+02	3.70E-01	8.92E-01	MNR	MNR	MNR	MNR	MNR	2.24E+03	MNR	MNR	2.32E-02	1.06E+00	2.02E+00	-5.72E+01
Radioactive waste	kg	1.12E-03	1.13E-04	4.11E-04	1.64E-03	1.14E-04	5.45E-07	MNR	MNR	MNR	MNR	MNR	3.77E-02	MNR	MNR	7.12E-06	2.93E-06	0.00E+00	-1.39E-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	2.09E+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	8.48E-01	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	8.76E-01	8.76E-01	0.00E+00	0.00E+00	MNR	MNR	MNR	MNR	MNR	0.00E+00	MNR	MNR	0.00E+00	1.86E+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	3.72E+01	1.12E+00	1.50E+01	5.33E+01	1.12E+00	3.71E-02	MNR	MNR	MNR	MNR	MNR	6.00E+02	MNR	MNR	7.02E-02	2.07E+00	1.15E+00	-5.87E+00
Ozone depletion Pot.	kg CFC ₁₁ e	1.97E-06	2.05E-07	1.44E-06	3.62E-06	2.06E-07	3.31E-09	MNR	MNR	MNR	MNR	MNR	1.54E-05	MNR	MNR	1.29E-08	8.19E-09	6.56E-09	-1.52E-07
Acidification	kg SO ₂ e	3.29E-01	4.44E-03	4.44E-02	3.78E-01	3.72E-03	2.20E-04	MNR	MNR	MNR	MNR	MNR	1.97E+00	MNR	MNR	2.33E-04	7.81E-04	3.17E-04	-1.57E-01
Eutrophication	kg PO ₄ ³ e	1.06E-01	9.16E-04	1.88E-02	1.26E-01	8.48E-04	1.65E-04	MNR	MNR	MNR	MNR	MNR	1.96E+00	MNR	MNR	5.31E-05	3.90E-04	3.78E-03	-3.34E-02
POCP ("smog")	kg C ₂ H ₄ e	1.87E-02	1.62E-04	2.70E-03	2.16E-02	1.45E-04	6.79E-06	MNR	MNR	MNR	MNR	MNR	9.47E-02	MNR	MNR	9.10E-06	2.46E-05	2.09E-05	-6.46E-03
ADP-elements	kg Sbe	6.12E-03	2.54E-06	3.38E-04	6.47E-03	2.57E-06	9.77E-08	MNR	MNR	MNR	MNR	MNR	8.15E-03	MNR	MNR	1.61E-07	4.80E-06	1.51E-07	-3.83E-03
ADP-fossil	MJ	4.69E+02	1.69E+01	2.49E+02	7.34E+02	1.70E+01	3.00E-01	MNR	MNR	MNR	MNR	MNR	8.64E+03	MNR	MNR	1.06E+00	1.10E+00	6.84E-01	-5.98E+01

APPENDIX (EPD HUB ALIGNED)

This section represents the scaling method for the **B6 module**, following the PEP EcoPassport PSR for luminaires (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.

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

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
BDS/BPS/BRB/BSS761 LED20-CLO/ 722	1638.0	17.0	96.4	0.531	0.531	0.398	0.398	0.292	323.4	242.4	242.4	177.8
BDS/BPS/BRB/BSS761 LED30-CLO/ 722	2407.0	25.5	94.4	0.797	0.797	0.598	0.598	0.438	485.4	364.2	364.2	266.7
BDS/BPS/BRB/BSS761 LED40-CLO/ 722	3154.0	34.5	91.4	1.078	1.078	0.808	0.808	0.593	656.5	492.1	492.1	361.1
BDS/BPS/BRB/BSS761 LED50-CLO/ 722	4116.0	39.5	104.2	1.234	1.234	0.925	0.925	0.679	751.5	563.3	563.3	413.5
BDS/BPS/BRB/BSS761 LED60-CLO/ 722	4872.0	47.5	102.6	1.484	1.484	1.113	1.113	0.816	903.8	677.8	677.8	496.9
BDS/BPS/BRB/BSS761 LED70-CLO/ 722	5644.0	56.0	100.8	1.75	1.75	1.312	1.312	0.963	1065.8	799.0	799.0	586.5
BDS/BPS/BRB/BSS761 LED80-CLO/ 722	6474.0	62.0	104.4	1.938	1.938	1.454	1.454	1.066	1180.2	885.5	885.5	649.2
BDS/BPS/BRB/BSS761 LED90-CLO/ 722	7304.0	70.0	104.3	2.188	2.188	1.641	1.641	1.203	1332.5	999.4	999.4	732.6
BDS/BPS/BRB/BSS761 LED100-CLO/ 722	8036.0	79.0	101.7	2.469	2.469	1.852	1.852	1.358	1503.6	1127.9	1127.9	827.0
BDS/BPS/BRB/BSS761 LED110-CLO/ 722	8610.0	86.0	100.1	2.688	2.688	2.016	2.016	1.478	1637.0	1227.7	1227.7	900.1
BDS/BPS/BRB/BSS761 LED120-CLO/ 722	9430.0	94.0	100.3	2.938	2.938	2.204	2.204	1.616	1789.2	1342.2	1342.2	984.1
BDS/BPS/BRB/BSS761 LED130-CLO/ 722	10125.0	104.0	97.4	3.25	3.25	2.438	2.438	1.788	1979.2	1484.7	1484.7	1088.9
BDS/BPS/BRB/BSS761 LED20-CLO/ 727	1638.0	14.8	110.7	0.463	0.463	0.347	0.347	0.255	282.0	211.3	211.3	155.3
BDS/BPS/BRB/BSS761 LED30-CLO/ 727	2407.0	21.5	112.0	0.672	0.672	0.504	0.504	0.37	409.2	306.9	306.9	225.3
BDS/BPS/BRB/BSS761 LED40-CLO/ 727	3237.0	29.5	109.7	0.922	0.922	0.692	0.692	0.507	561.5	421.4	421.4	308.8
BDS/BPS/BRB/BSS761 LED50-CLO/ 727	4116.0	34.5	119.3	1.078	1.078	0.808	0.808	0.593	656.5	492.1	492.1	361.1
BDS/BPS/BRB/BSS761 LED60-CLO/ 727	4872.0	40.5	120.3	1.266	1.266	0.95	0.95	0.696	771.0	578.5	578.5	423.9

BDS/BPS/BRB/BSS761 LED70-CLO/ 727	5644.0	47.5	118.8	1.484	1.484	1.113	1.113	0.816	903.8	677.8	677.8	496.9
BDS/BPS/BRB/BSS761 LED80-CLO/ 727	6474.0	53.0	122.2	1.656	1.656	1.242	1.242	0.911	1008.5	756.4	756.4	554.8
BDS/BPS/BRB/BSS761 LED90-CLO/ 727	7304.0	60.0	121.7	1.875	1.875	1.406	1.406	1.031	1141.9	856.3	856.3	627.9
BDS/BPS/BRB/BSS761 LED100-CLO/ 727	8036.0	67.0	119.9	2.094	2.094	1.571	1.571	1.152	1275.2	956.7	956.7	701.6
BDS/BPS/BRB/BSS761 LED110-CLO/ 727	8610.0	74.0	116.4	2.312	2.312	1.734	1.734	1.272	1408.0	1056.0	1056.0	774.6
BDS/BPS/BRB/BSS761 LED120-CLO/ 727	9430.0	80.0	117.9	2.5	2.5	1.875	1.875	1.375	1522.5	1141.9	1141.9	837.4
BDS/BPS/BRB/BSS761 LED130-CLO/ 727	10125.0	87.0	116.4	2.719	2.719	2.039	2.039	1.495	1655.9	1241.8	1241.8	910.5
BDS/BPS/BRB/BSS761 LED20-CLO/ 730	1638.0	13.4	122.2	0.419	0.419	0.314	0.314	0.23	255.2	191.2	191.2	140.1
BDS/BPS/BRB/BSS761 LED30-CLO/ 730	2436.0	19.6	124.3	0.613	0.613	0.46	0.46	0.337	373.3	280.1	280.1	205.2
BDS/BPS/BRB/BSS761 LED40-CLO/ 730	3237.0	26.5	122.2	0.828	0.828	0.621	0.621	0.455	504.3	378.2	378.2	277.1
BDS/BPS/BRB/BSS761 LED50-CLO/ 730	4116.0	30.5	135.0	0.953	0.953	0.715	0.715	0.524	580.4	435.4	435.4	319.1
BDS/BPS/BRB/BSS761 LED60-CLO/ 730	4872.0	36.5	133.5	1.141	1.141	0.856	0.856	0.628	694.9	521.3	521.3	382.5
BDS/BPS/BRB/BSS761 LED70-CLO/ 730	5712.0	42.5	134.4	1.328	1.328	0.996	0.996	0.73	808.8	606.6	606.6	444.6
BDS/BPS/BRB/BSS761 LED80-CLO/ 730	6552.0	47.5	137.9	1.484	1.484	1.113	1.113	0.816	903.8	677.8	677.8	496.9
BDS/BPS/BRB/BSS761 LED90-CLO/ 730	7304.0	54.0	135.3	1.688	1.688	1.266	1.266	0.928	1028.0	771.0	771.0	565.2
BDS/BPS/BRB/BSS761 LED100-CLO/ 730	8134.0	60.0	135.6	1.875	1.875	1.406	1.406	1.031	1141.9	856.3	856.3	627.9
BDS/BPS/BRB/BSS761 LED110-CLO/ 730	8715.0	66.0	132.0	2.062	2.062	1.546	1.546	1.134	1255.8	941.5	941.5	690.6
BDS/BPS/BRB/BSS761 LED120-CLO/ 730	9545.0	72.0	132.6	2.25	2.25	1.688	1.688	1.238	1370.2	1028.0	1028.0	753.9
BDS/BPS/BRB/BSS761 LED130-CLO/ 730	10250.0	78.0	131.4	2.438	2.438	1.829	1.829	1.341	1484.7	1113.9	1113.9	816.7
BDS/BPS/BRB/BSS761 LED20-CLO/ 740	1638.0	12.6	130.0	0.394	0.394	0.295	0.295	0.217	239.9	179.7	179.7	132.2
BDS/BPS/BRB/BSS761 LED30-CLO/ 740	2436.0	18.4	132.4	0.575	0.575	0.431	0.431	0.316	350.2	262.5	262.5	192.4
BDS/BPS/BRB/BSS761 LED40-CLO/ 740	3276.0	25.0	131.0	0.781	0.781	0.586	0.586	0.43	475.6	356.9	356.9	261.9
BDS/BPS/BRB/BSS761 LED50-CLO/ 740	4116.0	29.0	141.9	0.906	0.906	0.679	0.679	0.498	551.8	413.5	413.5	303.3
BDS/BPS/BRB/BSS761 LED60-CLO/ 740	4872.0	35.0	139.2	1.094	1.094	0.821	0.821	0.602	666.2	500.0	500.0	366.6

BDS/BPS/BRB/BSS761 LED70-CLO/ 740	5712.0	40.5	141.0	1.266	1.266	0.95	0.95	0.696	771.0	578.5	578.5	423.9
BDS/BPS/BRB/BSS761 LED80-CLO/ 740	6474.0	45.5	142.3	1.422	1.422	1.067	1.067	0.782	866.0	649.8	649.8	476.2
BDS/BPS/BRB/BSS761 LED90-CLO/ 740	7304.0	51.0	143.2	1.594	1.594	1.196	1.196	0.877	970.7	728.4	728.4	534.1
BDS/BPS/BRB/BSS761 LED100-CLO/ 740	8134.0	57.0	142.7	1.781	1.781	1.336	1.336	0.98	1084.6	813.6	813.6	596.8
BDS/BPS/BRB/BSS761 LED110-CLO/ 740	8715.0	62.0	140.6	1.938	1.938	1.454	1.454	1.066	1180.2	885.5	885.5	649.2
BDS/BPS/BRB/BSS761 LED120-CLO/ 740	9545.0	68.0	140.4	2.125	2.125	1.594	1.594	1.169	1294.1	970.7	970.7	711.9
BDS/BPS/BRB/BSS761 LED130-CLO/ 740	10250.0	74.0	138.5	2.312	2.312	1.734	1.734	1.272	1408.0	1056.0	1056.0	774.6
BDS/BPS/BRB/BSS761 LED20-CLO/ 827	1638.0	17.0	96.4	0.531	0.531	0.398	0.398	0.292	323.4	242.4	242.4	177.8
BDS/BPS/BRB/BSS761 LED30-CLO/ 827	2407.0	25.5	94.4	0.797	0.797	0.598	0.598	0.438	485.4	364.2	364.2	266.7
BDS/BPS/BRB/BSS761 LED40-CLO/ 827	3276.0	32.0	102.4	1.0	1.0	0.75	0.75	0.55	609.0	456.8	456.8	335.0
BDS/BPS/BRB/BSS761 LED50-CLO/ 827	4116.0	39.5	104.2	1.234	1.234	0.925	0.925	0.679	751.5	563.3	563.3	413.5
BDS/BPS/BRB/BSS761 LED60-CLO/ 827	4872.0	47.5	102.6	1.484	1.484	1.113	1.113	0.816	903.8	677.8	677.8	496.9
BDS/BPS/BRB/BSS761 LED70-CLO/ 827	5644.0	56.0	100.8	1.75	1.75	1.312	1.312	0.963	1065.8	799.0	799.0	586.5
BDS/BPS/BRB/BSS761 LED80-CLO/ 827	6474.0	62.0	104.4	1.938	1.938	1.454	1.454	1.066	1180.2	885.5	885.5	649.2
BDS/BPS/BRB/BSS761 LED90-CLO/ 827	7304.0	70.0	104.3	2.188	2.188	1.641	1.641	1.203	1332.5	999.4	999.4	732.6
BDS/BPS/BRB/BSS761 LED100-CLO/ 827	8036.0	79.0	101.7	2.469	2.469	1.852	1.852	1.358	1503.6	1127.9	1127.9	827.0
BDS/BPS/BRB/BSS761 LED110-CLO/ 827	8610.0	86.0	100.1	2.688	2.688	2.016	2.016	1.478	1637.0	1227.7	1227.7	900.1
BDS/BPS/BRB/BSS761 LED120-CLO/ 827	9430.0	94.0	100.3	2.938	2.938	2.204	2.204	1.616	1789.2	1342.2	1342.2	984.1
BDS/BPS/BRB/BSS761 LED130-CLO/ 827	10125.0	104.0	97.4	3.25	3.25	2.438	2.438	1.788	1979.2	1484.7	1484.7	1088.9
BDS/BPS/BRB/BSS761 LED20-CLO/ 830	1638.0	16.0	102.4	0.5	0.5	0.375	0.375	0.275	304.5	228.4	228.4	167.5
BDS/BPS/BRB/BSS761 LED30-CLO/ 830	2436.0	23.5	103.7	0.734	0.734	0.55	0.55	0.404	447.0	335.0	335.0	246.0
<u>BDS/BPS/BRB/BSS761 LED40-CLO/ 830</u>	3154.0	32.0	98.6	1.0	1.0	0.75	0.75	0.55	609.0	456.8	456.8	335.0
BDS/BPS/BRB/BSS761 LED50-CLO/ 830	4116.0	37.0	111.2	1.156	1.156	0.867	0.867	0.636	704.0	528.0	528.0	387.3
BDS/BPS/BRB/BSS761 LED60-CLO/ 830	4872.0	44.0	110.7	1.375	1.375	1.031	1.031	0.756	837.4	627.9	627.9	460.4

BDS/BPS/BRB/BSS761 LED70-CLO/ 830	5644.0	52.0	108.5	1.625	1.625	1.219	1.219	0.894	989.6	742.4	742.4	544.4
BDS/BPS/BRB/BSS761 LED80-CLO/ 830	6474.0	58.0	111.6	1.812	1.812	1.359	1.359	0.997	1103.5	827.6	827.6	607.2
BDS/BPS/BRB/BSS761 LED90-CLO/ 830	7304.0	65.0	112.4	2.031	2.031	1.523	1.523	1.117	1236.9	927.5	927.5	680.3
BDS/BPS/BRB/BSS761 LED100-CLO/ 830	8134.0	73.0	111.4	2.281	2.281	1.711	1.711	1.255	1389.1	1042.0	1042.0	764.3
BDS/BPS/BRB/BSS761 LED110-CLO/ 830	8610.0	79.0	109.0	2.469	2.469	1.852	1.852	1.358	1503.6	1127.9	1127.9	827.0
BDS/BPS/BRB/BSS761 LED120-CLO/ 830	9430.0	87.0	108.4	2.719	2.719	2.039	2.039	1.495	1655.9	1241.8	1241.8	910.5
BDS/BPS/BRB/BSS761 LED130-CLO/ 830	10250.0	95.0	107.9	2.969	2.969	2.227	2.227	1.633	1808.1	1356.2	1356.2	994.5
BDS/BPS/BRB/BSS761 LED20-CLO/ 840	1638.0	15.4	106.4	0.481	0.481	0.361	0.361	0.265	292.9	219.8	219.8	161.4
BDS/BPS/BRB/BSS761 LED30-CLO/ 840	2407.0	23.0	104.7	0.719	0.719	0.539	0.539	0.395	437.9	328.3	328.3	240.6
BDS/BPS/BRB/BSS761 LED40-CLO/ 840	3237.0	31.0	104.4	0.969	0.969	0.727	0.727	0.533	590.1	442.7	442.7	324.6
BDS/BPS/BRB/BSS761 LED50-CLO/ 840	4116.0	35.5	115.9	1.109	1.109	0.832	0.832	0.61	675.4	506.7	506.7	371.5
BDS/BPS/BRB/BSS761 LED60-CLO/ 840	4872.0	42.5	114.6	1.328	1.328	0.996	0.996	0.73	808.8	606.6	606.6	444.6
BDS/BPS/BRB/BSS761 LED70-CLO/ 840	5644.0	50.0	112.9	1.562	1.562	1.171	1.171	0.859	951.3	713.1	713.1	523.1
BDS/BPS/BRB/BSS761 LED80-CLO/ 840	6474.0	56.0	115.6	1.75	1.75	1.312	1.312	0.963	1065.8	799.0	799.0	586.5
BDS/BPS/BRB/BSS761 LED90-CLO/ 840	7304.0	63.0	115.9	1.969	1.969	1.477	1.477	1.083	1199.1	899.5	899.5	659.5
BDS/BPS/BRB/BSS761 LED100-CLO/ 840	7968.0	70.0	113.8	2.188	2.188	1.641	1.641	1.203	1332.5	999.4	999.4	732.6
BDS/BPS/BRB/BSS761 LED110-CLO/ 840	8610.0	78.0	110.4	2.438	2.438	1.829	1.829	1.341	1484.7	1113.9	1113.9	816.7
BDS/BPS/BRB/BSS761 LED120-CLO/ 840	9430.0	84.0	112.3	2.625	2.625	1.969	1.969	1.444	1598.6	1199.1	1199.1	879.4
BDS/BPS/BRB/BSS761 LED130-CLO/ 840	10250.0	92.0	111.4	2.875	2.875	2.156	2.156	1.581	1750.9	1313.0	1313.0	962.8

* 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
BDS/BPS/BRS/BSS761 LED20-CLO/ 722	1638.0	17.0	96.4	0.531	0.114	0.086	0.086	0.063	69.4	52.4	52.4	38.4
BDS/BPS/BRS/BSS761 LED30-CLO/ 722	2407.0	25.5	94.4	0.797	0.116	0.087	0.087	0.064	70.6	53.0	53.0	39.0
BDS/BPS/BRS/BSS761 LED40-CLO/ 722	3154.0	34.5	91.4	1.078	0.12	0.09	0.09	0.066	73.1	54.8	54.8	40.2
BDS/BPS/BRS/BSS761 LED50-CLO/ 722	4116.0	39.5	104.2	1.234	0.105	0.079	0.079	0.058	63.9	48.1	48.1	35.3
BDS/BPS/BRS/BSS761 LED60-CLO/ 722	4872.0	47.5	102.6	1.484	0.107	0.08	0.08	0.059	65.2	48.7	48.7	35.9

BDS/BPS/BRS/BSS761 LED70-CLO/ 722	5644.0	56.0	100.8	1.75	0.108	0.081	0.081	0.059	65.8	49.3	49.3	35.9
BDS/BPS/BRS/BSS761 LED80-CLO/ 722	6474.0	62.0	104.4	1.938	0.105	0.079	0.079	0.058	63.9	48.1	48.1	35.3
BDS/BPS/BRS/BSS761 LED90-CLO/ 722	7304.0	70.0	104.3	2.188	0.105	0.079	0.079	0.058	63.9	48.1	48.1	35.3
BDS/BPS/BRS/BSS761 LED100-CLO/ 722	8036.0	79.0	101.7	2.469	0.109	0.082	0.082	0.06	66.4	49.9	49.9	36.5
BDS/BPS/BRS/BSS761 LED110-CLO/ 722	8610.0	86.0	100.1	2.688	0.11	0.083	0.083	0.061	67.0	50.5	50.5	37.1
BDS/BPS/BRS/BSS761 LED120-CLO/ 722	9430.0	94.0	100.3	2.938	0.109	0.082	0.082	0.06	66.4	49.9	49.9	36.5
BDS/BPS/BRS/BSS761 LED130-CLO/ 722	10125.0	104.0	97.4	3.25	0.114	0.086	0.086	0.063	69.4	52.4	52.4	38.4
BDS/BPS/BRS/BSS761 LED20-CLO/ 727	1638.0	14.8	110.7	0.463	0.099	0.074	0.074	0.054	60.3	45.1	45.1	32.9
BDS/BPS/BRS/BSS761 LED30-CLO/ 727	2407.0	21.5	112.0	0.672	0.097	0.073	0.073	0.053	59.1	44.5	44.5	32.3
BDS/BPS/BRS/BSS761 LED40-CLO/ 727	3237.0	29.5	109.7	0.922	0.1	0.075	0.075	0.055	60.9	45.7	45.7	33.5
BDS/BPS/BRS/BSS761 LED50-CLO/ 727	4116.0	34.5	119.3	1.078	0.092	0.069	0.069	0.051	56.0	42.0	42.0	31.1
BDS/BPS/BRS/BSS761 LED60-CLO/ 727	4872.0	40.5	120.3	1.266	0.091	0.068	0.068	0.05	55.4	41.4	41.4	30.5
BDS/BPS/BRS/BSS761 LED70-CLO/ 727	5644.0	47.5	118.8	1.484	0.092	0.069	0.069	0.051	56.0	42.0	42.0	31.1
BDS/BPS/BRS/BSS761 LED80-CLO/ 727	6474.0	53.0	122.2	1.656	0.089	0.067	0.067	0.049	54.2	40.8	40.8	29.8
BDS/BPS/BRS/BSS761 LED90-CLO/ 727	7304.0	60.0	121.7	1.875	0.09	0.068	0.068	0.05	54.8	41.4	41.4	30.5
BDS/BPS/BRS/BSS761 LED100-CLO/ 727	8036.0	67.0	119.9	2.094	0.092	0.069	0.069	0.051	56.0	42.0	42.0	31.1
BDS/BPS/BRS/BSS761 LED110-CLO/ 727	8610.0	74.0	116.4	2.312	0.095	0.071	0.071	0.052	57.9	43.2	43.2	31.7
BDS/BPS/BRS/BSS761 LED120-CLO/ 727	9430.0	80.0	117.9	2.5	0.092	0.069	0.069	0.051	56.0	42.0	42.0	31.1
BDS/BPS/BRS/BSS761 LED130-CLO/ 727	10125.0	87.0	116.4	2.719	0.095	0.071	0.071	0.052	57.9	43.2	43.2	31.7
BDS/BPS/BRS/BSS761 LED20-CLO/ 730	1638.0	13.4	122.2	0.419	0.09	0.068	0.068	0.05	54.8	41.4	41.4	30.5
BDS/BPS/BRS/BSS761 LED30-CLO/ 730	2436.0	19.6	124.3	0.613	0.088	0.066	0.066	0.048	53.6	40.2	40.2	29.2
BDS/BPS/BRS/BSS761 LED40-CLO/ 730	3237.0	26.5	122.2	0.828	0.089	0.067	0.067	0.049	54.2	40.8	40.8	29.8
BDS/BPS/BRS/BSS761 LED50-CLO/ 730	4116.0	30.5	135.0	0.953	0.081	0.061	0.061	0.045	49.3	37.1	37.1	27.4
BDS/BPS/BRS/BSS761 LED60-CLO/ 730	4872.0	36.5	133.5	1.141	0.082	0.061	0.061	0.045	49.9	37.1	37.1	27.4

BDS/BPS/BRS/BSS761 LED70-CLO/ 730	5712.0	42.5	134.4	1.328	0.081	0.061	0.061	0.045	49.3	37.1	37.1	27.4
BDS/BPS/BRS/BSS761 LED80-CLO/ 730	6552.0	47.5	137.9	1.484	0.079	0.059	0.059	0.043	48.1	35.9	35.9	26.2
BDS/BPS/BRS/BSS761 LED90-CLO/ 730	7304.0	54.0	135.3	1.688	0.081	0.061	0.061	0.045	49.3	37.1	37.1	27.4
BDS/BPS/BRS/BSS761 LED100-CLO/ 730	8134.0	60.0	135.6	1.875	0.081	0.061	0.061	0.045	49.3	37.1	37.1	27.4
BDS/BPS/BRS/BSS761 LED110-CLO/ 730	8715.0	66.0	132.0	2.062	0.082	0.061	0.061	0.045	49.9	37.1	37.1	27.4
BDS/BPS/BRS/BSS761 LED120-CLO/ 730	9545.0	72.0	132.6	2.25	0.083	0.062	0.062	0.046	50.5	37.8	37.8	28.0
BDS/BPS/BRS/BSS761 LED130-CLO/ 730	10250.0	78.0	131.4	2.438	0.083	0.062	0.062	0.046	50.5	37.8	37.8	28.0
BDS/BPS/BRS/BSS761 LED20-CLO/ 740	1638.0	12.6	130.0	0.394	0.084	0.063	0.063	0.046	51.2	38.4	38.4	28.0
BDS/BPS/BRS/BSS761 LED30-CLO/ 740	2436.0	18.4	132.4	0.575	0.083	0.062	0.062	0.046	50.5	37.8	37.8	28.0
BDS/BPS/BRS/BSS761 LED40-CLO/ 740	3276.0	25.0	131.0	0.781	0.084	0.063	0.063	0.046	51.2	38.4	38.4	28.0
BDS/BPS/BRS/BSS761 LED50-CLO/ 740	4116.0	29.0	141.9	0.906	0.077	0.058	0.058	0.042	46.9	35.3	35.3	25.6
BDS/BPS/BRS/BSS761 LED60-CLO/ 740	4872.0	35.0	139.2	1.094	0.079	0.059	0.059	0.043	48.1	35.9	35.9	26.2
BDS/BPS/BRS/BSS761 LED70-CLO/ 740	5712.0	40.5	141.0	1.266	0.077	0.058	0.058	0.042	46.9	35.3	35.3	25.6
BDS/BPS/BRS/BSS761 LED80-CLO/ 740	6474.0	45.5	142.3	1.422	0.077	0.058	0.058	0.042	46.9	35.3	35.3	25.6
BDS/BPS/BRS/BSS761 LED90-CLO/ 740	7304.0	51.0	143.2	1.594	0.077	0.058	0.058	0.042	46.9	35.3	35.3	25.6
BDS/BPS/BRS/BSS761 LED100-CLO/ 740	8134.0	57.0	142.7	1.781	0.077	0.058	0.058	0.042	46.9	35.3	35.3	25.6
BDS/BPS/BRS/BSS761 LED110-CLO/ 740	8715.0	62.0	140.6	1.938	0.078	0.058	0.058	0.043	47.5	35.3	35.3	26.2
BDS/BPS/BRS/BSS761 LED120-CLO/ 740	9545.0	68.0	140.4	2.125	0.079	0.059	0.059	0.043	48.1	35.9	35.9	26.2
BDS/BPS/BRS/BSS761 LED130-CLO/ 740	10250.0	74.0	138.5	2.312	0.079	0.059	0.059	0.043	48.1	35.9	35.9	26.2
BDS/BPS/BRS/BSS761 LED20-CLO/ 827	1638.0	17.0	96.4	0.531	0.114	0.086	0.086	0.063	69.4	52.4	52.4	38.4
BDS/BPS/BRS/BSS761 LED30-CLO/ 827	2407.0	25.5	94.4	0.797	0.116	0.087	0.087	0.064	70.6	53.0	53.0	39.0
BDS/BPS/BRS/BSS761 LED40-CLO/ 827	3276.0	32.0	102.4	1.0	0.107	0.08	0.08	0.059	65.2	48.7	48.7	35.9
BDS/BPS/BRS/BSS761 LED50-CLO/ 827	4116.0	39.5	104.2	1.234	0.105	0.079	0.079	0.058	63.9	48.1	48.1	35.3
BDS/BPS/BRS/BSS761 LED60-CLO/ 827	4872.0	47.5	102.6	1.484	0.107	0.08	0.08	0.059	65.2	48.7	48.7	35.9

BDS/BPS/BRS/BSS761 LED70-CLO/ 827	5644.0	56.0	100.8	1.75	0.108	0.081	0.081	0.059	65.8	49.3	49.3	35.9
BDS/BPS/BRS/BSS761 LED80-CLO/ 827	6474.0	62.0	104.4	1.938	0.105	0.079	0.079	0.058	63.9	48.1	48.1	35.3
BDS/BPS/BRS/BSS761 LED90-CLO/ 827	7304.0	70.0	104.3	2.188	0.105	0.079	0.079	0.058	63.9	48.1	48.1	35.3
BDS/BPS/BRS/BSS761 LED100-CLO/ 827	8036.0	79.0	101.7	2.469	0.109	0.082	0.082	0.06	66.4	49.9	49.9	36.5
BDS/BPS/BRS/BSS761 LED110-CLO/ 827	8610.0	86.0	100.1	2.688	0.11	0.083	0.083	0.061	67.0	50.5	50.5	37.1
BDS/BPS/BRS/BSS761 LED120-CLO/ 827	9430.0	94.0	100.3	2.938	0.109	0.082	0.082	0.06	66.4	49.9	49.9	36.5
BDS/BPS/BRS/BSS761 LED130-CLO/ 827	10125.0	104.0	97.4	3.25	0.114	0.086	0.086	0.063	69.4	52.4	52.4	38.4
BDS/BPS/BRS/BSS761 LED20-CLO/ 830	1638.0	16.0	102.4	0.5	0.107	0.08	0.08	0.059	65.2	48.7	48.7	35.9
BDS/BPS/BRS/BSS761 LED30-CLO/ 830	2436.0	23.5	103.7	0.734	0.106	0.08	0.08	0.058	64.6	48.7	48.7	35.3
<u>BDS/BPS/BRS/BSS761 LED40-CLO/ 830</u>	3154.0	32.0	98.6	1.0	0.111	0.083	0.083	0.061	67.6	50.5	50.5	37.1
BDS/BPS/BRS/BSS761 LED50-CLO/ 830	4116.0	37.0	111.2	1.156	0.098	0.074	0.074	0.054	59.7	45.1	45.1	32.9
BDS/BPS/BRS/BSS761 LED60-CLO/ 830	4872.0	44.0	110.7	1.375	0.099	0.074	0.074	0.054	60.3	45.1	45.1	32.9
BDS/BPS/BRS/BSS761 LED70-CLO/ 830	5644.0	52.0	108.5	1.625	0.101	0.076	0.076	0.056	61.5	46.3	46.3	34.1
BDS/BPS/BRS/BSS761 LED80-CLO/ 830	6474.0	58.0	111.6	1.812	0.098	0.074	0.074	0.054	59.7	45.1	45.1	32.9
BDS/BPS/BRS/BSS761 LED90-CLO/ 830	7304.0	65.0	112.4	2.031	0.097	0.073	0.073	0.053	59.1	44.5	44.5	32.3
BDS/BPS/BRS/BSS761 LED100-CLO/ 830	8134.0	73.0	111.4	2.281	0.098	0.074	0.074	0.054	59.7	45.1	45.1	32.9
BDS/BPS/BRS/BSS761 LED110-CLO/ 830	8610.0	79.0	109.0	2.469	0.101	0.076	0.076	0.056	61.5	46.3	46.3	34.1
BDS/BPS/BRS/BSS761 LED120-CLO/ 830	9430.0	87.0	108.4	2.719	0.101	0.076	0.076	0.056	61.5	46.3	46.3	34.1
BDS/BPS/BRS/BSS761 LED130-CLO/ 830	10250.0	95.0	107.9	2.969	0.101	0.076	0.076	0.056	61.5	46.3	46.3	34.1
BDS/BPS/BRS/BSS761 LED20-CLO/ 840	1638.0	15.4	106.4	0.481	0.103	0.077	0.077	0.057	62.7	46.9	46.9	34.7
BDS/BPS/BRS/BSS761 LED30-CLO/ 840	2407.0	23.0	104.7	0.719	0.104	0.078	0.078	0.057	63.3	47.5	47.5	34.7
BDS/BPS/BRS/BSS761 LED40-CLO/ 840	3237.0	31.0	104.4	0.969	0.105	0.079	0.079	0.058	63.9	48.1	48.1	35.3
BDS/BPS/BRS/BSS761 LED50-CLO/ 840	4116.0	35.5	115.9	1.109	0.094	0.071	0.071	0.052	57.2	43.2	43.2	31.7
BDS/BPS/BRS/BSS761 LED60-CLO/ 840	4872.0	42.5	114.6	1.328	0.096	0.072	0.072	0.053	58.5	43.8	43.8	32.3

BDS/BPS/BRS/BSS761 LED70-CLO/ 840	5644.0	50.0	112.9	1.562	0.097	0.073	0.073	0.053	59.1	44.5	44.5	32.3
BDS/BPS/BRS/BSS761 LED80-CLO/ 840	6474.0	56.0	115.6	1.75	0.095	0.071	0.071	0.052	57.9	43.2	43.2	31.7
BDS/BPS/BRS/BSS761 LED90-CLO/ 840	7304.0	63.0	115.9	1.969	0.095	0.071	0.071	0.052	57.9	43.2	43.2	31.7
BDS/BPS/BRS/BSS761 LED100-CLO/ 840	7968.0	70.0	113.8	2.188	0.096	0.072	0.072	0.053	58.5	43.8	43.8	32.3
BDS/BPS/BRS/BSS761 LED110-CLO/ 840	8610.0	78.0	110.4	2.438	0.1	0.075	0.075	0.055	60.9	45.7	45.7	33.5
BDS/BPS/BRS/BSS761 LED120-CLO/ 840	9430.0	84.0	112.3	2.625	0.097	0.073	0.073	0.053	59.1	44.5	44.5	32.3
BDS/BPS/BRS/BSS761 LED130-CLO/ 840	10250.0	92.0	111.4	2.875	0.098	0.074	0.074	0.054	59.7	45.1	45.1	32.9

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

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 ₂ 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-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