

ENVIRONMENTAL PRODUCT DECLARATION

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

Philips CityCharm Cordoba

BDS490
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	https://www.signify.com/global

EPD STANDARDS, SCOPE AND VERIFICATION

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

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of lighting products may not be comparable if they do not comply with EN 15804 and if they are not compared in a lighting context.

PRODUCT

Product name	Philips CityCharm Cordoba
Additional labels	BDS490 LED25/830 SR I DM GR CLO SRT 60
Product reference	910771132825
Place of production	Spain
Period for data	2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit
Declared unit mass	10.383 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	9,32E+01
GWP-total, A1-A3 (kgCO ₂ e)	9,30E+01
Secondary material, inputs (%)	43.6
Secondary material, outputs (%)	59.7
Total energy use, A1-A3 (kWh)	339
Total water use, A1-A3 (m ³ e)	0.75

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 Philips CityCharm range is designed for use in urban areas where comfortable lighting, ambience, and design play an important role. It offers three iconic, timeless designs: CityCharm cordoba, CityCharm cone, and CityCharm fluid along with a range of decorative and practical accessories. This enables you to create a lighting solution that carries the signature of your municipality, both by day and by night. Whether you specify cordoba, cone or fluid LED lights, CityCharm provides high visual comfort while maintaining excellent performance. It offers a choice of two innovative Philips Lighting technologies: GentleBeam, which maximizes visual comfort, or ClearGuide (cordoba or cone), which optimizes vertical illumination and visual guidance. To personalize your CityCharm lighting solution further, decorative accessories for this range make it possible to define the volume of the bowl and change its appearance. To personalize your CityCharm lighting solution further, decorative accessories for this range make it possible to define the volume of the bowl and change its appearance. A variety of dedicated brackets and masts are also available to enable you to reshape your residential areas and city centers in the most elegant way imaginable. To improve the ecological impact of the luminaires, metal parts are manufactured using recycled aluminum.

For more information, please visit <https://www.lighting.philips.com/link/BDS490/fam/aa/en>
Philips CityCharm Cordoba-BDS490

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	59.46	EUR, ASIA
Minerals	0	Not applicable
Fossil materials	40.54	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	0.02

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Product
Mass per declared unit	10.383 kg
Functional unit	1 unit of 1950 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 CityCharm Cordoba-BDS490

Thus, it is possible to allocate it according to the weight of the product analysed in this study. Some of the wastes are due to ancillary materials used during manufacturing while the rest is due to material losses.

TRANSPORT AND INSTALLATION (A4-A5)

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

PRODUCT USE AND MAINTENANCE (B1-B7)

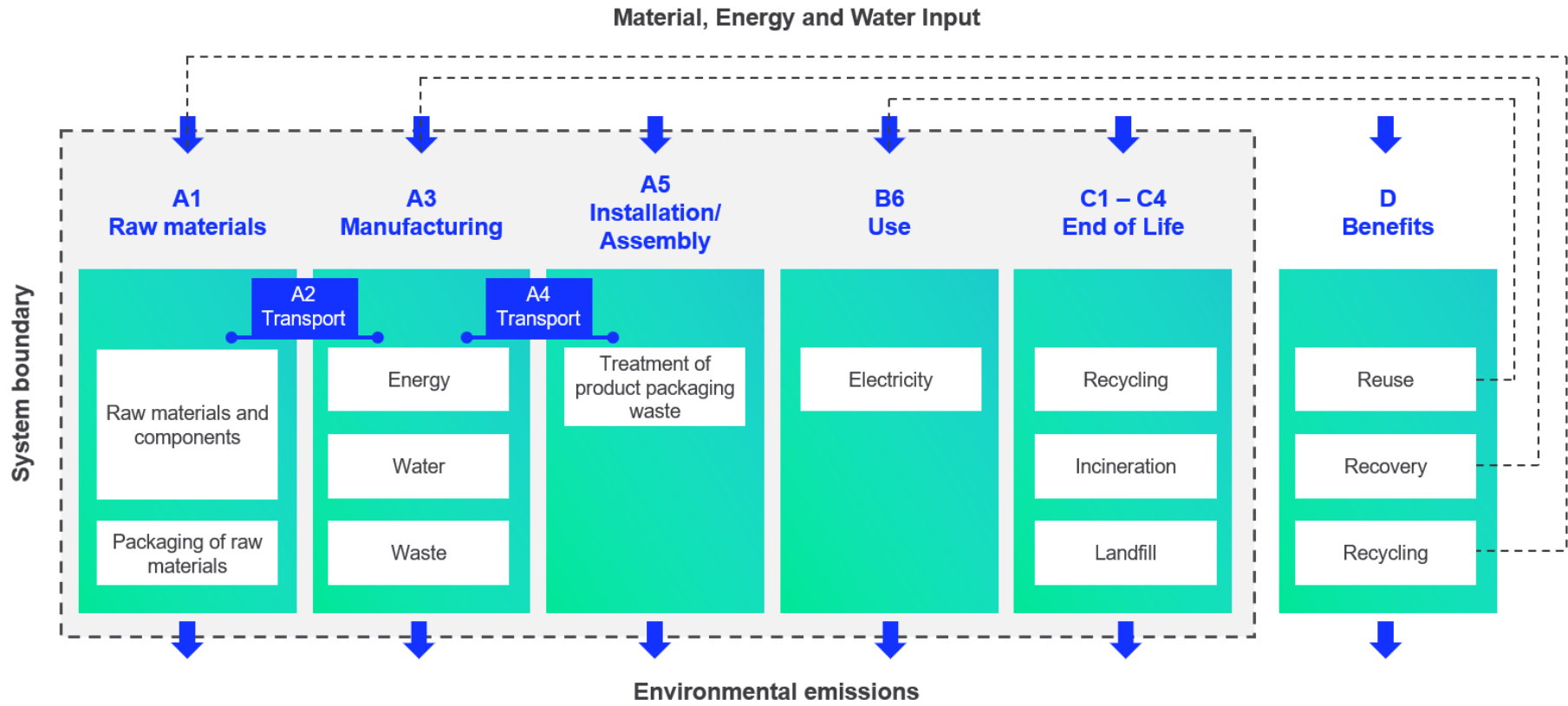
During the use phase, the product consumes electricity from Europe's electricity grid mix (B6). The total power consumption of the reference product is calculated as follows: Wattage x Reference lifetime = kWh consumed throughout the entire use phase B6.

PRODUCT END OF LIFE (C1-C4, D)

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

production (D). The benefits and loads of incineration and recycling are included in Module D.

SYSTEM BOUNDARY



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

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

ALLOCATION, ESTIMATES AND ASSUMPTIONS

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

Data type	Allocation
Raw materials	No allocation
No allocation	No allocation
No allocation	Allocated by mass or volume
Allocated by mass or volume	Allocated by mass or volume

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

AVERAGES AND VARIABILITY

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

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

LCA SOFTWARE AND BIBLIOGRAPHY

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

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	9,00E+01	1,96E+00	1,01E+00	9,30E+01	1,96E+00	7,63E-02	MNR	MNR	MNR	MNR	MNR	7,76E+02	MNR	MNR	1,46E-01	4,67E+00	3,02E+00	-1,65E+01
GWP – fossil	kg CO ₂ e	9,02E+01	1,96E+00	1,08E+00	9,32E+01	1,96E+00	2,44E-03	MNR	MNR	MNR	MNR	MNR	7,75E+02	MNR	MNR	1,46E-01	4,67E+00	2,69E+00	-1,65E+01
GWP – biogenic	kg CO ₂ e	-3,30E-01	0,00E+00	-7,38E-02	-4,03E-01	7,57E-04	7,38E-02	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	0,00E+00	3,30E-01	-9,82E-03
GWP – LULUC	kg CO ₂ e	1,47E-01	7,35E-04	2,47E-03	1,50E-01	7,23E-04	8,68E-07	MNR	MNR	MNR	MNR	MNR	1,81E+00	MNR	MNR	5,38E-05	2,00E-04	1,17E-04	-4,15E-03
Ozone depletion pot.	kg CFC ₁₁ e	1,36E-05	4,49E-07	1,94E-07	1,42E-05	4,51E-07	1,97E-10	MNR	MNR	MNR	MNR	MNR	3,93E-05	MNR	MNR	3,36E-08	2,22E-08	1,62E-08	-4,49E-07
Acidification potential	mol H ⁺ e	6,40E-01	9,28E-03	3,79E-03	6,53E-01	8,29E-03	1,81E-05	MNR	MNR	MNR	MNR	MNR	4,43E+00	MNR	MNR	6,18E-04	2,37E-03	9,93E-04	-2,58E-01
EP-freshwater ²⁾	kg Pe	8,20E-03	1,59E-05	2,81E-05	8,24E-03	1,60E-05	2,22E-08	MNR	MNR	MNR	MNR	MNR	8,21E-02	MNR	MNR	1,19E-06	6,51E-06	3,08E-06	-1,25E-03
EP-marine	kg Ne	9,30E-02	2,70E-03	8,75E-04	9,66E-02	2,46E-03	8,22E-06	MNR	MNR	MNR	MNR	MNR	5,87E-01	MNR	MNR	1,84E-04	7,67E-04	7,15E-04	-2,06E-02
EP-terrestrial	mol Ne	9,79E-01	2,98E-02	8,36E-03	1,02E+00	2,72E-02	8,40E-05	MNR	MNR	MNR	MNR	MNR	6,68E+00	MNR	MNR	2,03E-03	8,24E-03	3,99E-03	-2,52E-01
POCP (“smog”) ³⁾	kg NMVOCe	3,28E-01	9,35E-03	5,51E-03	3,42E-01	8,70E-03	2,08E-05	MNR	MNR	MNR	MNR	MNR	1,83E+00	MNR	MNR	6,48E-04	2,10E-03	1,11E-03	-7,29E-02
ADP-minerals & metals ⁴⁾	kg Sbe	5,19E-03	4,56E-06	1,47E-05	5,21E-03	4,59E-06	6,07E-09	MNR	MNR	MNR	MNR	MNR	7,23E-03	MNR	MNR	3,42E-07	1,32E-05	3,98E-07	-3,11E-03
ADP-fossil resources	MJ	1,18E+03	2,93E+01	2,01E+01	1,23E+03	2,94E+01	1,76E-02	MNR	MNR	MNR	MNR	MNR	1,65E+04	MNR	MNR	2,19E+00	2,29E+00	1,51E+00	-1,62E+02
Water use ⁵⁾	m ³ e depr.	3,78E+01	1,31E-01	5,24E-01	3,84E+01	1,32E-01	3,59E-03	MNR	MNR	MNR	MNR	MNR	4,50E+02	MNR	MNR	9,80E-03	2,05E-01	1,40E-01	-1,82E+00

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO₄e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	6,22E-06	2,23E-07	4,52E-08	6,49E-06	2,26E-07	1,60E-10	MNR	MNR	MNR	MNR	MNR	1,45E-05	MNR	MNR	1,68E-08	2,28E-08	1,15E-08	-1,21E-06
Ionizing radiation ⁶⁾	kBq U235e	5,43E+00	1,40E-01	5,84E-02	5,62E+00	1,40E-01	5,56E-05	MNR	MNR	MNR	MNR	MNR	4,46E+02	MNR	MNR	1,04E-02	1,20E-02	7,00E-03	-9,66E-01

Ecotoxicity (freshwater)	CTUe	4,52E+03	2,63E+01	2,06E+01	4,57E+03	2,65E+01	7,60E-02	MNR	MNR	MNR	MNR	MNR	1,12E+04	MNR	MNR	1,97E+00	1,61E+01	5,49E+02	-1,12E+03
Human toxicity, cancer	CTUh	2,44E-07	6,59E-10	6,13E-10	2,46E-07	6,50E-10	7,01E-12	MNR	MNR	MNR	MNR	MNR	3,67E-07	MNR	MNR	4,84E-11	5,96E-10	2,27E-09	-1,82E-08
Human tox. non-cancer	CTUh	5,21E-06	2,59E-08	1,58E-08	5,25E-06	2,62E-08	2,72E-10	MNR	MNR	MNR	MNR	MNR	1,21E-05	MNR	MNR	1,95E-09	2,38E-08	1,27E-07	-2,07E-06
SQP ⁷⁾	-	3,51E+02	3,34E+01	4,13E+01	4,26E+02	3,39E+01	1,14E-02	MNR	MNR	MNR	MNR	MNR	2,98E+03	MNR	MNR	2,52E+00	2,96E+00	1,94E+00	-7,38E+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	9,21E+01	3,29E-01	1,45E+01	1,07E+02	3,31E-01	4,22E-04	MNR	MNR	MNR	MNR	MNR	3,36E+03	MNR	MNR	2,47E-02	2,53E-01	6,14E-02	-7,59E+00
Renew. PER as material	MJ	3,07E+00	0,00E+00	7,26E-01	3,79E+00	0,00E+00	-7,26E-01	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	0,00E+00	-3,07E+00	0,00E+00
Total use of renew. PER	MJ	9,52E+01	3,29E-01	1,52E+01	1,11E+02	3,31E-01	-7,26E-01	MNR	MNR	MNR	MNR	MNR	3,36E+03	MNR	MNR	2,47E-02	2,53E-01	-3,00E+00	-7,59E+00
Non-re. PER as energy	MJ	1,07E+03	2,93E+01	1,58E+01	1,11E+03	2,94E+01	1,76E-02	MNR	MNR	MNR	MNR	MNR	1,64E+04	MNR	MNR	2,19E+00	2,29E+00	1,51E+00	-1,62E+02
Non-re. PER as material	MJ	1,11E+02	0,00E+00	1,88E-02	1,11E+02	0,00E+00	-1,88E-02	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	-5,55E+01	-5,55E+01	0,00E+00
Total use of non-re. PER	MJ	1,18E+03	2,93E+01	1,59E+01	1,23E+03	2,94E+01	-1,17E-03	MNR	MNR	MNR	MNR	MNR	1,64E+04	MNR	MNR	2,19E+00	-5,32E+01	-5,40E+01	-1,62E+02
Secondary materials	kg	4,53E+00	8,22E-03	1,16E-02	4,55E+00	8,17E-03	1,91E-05	MNR	MNR	MNR	MNR	MNR	1,70E+00	MNR	MNR	6,08E-04	2,20E-03	3,24E-03	6,79E-01
Renew. secondary fuels	MJ	7,11E-02	8,15E-05	5,50E-04	7,17E-02	8,24E-05	1,69E-07	MNR	MNR	MNR	MNR	MNR	1,38E-02	MNR	MNR	6,14E-06	1,04E-04	3,27E-05	-2,06E-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	7,25E-01	3,77E-03	2,04E-02	7,49E-01	3,81E-03	1,43E-05	MNR	MNR	MNR	MNR	MNR	1,42E+01	MNR	MNR	2,84E-04	7,44E-03	3,92E-03	-8,65E-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	1,29E+01	3,89E-02	5,83E-02	1,30E+01	3,90E-02	1,87E-03	MNR	MNR	MNR	MNR	MNR	5,92E+01	MNR	MNR	2,91E-03	1,10E-02	7,41E-02	-2,54E+00
Non-hazardous waste	kg	1,53E+02	6,34E-01	9,48E-01	1,55E+02	6,41E-01	6,15E-03	MNR	MNR	MNR	MNR	MNR	3,74E+03	MNR	MNR	4,77E-02	2,19E+00	4,11E+00	-7,64E+01
Radioactive waste	kg	2,01E-03	1,96E-04	4,79E-05	2,25E-03	1,97E-04	5,81E-08	MNR	MNR	MNR	MNR	MNR	1,20E-01	MNR	MNR	1,47E-05	6,23E-06	0,00E+00	-3,58E-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	4,28E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	1,91E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	5,75E-01	5,75E-01	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	4,21E+01	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	8,78E+01	1,94E+00	1,07E+00	9,08E+01	1,94E+00	2,31E-03	MNR	MNR	MNR	MNR	MNR	7,67E+02	MNR	MNR	1,44E-01	4,66E+00	2,76E+00	-1,62E+01
Ozone depletion Pot.	kg CFC ₁₁ e	1,03E-05	3,56E-07	1,66E-07	1,08E-05	3,57E-07	1,67E-10	MNR	MNR	MNR	MNR	MNR	3,41E-05	MNR	MNR	2,66E-08	1,88E-08	1,35E-08	-3,79E-07
Acidification	kg SO ₂ e	5,42E-01	7,23E-03	3,09E-03	5,52E-01	6,44E-03	1,30E-05	MNR	MNR	MNR	MNR	MNR	3,75E+00	MNR	MNR	4,80E-04	1,81E-03	7,39E-04	-2,25E-01
Eutrophication	kg PO ₄ ³ e	2,14E-01	1,54E-03	1,22E-03	2,17E-01	1,47E-03	1,03E-05	MNR	MNR	MNR	MNR	MNR	2,89E+00	MNR	MNR	1,09E-04	8,78E-04	7,84E-03	-5,62E-02
POCP (“smog”)	kg C ₂ H ₄ e	3,75E-02	2,70E-04	2,50E-04	3,80E-02	2,52E-04	3,50E-07	MNR	MNR	MNR	MNR	MNR	1,54E-01	MNR	MNR	1,87E-05	5,69E-05	6,81E-05	-1,00E-02
ADP-elements	kg Sbe	5,26E-03	4,41E-06	1,46E-05	5,28E-03	4,45E-06	4,86E-09	MNR	MNR	MNR	MNR	MNR	7,22E-03	MNR	MNR	3,31E-07	1,31E-05	3,42E-07	-3,11E-03
ADP-fossil	MJ	1,16E+03	2,93E+01	2,01E+01	1,21E+03	2,94E+01	1,76E-02	MNR	MNR	MNR	MNR	MNR	1,64E+04	MNR	MNR	2,19E+00	2,29E+00	1,51E+00	-1,62E+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
BDS490 LED10/722	793.8	9.5	83.6	0.48	0.48	0.36	0.36	0.264	372.5	279.4	279.4	204.9
BDS490 LED100/722	7296.0	83.0	87.9	4.192	4.192	3.144	3.144	2.306	3253.0	2439.7	2439.7	1789.5
BDS490 LED15/722	1174.5	13.8	85.1	0.697	0.697	0.523	0.523	0.383	540.9	405.8	405.8	297.2
BDS490 LED20/722	1521.0	17.0	89.5	0.859	0.859	0.644	0.644	0.472	666.6	499.7	499.7	366.3
BDS490 LED25/722	1950.0	21.0	92.9	1.061	1.061	0.796	0.796	0.584	823.3	617.7	617.7	453.2
BDS490 LED30/722	2262.0	25.0	90.5	1.263	1.263	0.947	0.947	0.695	980.1	734.9	734.9	539.3
BDS490 LED40/722	3042.0	34.0	89.5	1.717	1.717	1.288	1.288	0.944	1332.4	999.5	999.5	732.5
BDS490 LED50/722	3822.0	40.0	95.6	2.02	2.02	1.515	1.515	1.111	1567.5	1175.6	1175.6	862.1
BDS490 LED60/722	4524.0	48.0	94.2	2.424	2.424	1.818	1.818	1.333	1881.0	1410.8	1410.8	1034.4
BDS490 LED70/722	5236.0	57.0	91.9	2.879	2.879	2.159	2.159	1.583	2234.1	1675.4	1675.4	1228.4
BDS490 LED80/722	5852.0	65.0	90.0	3.283	3.283	2.462	2.462	1.806	2547.6	1910.5	1910.5	1401.5
BDS490 LED90/722	6622.0	74.0	89.5	3.737	3.737	2.803	2.803	2.055	2899.9	2175.1	2175.1	1594.7

BDS490 LED10/727	793.8	8.3	95.6	0.419	0.419	0.314	0.314	0.23	325.1	243.7	243.7	178.5
BDS490 LED100/727	7296.0	70.0	104.2	3.535	3.535	2.651	2.651	1.944	2743.2	2057.2	2057.2	1508.5
BDS490 LED15/727	1174.5	11.8	99.5	0.596	0.596	0.447	0.447	0.328	462.5	346.9	346.9	254.5
BDS490 LED20/727	1579.5	15.8	100.0	0.798	0.798	0.598	0.598	0.439	619.2	464.0	464.0	340.7
BDS490 LED25/727	1950.0	18.2	107.1	0.919	0.919	0.689	0.689	0.505	713.1	534.7	534.7	391.9
BDS490 LED30/727	2262.0	21.5	105.2	1.086	1.086	0.814	0.814	0.597	842.7	631.7	631.7	463.3
BDS490 LED40/727	3042.0	29.0	104.9	1.465	1.465	1.099	1.099	0.806	1136.8	852.8	852.8	625.5
BDS490 LED50/727	3822.0	36.5	104.7	1.843	1.843	1.382	1.382	1.014	1430.2	1072.4	1072.4	786.9
BDS490 LED60/727	4524.0	41.0	110.3	2.071	2.071	1.553	1.553	1.139	1607.1	1205.1	1205.1	883.9
BDS490 LED70/727	5236.0	48.0	109.1	2.424	2.424	1.818	1.818	1.333	1881.0	1410.8	1410.8	1034.4
BDS490 LED80/727	6006.0	56.0	107.2	2.828	2.828	2.121	2.121	1.555	2194.5	1645.9	1645.9	1206.7
BDS490 LED90/727	6622.0	62.0	106.8	3.131	3.131	2.348	2.348	1.722	2429.7	1822.0	1822.0	1336.3
BDS490 LED10/730	793.8	7.6	104.4	0.384	0.384	0.288	0.288	0.211	298.0	223.5	223.5	163.7
BDS490 LED100/730	7392.0	63.0	117.3	3.182	3.182	2.386	2.386	1.75	2469.2	1851.5	1851.5	1358.0
BDS490 LED15/730	1174.5	10.8	108.7	0.545	0.545	0.409	0.409	0.3	422.9	317.4	317.4	232.8
BDS490 LED20/730	1579.5	14.2	111.2	0.717	0.717	0.538	0.538	0.394	556.4	417.5	417.5	305.7
BDS490 LED25/730	1950.0	16.4	118.9	0.828	0.828	0.621	0.621	0.455	642.5	481.9	481.9	353.1
BDS490 LED30/730	2340.0	19.6	119.4	0.99	0.99	0.742	0.742	0.544	768.2	575.8	575.8	422.1
BDS490 LED40/730	3042.0	26.0	117.0	1.313	1.313	0.985	0.985	0.722	1018.9	764.4	764.4	560.3
BDS490 LED50/730	3822.0	33.0	115.8	1.667	1.667	1.25	1.25	0.917	1293.6	970.0	970.0	711.6
BDS490 LED60/730	4524.0	37.0	122.3	1.869	1.869	1.402	1.402	1.028	1450.3	1088.0	1088.0	797.7
BDS490 LED70/730	5304.0	43.0	123.3	2.172	2.172	1.629	1.629	1.195	1685.5	1264.1	1264.1	927.3
BDS490 LED80/730	6084.0	50.0	121.7	2.525	2.525	1.894	1.894	1.389	1959.4	1469.7	1469.7	1077.9
BDS490 LED90/730	6864.0	56.0	122.6	2.828	2.828	2.121	2.121	1.555	2194.5	1645.9	1645.9	1206.7
BDS490 LED10/740	793.8	7.2	110.2	0.364	0.364	0.273	0.273	0.2	282.5	211.8	211.8	155.2

BDS490 LED100/740	7546.0	59.0	127.9	2.98	2.98	2.235	2.235	1.639	2312.5	1734.4	1734.4	1271.9
BDS490 LED15/740	1174.5	10.2	115.1	0.515	0.515	0.386	0.386	0.283	399.6	299.5	299.5	219.6
BDS490 LED20/740	1579.5	13.4	117.9	0.677	0.677	0.508	0.508	0.372	525.4	394.2	394.2	288.7
BDS490 LED25/740	1944.0	17.0	114.4	0.859	0.859	0.644	0.644	0.472	666.6	499.7	499.7	366.3
BDS490 LED30/740	2262.0	18.6	121.6	0.939	0.939	0.704	0.704	0.516	728.7	546.3	546.3	400.4
BDS490 LED40/740	3042.0	24.5	124.2	1.237	1.237	0.928	0.928	0.68	959.9	720.1	720.1	527.7
BDS490 LED50/740	3822.0	30.5	125.3	1.54	1.54	1.155	1.155	0.847	1195.0	896.3	896.3	657.3
BDS490 LED60/740	4524.0	35.5	127.4	1.793	1.793	1.345	1.345	0.986	1391.4	1043.7	1043.7	765.1
BDS490 LED70/740	5304.0	41.0	129.4	2.071	2.071	1.553	1.553	1.139	1607.1	1205.1	1205.1	883.9
BDS490 LED80/740	6084.0	46.5	130.8	2.348	2.348	1.761	1.761	1.291	1822.0	1366.5	1366.5	1001.8
BDS490 LED90/740	6864.0	53.0	129.5	2.677	2.677	2.008	2.008	1.472	2077.4	1558.2	1558.2	1142.3
BDS490 LED10/827	793.8	9.5	83.6	0.48	0.48	0.36	0.36	0.264	372.5	279.4	279.4	204.9
BDS490 LED100/827	7296.0	83.0	87.9	4.192	4.192	3.144	3.144	2.306	3253.0	2439.7	2439.7	1789.5
BDS490 LED15/827	1174.5	13.8	85.1	0.697	0.697	0.523	0.523	0.383	540.9	405.8	405.8	297.2
BDS490 LED20/827	1521.0	17.0	89.5	0.859	0.859	0.644	0.644	0.472	666.6	499.7	499.7	366.3
BDS490 LED25/827	1950.0	21.0	92.9	1.061	1.061	0.796	0.796	0.584	823.3	617.7	617.7	453.2
BDS490 LED30/827	2262.0	25.0	90.5	1.263	1.263	0.947	0.947	0.695	980.1	734.9	734.9	539.3
BDS490 LED40/827	3042.0	34.0	89.5	1.717	1.717	1.288	1.288	0.944	1332.4	999.5	999.5	732.5
BDS490 LED50/827	3822.0	40.0	95.6	2.02	2.02	1.515	1.515	1.111	1567.5	1175.6	1175.6	862.1
BDS490 LED60/827	4524.0	48.0	94.2	2.424	2.424	1.818	1.818	1.333	1881.0	1410.8	1410.8	1034.4
BDS490 LED70/827	5236.0	57.0	91.9	2.879	2.879	2.159	2.159	1.583	2234.1	1675.4	1675.4	1228.4
BDS490 LED80/827	5852.0	65.0	90.0	3.283	3.283	2.462	2.462	1.806	2547.6	1910.5	1910.5	1401.5
BDS490 LED90/827	6622.0	74.0	89.5	3.737	3.737	2.803	2.803	2.055	2899.9	2175.1	2175.1	1594.7
BDS490 LED10/830	793.8	8.9	89.2	0.449	0.449	0.337	0.337	0.247	348.4	261.5	261.5	191.7
BDS490 LED100/830	7296.0	77.0	94.8	3.889	3.889	2.917	2.917	2.139	3017.9	2263.6	2263.6	1659.9

BDS490 LED15/830	1174.5	12.8	91.8	0.646	0.646	0.485	0.485	0.355	501.3	376.4	376.4	275.5
BDS490 LED20/830	1579.5	17.4	90.8	0.879	0.879	0.659	0.659	0.483	682.1	511.4	511.4	374.8
BDS490 LED25/830	1950.0	19.8	98.5	1.0	1.0	0.75	0.75	0.55	776.0	582.0	582.0	426.8
BDS490 LED30/830	2262.0	23.5	96.3	1.187	1.187	0.89	0.89	0.653	921.1	690.6	690.6	506.7
BDS490 LED40/830	3042.0	31.5	96.6	1.591	1.591	1.193	1.193	0.875	1234.6	925.8	925.8	679.0
BDS490 LED50/830	3744.0	39.5	94.8	1.995	1.995	1.496	1.496	1.097	1548.1	1160.9	1160.9	851.3
BDS490 LED60/830	4524.0	44.5	101.7	2.247	2.247	1.685	1.685	1.236	1743.7	1307.6	1307.6	959.1
BDS490 LED70/830	5304.0	52.0	102.0	2.626	2.626	1.97	1.97	1.444	2037.8	1528.7	1528.7	1120.5
BDS490 LED80/830	6006.0	61.0	98.5	3.081	3.081	2.311	2.311	1.695	2390.9	1793.3	1793.3	1315.3
BDS490 LED90/830	6622.0	68.0	97.4	3.434	3.434	2.576	2.576	1.889	2664.8	1999.0	1999.0	1465.9
BDS490 LED10/840	793.8	8.7	91.2	0.439	0.439	0.329	0.329	0.241	340.7	255.3	255.3	187.0
BDS490 LED100/840	7392.0	74.0	99.9	3.737	3.737	2.803	2.803	2.055	2899.9	2175.1	2175.1	1594.7
BDS490 LED15/840	1174.5	12.4	94.7	0.626	0.626	0.47	0.47	0.344	485.8	364.7	364.7	266.9
BDS490 LED20/840	1579.5	16.8	94.0	0.848	0.848	0.636	0.636	0.466	658.0	493.5	493.5	361.6
BDS490 LED25/840	1950.0	19.2	101.6	0.97	0.97	0.728	0.728	0.534	752.7	564.9	564.9	414.4
BDS490 LED30/840	2262.0	23.0	98.3	1.162	1.162	0.871	0.871	0.639	901.7	675.9	675.9	495.9
BDS490 LED40/840	3042.0	30.5	99.7	1.54	1.54	1.155	1.155	0.847	1195.0	896.3	896.3	657.3
BDS490 LED50/840	3822.0	38.5	99.3	1.944	1.944	1.458	1.458	1.069	1508.5	1131.4	1131.4	829.5
BDS490 LED60/840	4524.0	43.0	105.2	2.172	2.172	1.629	1.629	1.195	1685.5	1264.1	1264.1	927.3
BDS490 LED70/840	5304.0	51.0	104.0	2.576	2.576	1.932	1.932	1.417	1999.0	1499.2	1499.2	1099.6
BDS490 LED80/840	6084.0	58.0	104.9	2.929	2.929	2.197	2.197	1.611	2272.9	1704.9	1704.9	1250.1
BDS490 LED90/840	6622.0	66.0	100.3	3.333	3.333	2.5	2.5	1.833	2586.4	1940.0	1940.0	1422.4

* 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.

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 (Olum) 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 luminaires (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
BDS490 LED10/722	793.8	9.5	83.6	0.48	0.212	0.159	0.159	0.117	164.5	123.4	123.4	90.8
BDS490 LED100/722	7296.0	83.0	87.9	4.192	0.201	0.151	0.151	0.111	156.0	117.2	117.2	86.1
BDS490 LED15/722	1174.5	13.8	85.1	0.697	0.208	0.156	0.156	0.114	161.4	121.1	121.1	88.5
BDS490 LED20/722	1521.0	17.0	89.5	0.859	0.198	0.149	0.149	0.109	153.6	115.6	115.6	84.6
BDS490 LED25/722	1950.0	21.0	92.9	1.061	0.19	0.143	0.143	0.105	147.4	111.0	111.0	81.5
BDS490 LED30/722	2262.0	25.0	90.5	1.263	0.195	0.146	0.146	0.107	151.3	113.3	113.3	83.0
BDS490 LED40/722	3042.0	34.0	89.5	1.717	0.198	0.149	0.149	0.109	153.6	115.6	115.6	84.6
BDS490 LED50/722	3822.0	40.0	95.6	2.02	0.185	0.139	0.139	0.102	143.6	107.9	107.9	79.2
BDS490 LED60/722	4524.0	48.0	94.2	2.424	0.188	0.141	0.141	0.103	145.9	109.4	109.4	79.9
BDS490 LED70/722	5236.0	57.0	91.9	2.879	0.192	0.144	0.144	0.106	149.0	111.7	111.7	82.3
BDS490 LED80/722	5852.0	65.0	90.0	3.283	0.196	0.147	0.147	0.108	152.1	114.1	114.1	83.8
BDS490 LED90/722	6622.0	74.0	89.5	3.737	0.198	0.149	0.149	0.109	153.6	115.6	115.6	84.6
BDS490 LED10/727	793.8	8.3	95.6	0.419	0.185	0.139	0.139	0.102	143.6	107.9	107.9	79.2
BDS490 LED100/727	7296.0	70.0	104.2	3.535	0.17	0.128	0.128	0.094	131.9	99.3	99.3	72.9
BDS490 LED15/727	1174.5	11.8	99.5	0.596	0.178	0.134	0.134	0.098	138.1	104.0	104.0	76.0
BDS490 LED20/727	1579.5	15.8	100.0	0.798	0.177	0.133	0.133	0.097	137.4	103.2	103.2	75.3
BDS490 LED25/727	1950.0	18.2	107.1	0.919	0.165	0.124	0.124	0.091	128.0	96.2	96.2	70.6
BDS490 LED30/727	2262.0	21.5	105.2	1.086	0.168	0.126	0.126	0.092	130.4	97.8	97.8	71.4
BDS490 LED40/727	3042.0	29.0	104.9	1.465	0.169	0.127	0.127	0.093	131.1	98.6	98.6	72.2

BDS490 LED50/727	3822.0	36.5	104.7	1.843	0.169	0.127	0.127	0.093	131.1	98.6	98.6	72.2
BDS490 LED60/727	4524.0	41.0	110.3	2.071	0.16	0.12	0.12	0.088	124.2	93.1	93.1	68.3
BDS490 LED70/727	5236.0	48.0	109.1	2.424	0.162	0.122	0.122	0.089	125.7	94.7	94.7	69.1
BDS490 LED80/727	6006.0	56.0	107.2	2.828	0.165	0.124	0.124	0.091	128.0	96.2	96.2	70.6
BDS490 LED90/727	6622.0	62.0	106.8	3.131	0.165	0.124	0.124	0.091	128.0	96.2	96.2	70.6
BDS490 LED10/730	793.8	7.6	104.4	0.384	0.169	0.127	0.127	0.093	131.1	98.6	98.6	72.2
BDS490 LED100/730	7392.0	63.0	117.3	3.182	0.151	0.113	0.113	0.083	117.2	87.7	87.7	64.4
BDS490 LED15/730	1174.5	10.8	108.7	0.545	0.162	0.122	0.122	0.089	125.7	94.7	94.7	69.1
BDS490 LED20/730	1579.5	14.2	111.2	0.717	0.159	0.119	0.119	0.087	123.4	92.3	92.3	67.5
BDS490 LED25/730	1950.0	16.4	118.9	0.828	0.149	0.112	0.112	0.082	115.6	86.9	86.9	63.6
BDS490 LED30/730	2340.0	19.6	119.4	0.99	0.148	0.111	0.111	0.081	114.8	86.1	86.1	62.9
BDS490 LED40/730	3042.0	26.0	117.0	1.313	0.151	0.113	0.113	0.083	117.2	87.7	87.7	64.4
BDS490 LED50/730	3822.0	33.0	115.8	1.667	0.153	0.115	0.115	0.084	118.7	89.2	89.2	65.2
BDS490 LED60/730	4524.0	37.0	122.3	1.869	0.145	0.109	0.109	0.08	112.5	84.6	84.6	62.1
BDS490 LED70/730	5304.0	43.0	123.3	2.172	0.143	0.107	0.107	0.079	111.0	83.0	83.0	61.3
BDS490 LED80/730	6084.0	50.0	121.7	2.525	0.145	0.109	0.109	0.08	112.5	84.6	84.6	62.1
BDS490 LED90/730	6864.0	56.0	122.6	2.828	0.144	0.108	0.108	0.079	111.7	83.8	83.8	61.3
BDS490 LED10/740	793.8	7.2	110.2	0.364	0.16	0.12	0.12	0.088	124.2	93.1	93.1	68.3
BDS490 LED100/740	7546.0	59.0	127.9	2.98	0.138	0.104	0.104	0.076	107.1	80.7	80.7	59.0
BDS490 LED15/740	1174.5	10.2	115.1	0.515	0.153	0.115	0.115	0.084	118.7	89.2	89.2	65.2
BDS490 LED20/740	1579.5	13.4	117.9	0.677	0.15	0.112	0.112	0.082	116.4	86.9	86.9	63.6
BDS490 LED25/740	1944.0	17.0	114.4	0.859	0.155	0.116	0.116	0.085	120.3	90.0	90.0	66.0
BDS490 LED30/740	2262.0	18.6	121.6	0.939	0.145	0.109	0.109	0.08	112.5	84.6	84.6	62.1
BDS490 LED40/740	3042.0	24.5	124.2	1.237	0.142	0.106	0.106	0.078	110.2	82.3	82.3	60.5
BDS490 LED50/740	3822.0	30.5	125.3	1.54	0.141	0.106	0.106	0.078	109.4	82.3	82.3	60.5

BDS490 LED60/740	4524.0	35.5	127.4	1.793	0.139	0.104	0.104	0.076	107.9	80.7	80.7	59.0
BDS490 LED70/740	5304.0	41.0	129.4	2.071	0.137	0.103	0.103	0.075	106.3	79.9	79.9	58.2
BDS490 LED80/740	6084.0	46.5	130.8	2.348	0.135	0.101	0.101	0.074	104.8	78.4	78.4	57.4
BDS490 LED90/740	6864.0	53.0	129.5	2.677	0.137	0.103	0.103	0.075	106.3	79.9	79.9	58.2
BDS490 LED10/827	793.8	9.5	83.6	0.48	0.212	0.159	0.159	0.117	164.5	123.4	123.4	90.8
BDS490 LED100/827	7296.0	83.0	87.9	4.192	0.201	0.151	0.151	0.111	156.0	117.2	117.2	86.1
BDS490 LED15/827	1174.5	13.8	85.1	0.697	0.208	0.156	0.156	0.114	161.4	121.1	121.1	88.5
BDS490 LED20/827	1521.0	17.0	89.5	0.859	0.198	0.149	0.149	0.109	153.6	115.6	115.6	84.6
BDS490 LED25/827	1950.0	21.0	92.9	1.061	0.19	0.143	0.143	0.105	147.4	111.0	111.0	81.5
BDS490 LED30/827	2262.0	25.0	90.5	1.263	0.195	0.146	0.146	0.107	151.3	113.3	113.3	83.0
BDS490 LED40/827	3042.0	34.0	89.5	1.717	0.198	0.149	0.149	0.109	153.6	115.6	115.6	84.6
BDS490 LED50/827	3822.0	40.0	95.6	2.02	0.185	0.139	0.139	0.102	143.6	107.9	107.9	79.2
BDS490 LED60/827	4524.0	48.0	94.2	2.424	0.188	0.141	0.141	0.103	145.9	109.4	109.4	79.9
BDS490 LED70/827	5236.0	57.0	91.9	2.879	0.192	0.144	0.144	0.106	149.0	111.7	111.7	82.3
BDS490 LED80/827	5852.0	65.0	90.0	3.283	0.196	0.147	0.147	0.108	152.1	114.1	114.1	83.8
BDS490 LED90/827	6622.0	74.0	89.5	3.737	0.198	0.149	0.149	0.109	153.6	115.6	115.6	84.6
BDS490 LED10/830	793.8	8.9	89.2	0.449	0.198	0.149	0.149	0.109	153.6	115.6	115.6	84.6
BDS490 LED100/830	7296.0	77.0	94.8	3.889	0.187	0.14	0.14	0.103	145.1	108.6	108.6	79.9
BDS490 LED15/830	1174.5	12.8	91.8	0.646	0.193	0.145	0.145	0.106	149.8	112.5	112.5	82.3
BDS490 LED20/830	1579.5	17.4	90.8	0.879	0.195	0.146	0.146	0.107	151.3	113.3	113.3	83.0
BDS490 LED25/830	1950.0	19.8	98.5	1.0	0.179	0.134	0.134	0.098	138.9	104.0	104.0	76.0
BDS490 LED30/830	2262.0	23.5	96.3	1.187	0.184	0.138	0.138	0.101	142.8	107.1	107.1	78.4
BDS490 LED40/830	3042.0	31.5	96.6	1.591	0.183	0.137	0.137	0.101	142.0	106.3	106.3	78.4
BDS490 LED50/830	3744.0	39.5	94.8	1.995	0.186	0.14	0.14	0.102	144.3	108.6	108.6	79.2
BDS490 LED60/830	4524.0	44.5	101.7	2.247	0.174	0.13	0.13	0.096	135.0	100.9	100.9	74.5

BDS490 LED70/830	5304.0	52.0	102.0	2.626	0.173	0.13	0.13	0.095	134.2	100.9	100.9	73.7
BDS490 LED80/830	6006.0	61.0	98.5	3.081	0.18	0.135	0.135	0.099	139.7	104.8	104.8	76.8
BDS490 LED90/830	6622.0	68.0	97.4	3.434	0.182	0.136	0.136	0.1	141.2	105.5	105.5	77.6
BDS490 LED10/840	793.8	8.7	91.2	0.439	0.194	0.146	0.146	0.107	150.5	113.3	113.3	83.0
BDS490 LED100/840	7392.0	74.0	99.9	3.737	0.177	0.133	0.133	0.097	137.4	103.2	103.2	75.3
BDS490 LED15/840	1174.5	12.4	94.7	0.626	0.187	0.14	0.14	0.103	145.1	108.6	108.6	79.9
BDS490 LED20/840	1579.5	16.8	94.0	0.848	0.188	0.141	0.141	0.103	145.9	109.4	109.4	79.9
BDS490 LED25/840	1950.0	19.2	101.6	0.97	0.174	0.13	0.13	0.096	135.0	100.9	100.9	74.5
BDS490 LED30/840	2262.0	23.0	98.3	1.162	0.18	0.135	0.135	0.099	139.7	104.8	104.8	76.8
BDS490 LED40/840	3042.0	30.5	99.7	1.54	0.177	0.133	0.133	0.097	137.4	103.2	103.2	75.3
BDS490 LED50/840	3822.0	38.5	99.3	1.944	0.178	0.134	0.134	0.098	138.1	104.0	104.0	76.0
BDS490 LED60/840	4524.0	43.0	105.2	2.172	0.168	0.126	0.126	0.092	130.4	97.8	97.8	71.4
BDS490 LED70/840	5304.0	51.0	104.0	2.576	0.17	0.128	0.128	0.094	131.9	99.3	99.3	72.9
BDS490 LED80/840	6084.0	58.0	104.9	2.929	0.168	0.126	0.126	0.092	130.4	97.8	97.8	71.4
BDS490 LED90/840	6622.0	66.0	100.3	3.333	0.176	0.132	0.132	0.097	136.6	102.4	102.4	75.3

** 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 highlighted in yellow:

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ²¹	kg CO _{2e}	5,88E+00	2,61E-01	-1,25E-01	6,02E+00	3,02E-01	5,41E-01	MND	MND	MND	MND	MND	4,06E+02	MND	MNR	1,77E-02	2,62E-01	1,88E-01	-1,09E+01

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

Thus, the calculation of this example would be:

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

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

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

Source Ecoinvent 3.8