ENVIRONMENTAL PRODUCT DECLARATION

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

Philips CityCharm Cone

BDS491
Signify N.V.

EPD HUB
Publishing date 2024-11-06

GENERAL INFORMATION

MANUFACTURER

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

EPD STANDARDS, SCOPE AND VERIFICATION

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

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

PRODUCT

Product name	Philips CityCharm Cone
Additional labels	BDS491 LED60/830 PSD I A GR D9 H07RN 60
Product reference	910771135025
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	12.333 kg
GWP-fossil, A1-A3 (kgCO2e)	1,07E+02
GWP-total, A1-A3 (kgCO2e)	1,06E+02
Secondary material, inputs (%)	37.8
Secondary material, outputs (%)	56.4
Total energy use, A1-A3 (kWh)	398
Total water use, A1-A3 (m3e)	0.94

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 (BDS490), CityCharm cone (BDS491), and CityCharm fluid (BDS492) 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. 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.

For more information, please visit
https://www.lighting.philips.com/link/BDS491/fam/aa/en

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	53.44	EUR, ASIA
Minerals	1.65	APAC
Fossil materials	44.9	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	0.06

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Product
Mass per declared unit	12.333 kg
Functional unit	1 unit of 4740 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 wastes are due to ancillary materials used during manufacturing while the rest is due to material losses.

TRANSPORT AND INSTALLATION (A4-A5)

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

PRODUCT USE AND MAINTENANCE (B1-B7)

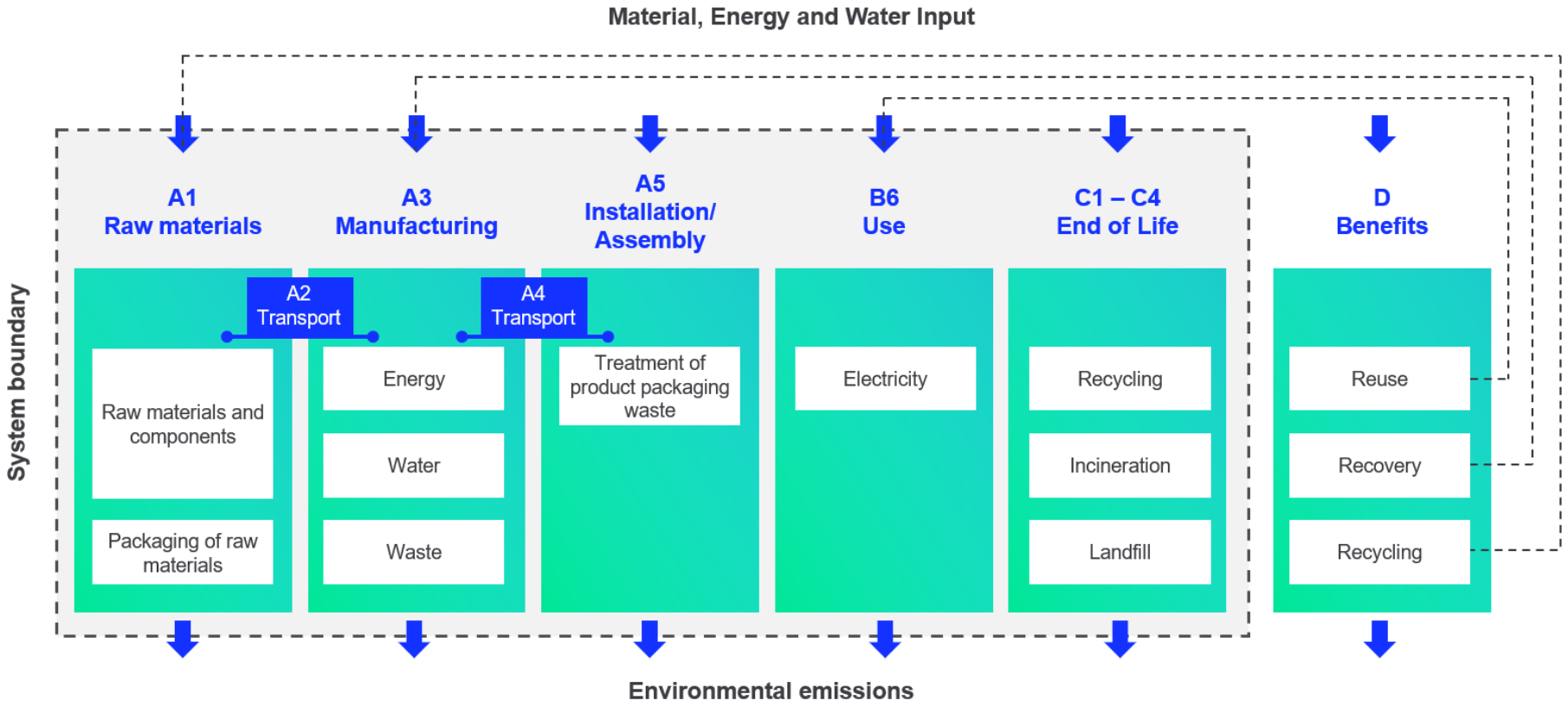
During the use phase, the product consumes electricity from Europe's electricity grid mix (B6). The total power consumption of the reference product is calculated as follows: Wattage x Reference lifetime = kWh consumed throughout the entire use phase B6.

PRODUCT END OF LIFE (C1-C4, D)

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

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

SYSTEM BOUNDARY



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

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

ALLOCATION, ESTIMATES AND ASSUMPTIONS

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

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

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

AVERAGES AND VARIABILITY

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

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

LCA SOFTWARE AND BIBLIOGRAPHY

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

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	1,03E+02	2,34E+00	1,12E+00	1,06E+02	2,34E+00	2,23E-01	MNR	MNR	MNR	MNR	MNR	1,58E+03	MNR	MNR	1,73E-01	6,15E+00	3,88E+00	-1,82E+01
GWP – fossil	kg CO_2e	1,03E+02	2,34E+00	1,34E+00	1,07E+02	2,34E+00	6,15E-03	MNR	MNR	MNR	MNR	MNR	1,58E+03	MNR	MNR	1,73E-01	6,15E+00	3,49E+00	-1,82E+01
GWP – biogenic	kg CO_2e	-3,91E-01	0,00E+00	-2,17E-01	-6,08E-01	9,06E-04	2,17E-01	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	0,00E+00	3,91E-01	-1,49E-02
GWP – LULUC	kg CO_2e	1,64E-01	9,16E-04	3,14E-03	1,68E-01	8,64E-04	2,14E-06	MNR	MNR	MNR	MNR	MNR	3,70E+00	MNR	MNR	6,37E-05	1,99E-04	1,42E-04	-6,12E-03
Ozone depletion pot.	kg CFC_{-11}e	3,19E-05	5,35E-07	2,35E-07	3,27E-05	5,39E-07	5,73E-10	MNR	MNR	MNR	MNR	MNR	8,04E-05	MNR	MNR	3,97E-08	2,55E-08	2,08E-08	-5,06E-07
Acidification potential	mol H^+e	9,11E-01	1,40E-02	4,77E-03	9,29E-01	9,92E-03	4,74E-05	MNR	MNR	MNR	MNR	MNR	9,04E+00	MNR	MNR	7,31E-04	2,69E-03	1,30E-03	-3,25E-01
EP-freshwater[2)]	kg Pe	9,52E-03	1,85E-05	3,67E-05	9,57E-03	1,92E-05	6,14E-08	MNR	MNR	MNR	MNR	MNR	1,68E-01	MNR	MNR	1,41E-06	6,55E-06	6,53E-06	-1,54E-03
EP-marine	kg Ne	1,12E-01	3,91E-03	1,22E-03	1,17E-01	2,95E-03	2,05E-05	MNR	MNR	MNR	MNR	MNR	1,20E+00	MNR	MNR	2,17E-04	9,27E-04	1,60E-03	-2,43E-02
EP-terrestrial	mol Ne	1,20E+00	4,32E-02	1,09E-02	1,26E+00	3,25E-02	2,12E-04	MNR	MNR	MNR	MNR	MNR	1,36E+01	MNR	MNR	2,40E-03	9,87E-03	5,20E-03	-3,03E-01
POCP ("smog")[3)]	kg NMVOCe	4,06E-01	1,31E-02	6,55E-03	4,26E-01	1,04E-02	5,28E-05	MNR	MNR	MNR	MNR	MNR	3,73E+00	MNR	MNR	7,67E-04	2,50E-03	1,55E-03	-8,69E-02
ADP-minerals & metals[4)]	kg Sbe	8,99E-03	5,36E-06	1,77E-05	9,01E-03	5,49E-06	1,85E-08	MNR	MNR	MNR	MNR	MNR	1,48E-02	MNR	MNR	4,05E-07	1,36E-05	5,19E-07	-4,58E-03
ADP-fossil resources	MJ	1,38E+03	3,48E+01	2,45E+01	1,44E+03	3,52E+01	4,67E-02	MNR	MNR	MNR	MNR	MNR	3,36E+04	MNR	MNR	2,59E+00	2,48E+00	1,92E+00	-1,80E+02
Water use[5)]	m^3e depr.	4,47E+01	1,53E-01	6,30E-01	4,54E+01	1,57E-01	1,05E-02	MNR	MNR	MNR	MNR	MNR	9,20E+02	MNR	MNR	1,16E-02	2,62E-01	1,73E-01	-2,55E+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	7,15E-06	2,58E-07	5,82E-08	7,47E-06	2,70E-07	4,33E-10	MNR	MNR	MNR	MNR	MNR	2,97E-05	MNR	MNR	1,99E-08	2,45E-08	1,42E-08	-1,45E-06
Ionizing radiation[6)]	kBq U235e	6,67E+00	1,66E-01	7,08E-02	6,90E+00	1,68E-01	1,61E-04	MNR	MNR	MNR	MNR	MNR	9,12E+02	MNR	MNR	1,24E-02	1,19E-02	9,03E-03	-1,10E+00

Ecotoxicity (freshwater)	CTUe	6,36E+03	3,09E+01	2,78E+01	6,42E+03	3,17E+01	2,79E-01	MNR	MNR	MNR	MNR	MNR	2,29E+04	MNR	MNR	2,33E+00	1,91E+01	5,55E+02	-1,69E+03
Human toxicity, cancer	CTUh	2,80E-07	8,16E-10	7,66E-10	2,82E-07	7,78E-10	1,60E-11	MNR	MNR	MNR	MNR	MNR	7,48E-07	MNR	MNR	5,73E-11	7,27E-10	3,25E-09	-2,69E-08
Human tox. non-cancer	CTUh	7,04E-06	3,02E-08	1,93E-08	7,09E-06	3,13E-08	6,46E-10	MNR	MNR	MNR	MNR	MNR	2,46E-05	MNR	MNR	2,31E-09	2,88E-08	1,92E-07	-2,87E-06
SQP[7)]	-	4,39E+02	3,83E+01	5,07E+01	5,28E+02	4,05E+01	2,72E-02	MNR	MNR	MNR	MNR	MNR	6,08E+03	MNR	MNR	2,99E+00	3,09E+00	2,53E+00	-9,80E+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	1,12E+02	3,85E-01	1,75E+01	1,30E+02	3,96E-01	1,39E-03	MNR	MNR	MNR	MNR	MNR	6,84E+03	MNR	MNR	2,92E-02	2,55E-01	7,73E-02	-1,11E+01
Renew. PER as material	MJ	3,64E+00	0,00E+00	1,98E+00	5,62E+00	0,00E+00	-1,98E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	0,00E+00	-3,64E+00	0,00E+00
Total use of renew. PER	MJ	1,16E+02	3,85E-01	1,95E+01	1,36E+02	3,96E-01	-1,98E+00	MNR	MNR	MNR	MNR	MNR	6,84E+03	MNR	MNR	2,92E-02	2,55E-01	-3,56E+00	-1,11E+01
Non-re. PER as energy	MJ	1,25E+03	3,48E+01	1,95E+01	1,30E+03	3,52E+01	4,67E-02	MNR	MNR	MNR	MNR	MNR	3,36E+04	MNR	MNR	2,59E+00	2,48E+00	1,92E+00	-1,80E+02
Non-re. PER as material	MJ	1,40E+02	0,00E+00	2,85E-02	1,40E+02	0,00E+00	-2,85E-02	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	-6,93E+01	-7,04E+01	0,00E+00
Total use of non-re. PER	MJ	1,39E+03	3,48E+01	1,95E+01	1,44E+03	3,52E+01	1,82E-02	MNR	MNR	MNR	MNR	MNR	3,36E+04	MNR	MNR	2,59E+00	-6,68E+01	-6,85E+01	-1,80E+02
Secondary materials	kg	4,66E+00	1,00E-02	1,12E-01	4,78E+00	9,77E-03	5,39E-05	MNR	MNR	MNR	MNR	MNR	3,46E+00	MNR	MNR	7,20E-04	2,46E-03	3,57E-03	7,52E-01
Renew. secondary fuels	MJ	8,39E-02	9,48E-05	7,65E-03	9,16E-02	9,86E-05	7,54E-07	MNR	MNR	MNR	MNR	MNR	2,81E-02	MNR	MNR	7,27E-06	1,10E-04	4,03E-05	-2,69E-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	9,10E-01	4,40E-03	2,44E-02	9,39E-01	4,56E-03	1,39E-04	MNR	MNR	MNR	MNR	MNR	2,90E+01	MNR	MNR	3,36E-04	9,59E-03	5,26E-03	-1,16E-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
Hazardous waste	kg	1,44E+01	4,63E-02	7,15E-02	1,45E+01	4,67E-02	1,81E-03	MNR	MNR	MNR	MNR	MNR	1,21E+02	MNR	MNR	3,44E-03	1,04E-02	1,12E-01	-2,83E+00
Non-hazardous waste	kg	2,07E+02	7,40E-01	1,16E+00	2,09E+02	7,67E-01	1,06E-01	MNR	MNR	MNR	MNR	MNR	7,64E+03	MNR	MNR	5,65E-02	2,80E+00	5,27E+00	-9,51E+01
Radioactive waste	kg	2,50E-03	2,34E-04	5,79E-05	2,79E-03	2,35E-04	1,03E-07	MNR	MNR	MNR	MNR	MNR	2,45E-01	MNR	MNR	1,74E-05	6,08E-06	0,00E+00	-4,08E-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	4,41E+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	2,54E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	6,83E-01	6,83E-01	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	5,58E+01	0,00E+00	0,00E+00

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

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	1,00E+02	2,32E+00	1,33E+00	1,04E+02	2,32E+00	5,86E-03	MNR	MNR	MNR	MNR	MNR	1,56E+03	MNR	MNR	1,71E-01	6,14E+00	3,90E+00	-1,78E+01
Ozone depletion Pot.	kg CFC_{-11}e	2,27E-05	4,23E-07	2,01E-07	2,33E-05	4,27E-07	4,96E-10	MNR	MNR	MNR	MNR	MNR	6,96E-05	MNR	MNR	3,15E-08	2,18E-08	1,73E-08	-4,26E-07
Acidification	kg SO_2e	7,80E-01	1,09E-02	3,85E-03	7,95E-01	7,71E-03	3,43E-05	MNR	MNR	MNR	MNR	MNR	7,64E+00	MNR	MNR	5,68E-04	2,04E-03	9,65E-04	-2,83E-01
Eutrophication	kg PO_4^3e	2,69E-01	2,06E-03	1,63E-03	2,73E-01	1,76E-03	2,62E-05	MNR	MNR	MNR	MNR	MNR	5,88E+00	MNR	MNR	1,29E-04	1,05E-03	1,10E-02	-7,30E-02
POCP (“smog”)	kg C_2H_4e	4,78E-02	3,78E-04	2,95E-04	4,84E-02	3,01E-04	1,02E-06	MNR	MNR	MNR	MNR	MNR	3,13E-01	MNR	MNR	2,22E-05	6,14E-05	1,56E-04	-1,23E-02
ADP-elements	kg Sbe	9,12E-03	5,19E-06	1,75E-05	9,14E-03	5,32E-06	1,46E-08	MNR	MNR	MNR	MNR	MNR	1,47E-02	MNR	MNR	3,92E-07	1,34E-05	4,46E-07	-4,57E-03
ADP-fossil	MJ	1,37E+03	3,48E+01	2,45E+01	1,43E+03	3,52E+01	4,67E-02	MNR	MNR	MNR	MNR	MNR	3,36E+04	MNR	MNR	2,59E+00	2,48E+00	1,92E+00	-1,79E+02

APPENDIX (EPD HUB ALIGNED)

This section represents the scaling method for the **B6 module**, following the PEP EcoPassport PSR for luminaries (PSR-0014-ed2.0-EN-2023 07 13). The GWP results were scaled from a refernce variant of a product family, based on various light management scenarios and power inputs of the luminaires within the same product familiy

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

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

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

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

$$TSF = PSF * CSF$$

Table A1: Light management function (PEP EcoPassport aligned)

Scenario	Abbrev.	CSF
No control	NC	1
Daylight dependency factor	DD	0.75
Presence sensing	PS	0.75
Daylight dependency and presence sensing	DD+PS	0.55

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

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

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

Configuration	Flux [lm]	Power [W]	Efficacy [lm/W]	PSF	Total Scaling Factor (TSF)				Scaled Impacts (GWP100 B6 - kg CO2eq.)			
					NC	DD	PS	DD+PS	NC	DD	PS	DD+PS
BDS491 LED10/740	800.0	6.6	121.2	0.165	0.165	0.124	0.124	0.091	260.7	195.9	195.9	143.8
BDS491 LED15/740	1200.0	9.6	125.0	0.24	0.24	0.18	0.18	0.132	379.2	284.4	284.4	208.6
BDS491 LED20/740	1600.0	12.8	125.0	0.32	0.32	0.24	0.24	0.176	505.6	379.2	379.2	278.1
BDS491 LED25/740	2000.0	16.2	123.5	0.405	0.405	0.304	0.304	0.223	639.9	480.3	480.3	352.3
BDS491 LED30/740	2370.0	17.8	133.1	0.445	0.445	0.334	0.334	0.245	703.1	527.7	527.7	387.1
BDS491 LED40/740	3160.0	24.0	131.7	0.6	0.6	0.45	0.45	0.33	948.0	711.0	711.0	521.4
BDS491 LED50/740	3950.0	30.0	131.7	0.75	0.75	0.562	0.562	0.413	1185.0	888.0	888.0	652.5
BDS491 LED60/740	4740.0	33.5	141.5	0.838	0.838	0.628	0.628	0.461	1324.0	992.2	992.2	728.4
BDS491 LED70/740	5530.0	39.5	140.0	0.988	0.988	0.741	0.741	0.543	1561.0	1170.8	1170.8	857.9
BDS491 LED80/740	6320.0	45.0	140.4	1.125	1.125	0.844	0.844	0.619	1777.5	1333.5	1333.5	978.0
BDS491 LED90/740	7110.0	51.0	139.4	1.275	1.275	0.956	0.956	0.701	2014.5	1510.5	1510.5	1107.6
BDS491 LED100/740	7900.0	58.0	136.2	1.45	1.45	1.088	1.088	0.798	2291.0	1719.0	1719.0	1260.8

BDS491 LED10/830	800.0	7.8	102.6	0.195	0.195	0.146	0.146	0.107	308.1	230.7	230.7	169.1
BDS491 LED15/830	1200.0	11.4	105.3	0.285	0.285	0.214	0.214	0.157	450.3	338.1	338.1	248.1
BDS491 LED20/830	1600.0	15.4	103.9	0.385	0.385	0.289	0.289	0.212	608.3	456.6	456.6	335.0
BDS491 LED25/830	1975.0	17.6	112.2	0.44	0.44	0.33	0.33	0.242	695.2	521.4	521.4	382.4
BDS491 LED30/830	2370.0	21.0	112.9	0.525	0.525	0.394	0.394	0.289	829.5	622.5	622.5	456.6
BDS491 LED40/830	3160.0	28.5	110.9	0.712	0.712	0.534	0.534	0.392	1125.0	843.7	843.7	619.4
BDS491 LED50/830	3900.0	36.5	106.8	0.912	0.912	0.684	0.684	0.502	1441.0	1080.7	1080.7	793.2
BDS491 LED60/830	4740.0	40.0	118.5	1.0	1.0	0.75	0.75	0.55	1580.0	1185.0	1185.0	869.0
BDS491 LED70/830	5530.0	47.0	117.7	1.175	1.175	0.881	0.881	0.646	1856.5	1392.0	1392.0	1020.7
BDS491 LED80/830	6320.0	55.0	114.9	1.375	1.375	1.031	1.031	0.756	2172.5	1629.0	1629.0	1194.5
BDS491 LED90/830	7020.0	62.0	113.2	1.55	1.55	1.162	1.162	0.853	2449.0	1836.0	1836.0	1347.7
BDS491 LED100/830	7800.0	70.0	111.4	1.75	1.75	1.312	1.312	0.963	2765.0	2073.0	2073.0	1521.5
BDS491 LED10/722	800.0	8.6	93.0	0.215	0.215	0.161	0.161	0.118	339.7	254.4	254.4	186.4
BDS491 LED15/722	1200.0	12.8	93.8	0.32	0.32	0.24	0.24	0.176	505.6	379.2	379.2	278.1
BDS491 LED20/722	1580.0	15.8	100.0	0.395	0.395	0.296	0.296	0.217	624.1	467.7	467.7	342.9
BDS491 LED25/722	1975.0	19.8	99.7	0.495	0.495	0.371	0.371	0.272	782.1	586.2	586.2	429.8
BDS491 LED30/722	2370.0	23.5	100.9	0.588	0.588	0.441	0.441	0.323	929.0	696.8	696.8	510.3
BDS491 LED40/722	3120.0	32.0	97.5	0.8	0.8	0.6	0.6	0.44	1264.0	948.0	948.0	695.2
BDS491 LED50/722	3950.0	37.0	106.8	0.925	0.925	0.694	0.694	0.509	1461.5	1096.5	1096.5	804.2
BDS491 LED60/722	4740.0	45.0	105.3	1.125	1.125	0.844	0.844	0.619	1777.5	1333.5	1333.5	978.0
BDS491 LED70/722	5530.0	53.0	104.3	1.325	1.325	0.994	0.994	0.729	2093.5	1570.5	1570.5	1151.8
BDS491 LED80/722	6240.0	62.0	100.6	1.55	1.55	1.162	1.162	0.853	2449.0	1836.0	1836.0	1347.7
BDS491 LED90/722	7020.0	70.0	100.3	1.75	1.75	1.312	1.312	0.963	2765.0	2073.0	2073.0	1521.5
BDS491 LED100/722	7700.0	80.0	96.2	2.0	2.0	1.5	1.5	1.1	3160.0	2370.0	2370.0	1738.0
BDS491 LED10/727	800.0	7.8	102.6	0.195	0.195	0.146	0.146	0.107	308.1	230.7	230.7	169.1

BDS491 LED15/727	1200.0	11.4	105.3	0.285	0.285	0.214	0.214	0.157	450.3	338.1	338.1	248.1
BDS491 LED20/727	1600.0	15.4	103.9	0.385	0.385	0.289	0.289	0.212	608.3	456.6	456.6	335.0
BDS491 LED25/727	1975.0	17.6	112.2	0.44	0.44	0.33	0.33	0.242	695.2	521.4	521.4	382.4
BDS491 LED30/727	2370.0	21.0	112.9	0.525	0.525	0.394	0.394	0.289	829.5	622.5	622.5	456.6
BDS491 LED40/727	3160.0	28.5	110.9	0.712	0.712	0.534	0.534	0.392	1125.0	843.7	843.7	619.4
BDS491 LED50/727	3900.0	36.5	106.8	0.912	0.912	0.684	0.684	0.502	1441.0	1080.7	1080.7	793.2
BDS491 LED60/727	4740.0	40.0	118.5	1.0	1.0	0.75	0.75	0.55	1580.0	1185.0	1185.0	869.0
BDS491 LED70/727	5530.0	47.0	117.7	1.175	1.175	0.881	0.881	0.646	1856.5	1392.0	1392.0	1020.7
BDS491 LED80/727	6320.0	55.0	114.9	1.375	1.375	1.031	1.031	0.756	2172.5	1629.0	1629.0	1194.5
BDS491 LED90/727	7020.0	62.0	113.2	1.55	1.55	1.162	1.162	0.853	2449.0	1836.0	1836.0	1347.7
BDS491 LED100/727	7800.0	70.0	111.4	1.75	1.75	1.312	1.312	0.963	2765.0	2073.0	2073.0	1521.5
BDS491 LED10/730	800.0	7.0	114.3	0.175	0.175	0.131	0.131	0.096	276.5	207.0	207.0	151.7
BDS491 LED15/730	1200.0	10.2	117.6	0.255	0.255	0.191	0.191	0.14	402.9	301.8	301.8	221.2
BDS491 LED20/730	1600.0	13.6	117.6	0.34	0.34	0.255	0.255	0.187	537.2	402.9	402.9	295.5
BDS491 LED25/730	1975.0	15.8	125.0	0.395	0.395	0.296	0.296	0.217	624.1	467.7	467.7	342.9
BDS491 LED30/730	2370.0	19.0	124.7	0.475	0.475	0.356	0.356	0.261	750.5	562.5	562.5	412.4
BDS491 LED40/730	3160.0	25.5	123.9	0.638	0.638	0.479	0.479	0.351	1008.0	756.8	756.8	554.6
BDS491 LED50/730	3900.0	32.0	121.9	0.8	0.8	0.6	0.6	0.44	1264.0	948.0	948.0	695.2
BDS491 LED60/730	4740.0	35.5	133.5	0.888	0.888	0.666	0.666	0.488	1403.0	1052.3	1052.3	771.0
BDS491 LED70/730	5530.0	41.5	133.3	1.038	1.038	0.778	0.778	0.571	1640.0	1229.2	1229.2	902.2
BDS491 LED80/730	6320.0	48.0	131.7	1.2	1.2	0.9	0.9	0.66	1896.0	1422.0	1422.0	1042.8
BDS491 LED90/730	7110.0	55.0	129.3	1.375	1.375	1.031	1.031	0.756	2172.5	1629.0	1629.0	1194.5
BDS491 LED100/730	7800.0	62.0	125.8	1.55	1.55	1.162	1.162	0.853	2449.0	1836.0	1836.0	1347.7
BDS491 LED10/827	800.0	8.3	96.4	0.208	0.208	0.156	0.156	0.114	328.6	246.5	246.5	180.1
BDS491 LED15/827	1200.0	12.2	98.4	0.305	0.305	0.229	0.229	0.168	481.9	361.8	361.8	265.4

BDS491 LED20/827	1580.0	15.2	103.9	0.38	0.38	0.285	0.285	0.209	600.4	450.3	450.3	330.2
BDS491 LED25/827	1975.0	19.0	103.9	0.475	0.475	0.356	0.356	0.261	750.5	562.5	562.5	412.4
BDS491 LED30/827	2370.0	22.5	105.3	0.562	0.562	0.422	0.422	0.309	888.0	666.8	666.8	488.2
BDS491 LED40/827	3120.0	31.0	100.6	0.775	0.775	0.581	0.581	0.426	1224.5	918.0	918.0	673.1
BDS491 LED50/827	3950.0	36.0	109.7	0.9	0.9	0.675	0.675	0.495	1422.0	1066.5	1066.5	782.1
BDS491 LED60/827	4740.0	43.0	110.2	1.075	1.075	0.806	0.806	0.591	1698.5	1273.5	1273.5	933.8
BDS491 LED70/827	5530.0	51.0	108.4	1.275	1.275	0.956	0.956	0.701	2014.5	1510.5	1510.5	1107.6
BDS491 LED80/827	6240.0	59.0	105.8	1.475	1.475	1.106	1.106	0.811	2330.5	1747.5	1747.5	1281.4
BDS491 LED90/827	7020.0	67.0	104.8	1.675	1.675	1.256	1.256	0.921	2646.5	1984.5	1984.5	1455.2
BDS491 LED100/827	7800.0	76.0	102.6	1.9	1.9	1.425	1.425	1.045	3002.0	2251.5	2251.5	1651.1
BDS491 LED10/840	800.0	7.6	105.3	0.19	0.19	0.143	0.143	0.105	300.2	225.9	225.9	165.9
BDS491 LED15/840	1200.0	11.0	109.1	0.275	0.275	0.206	0.206	0.151	434.5	325.5	325.5	238.6
BDS491 LED20/840	1600.0	14.8	108.1	0.37	0.37	0.277	0.277	0.204	584.6	437.7	437.7	322.3
BDS491 LED25/840	1975.0	17.2	114.8	0.43	0.43	0.322	0.322	0.237	679.4	508.8	508.8	374.5
BDS491 LED30/840	2370.0	20.5	115.6	0.512	0.512	0.384	0.384	0.282	809.0	606.7	606.7	445.6
BDS491 LED40/840	3160.0	27.5	114.9	0.688	0.688	0.516	0.516	0.378	1087.0	815.3	815.3	597.2
BDS491 LED50/840	3900.0	35.0	111.4	0.875	0.875	0.656	0.656	0.481	1382.5	1036.5	1036.5	760.0
BDS491 LED60/840	4740.0	39.0	121.5	0.975	0.975	0.731	0.731	0.536	1540.5	1155.0	1155.0	846.9
BDS491 LED70/840	5530.0	45.5	121.5	1.138	1.138	0.853	0.853	0.626	1798.0	1347.7	1347.7	989.1
BDS491 LED80/840	6320.0	53.0	119.2	1.325	1.325	0.994	0.994	0.729	2093.5	1570.5	1570.5	1151.8
BDS491 LED90/840	7020.0	60.0	117.0	1.5	1.5	1.125	1.125	0.825	2370.0	1777.5	1777.5	1303.5
BDS491 LED100/840	7800.0	68.0	114.7	1.7	1.7	1.275	1.275	0.935	2686.0	2014.5	2014.5	1477.3

** 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.*

APPENDIX (PEP ECOPASSPORT ALIGNED)

This section represents the scaling method for the **B6 module**, following the PEP EcoPassport PSR for luminaries (PSR-0014-ed2.0-EN-2023 07 13). The GWP results were scaled from a refernce variant of a product family, based on various light management functions, the lumen output (O_{lum}) and reference service life (*RSL*) of each product within the same product familiy.

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

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

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

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

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

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

$$PGSF = PSF * GSF$$

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

$$TSF = PGSF * CSF$$

Table A3: Light management functions (PEP EcoPassport aligned)

Scenario	Abbrev.	CSF
No control	NC	1
Daylight dependency factor	DD	0.75
Presence sensing	PS	0.75
Daylight dependency and presence sensing	DD+PS	0.55

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

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

As described in the EPD, calculations are made based on dataset describing electricity available on the low voltage level in Europe for year 2022 (source Ecoinvent 3.8 database). This value should be adjusted depending on specific project requirements. Presented controls factors and functional unit conversion

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

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

Configuration	Flux [lm]	Power [W]	Efficacy [lm/W]	PSF	Total Scaling Factor (TSF)				Scaled Impacts (GWP100 B6 - kg CO2eq.)			
					NC	DD	PS	DD+PS	NC	DD	PS	DD+PS
BDS491 LED10/740	800.0	6.6	121.2	0.165	0.072	0.054	0.054	0.04	113.8	85.3	85.3	63.2
BDS491 LED15/740	1200.0	9.6	125.0	0.24	0.07	0.053	0.053	0.039	110.6	83.7	83.7	61.6
BDS491 LED20/740	1600.0	12.8	125.0	0.32	0.07	0.053	0.053	0.039	110.6	83.7	83.7	61.6
BDS491 LED25/740	2000.0	16.2	123.5	0.405	0.071	0.053	0.053	0.039	112.2	83.7	83.7	61.6
BDS491 LED30/740	2370.0	17.8	133.1	0.445	0.066	0.05	0.05	0.036	104.3	79.0	79.0	56.9
BDS491 LED40/740	3160.0	24.0	131.7	0.6	0.066	0.05	0.05	0.036	104.3	79.0	79.0	56.9
BDS491 LED50/740	3950.0	30.0	131.7	0.75	0.066	0.05	0.05	0.036	104.3	79.0	79.0	56.9
BDS491 LED60/740	4740.0	33.5	141.5	0.838	0.062	0.046	0.046	0.034	98.0	72.7	72.7	53.7
BDS491 LED70/740	5530.0	39.5	140.0	0.988	0.063	0.047	0.047	0.035	99.5	74.3	74.3	55.3
BDS491 LED80/740	6320.0	45.0	140.4	1.125	0.062	0.046	0.046	0.034	98.0	72.7	72.7	53.7
BDS491 LED90/740	7110.0	51.0	139.4	1.275	0.063	0.047	0.047	0.035	99.5	74.3	74.3	55.3
BDS491 LED100/740	7900.0	58.0	136.2	1.45	0.064	0.048	0.048	0.035	101.1	75.8	75.8	55.3
BDS491 LED10/830	800.0	7.8	102.6	0.195	0.085	0.064	0.064	0.047	134.3	101.1	101.1	74.3
BDS491 LED15/830	1200.0	11.4	105.3	0.285	0.083	0.062	0.062	0.046	131.1	98.0	98.0	72.7
BDS491 LED20/830	1600.0	15.4	103.9	0.385	0.084	0.063	0.063	0.046	132.7	99.5	99.5	72.7
BDS491 LED25/830	1975.0	17.6	112.2	0.44	0.078	0.058	0.058	0.043	123.2	91.6	91.6	67.9
BDS491 LED30/830	2370.0	21.0	112.9	0.525	0.078	0.058	0.058	0.043	123.2	91.6	91.6	67.9
BDS491 LED40/830	3160.0	28.5	110.9	0.712	0.079	0.059	0.059	0.043	124.8	93.2	93.2	67.9
BDS491 LED50/830	3900.0	36.5	106.8	0.912	0.082	0.062	0.062	0.045	129.6	98.0	98.0	71.1

BDS491 LED60/830	4740.0	40.0	118.5	1.0	0.074	0.055	0.055	0.041	116.9	86.9	86.9	64.8
BDS491 LED70/830	5530.0	47.0	117.7	1.175	0.074	0.055	0.055	0.041	116.9	86.9	86.9	64.8
BDS491 LED80/830	6320.0	55.0	114.9	1.375	0.076	0.057	0.057	0.042	120.1	90.1	90.1	66.4
BDS491 LED90/830	7020.0	62.0	113.2	1.55	0.077	0.058	0.058	0.042	121.7	91.6	91.6	66.4
BDS491 LED100/830	7800.0	70.0	111.4	1.75	0.079	0.059	0.059	0.043	124.8	93.2	93.2	67.9
BDS491 LED10/722	800.0	8.6	93.0	0.215	0.094	0.07	0.07	0.052	148.5	110.6	110.6	82.2
BDS491 LED15/722	1200.0	12.8	93.8	0.32	0.093	0.07	0.07	0.051	146.9	110.6	110.6	80.6
BDS491 LED20/722	1580.0	15.8	100.0	0.395	0.088	0.066	0.066	0.048	139.0	104.3	104.3	75.8
BDS491 LED25/722	1975.0	19.8	99.7	0.495	0.088	0.066	0.066	0.048	139.0	104.3	104.3	75.8
BDS491 LED30/722	2370.0	23.5	100.9	0.588	0.087	0.065	0.065	0.048	137.5	102.7	102.7	75.8
BDS491 LED40/722	3120.0	32.0	97.5	0.8	0.09	0.068	0.068	0.05	142.2	107.4	107.4	79.0
BDS491 LED50/722	3950.0	37.0	106.8	0.925	0.082	0.062	0.062	0.045	129.6	98.0	98.0	71.1
BDS491 LED60/722	4740.0	45.0	105.3	1.125	0.083	0.062	0.062	0.046	131.1	98.0	98.0	72.7
BDS491 LED70/722	5530.0	53.0	104.3	1.325	0.084	0.063	0.063	0.046	132.7	99.5	99.5	72.7
BDS491 LED80/722	6240.0	62.0	100.6	1.55	0.087	0.065	0.065	0.048	137.5	102.7	102.7	75.8
BDS491 LED90/722	7020.0	70.0	100.3	1.75	0.087	0.065	0.065	0.048	137.5	102.7	102.7	75.8
BDS491 LED100/722	7700.0	80.0	96.2	2.0	0.091	0.068	0.068	0.05	143.8	107.4	107.4	79.0
BDS491 LED10/727	800.0	7.8	102.6	0.195	0.085	0.064	0.064	0.047	134.3	101.1	101.1	74.3
BDS491 LED15/727	1200.0	11.4	105.3	0.285	0.083	0.062	0.062	0.046	131.1	98.0	98.0	72.7
BDS491 LED20/727	1600.0	15.4	103.9	0.385	0.084	0.063	0.063	0.046	132.7	99.5	99.5	72.7
BDS491 LED25/727	1975.0	17.6	112.2	0.44	0.078	0.058	0.058	0.043	123.2	91.6	91.6	67.9
BDS491 LED30/727	2370.0	21.0	112.9	0.525	0.078	0.058	0.058	0.043	123.2	91.6	91.6	67.9
BDS491 LED40/727	3160.0	28.5	110.9	0.712	0.079	0.059	0.059	0.043	124.8	93.2	93.2	67.9
BDS491 LED50/727	3900.0	36.5	106.8	0.912	0.082	0.062	0.062	0.045	129.6	98.0	98.0	71.1
BDS491 LED60/727	4740.0	40.0	118.5	1.0	0.074	0.055	0.055	0.041	116.9	86.9	86.9	64.8

BDS491 LED70/727	5530.0	47.0	117.7	1.175	0.074	0.055	0.055	0.041	116.9	86.9	86.9	64.8
BDS491 LED80/727	6320.0	55.0	114.9	1.375	0.076	0.057	0.057	0.042	120.1	90.1	90.1	66.4
BDS491 LED90/727	7020.0	62.0	113.2	1.55	0.077	0.058	0.058	0.042	121.7	91.6	91.6	66.4
BDS491 LED100/727	7800.0	70.0	111.4	1.75	0.079	0.059	0.059	0.043	124.8	93.2	93.2	67.9
BDS491 LED10/730	800.0	7.0	114.3	0.175	0.077	0.058	0.058	0.042	121.7	91.6	91.6	66.4
BDS491 LED15/730	1200.0	10.2	117.6	0.255	0.074	0.055	0.055	0.041	116.9	86.9	86.9	64.8
BDS491 LED20/730	1600.0	13.6	117.6	0.34	0.074	0.055	0.055	0.041	116.9	86.9	86.9	64.8
BDS491 LED25/730	1975.0	15.8	125.0	0.395	0.07	0.053	0.053	0.039	110.6	83.7	83.7	61.6
BDS491 LED30/730	2370.0	19.0	124.7	0.475	0.07	0.053	0.053	0.039	110.6	83.7	83.7	61.6
BDS491 LED40/730	3160.0	25.5	123.9	0.638	0.071	0.053	0.053	0.039	112.2	83.7	83.7	61.6
BDS491 LED50/730	3900.0	32.0	121.9	0.8	0.072	0.054	0.054	0.04	113.8	85.3	85.3	63.2
BDS491 LED60/730	4740.0	35.5	133.5	0.888	0.066	0.05	0.05	0.036	104.3	79.0	79.0	56.9
BDS491 LED70/730	5530.0	41.5	133.3	1.038	0.066	0.05	0.05	0.036	104.3	79.0	79.0	56.9
BDS491 LED80/730	6320.0	48.0	131.7	1.2	0.066	0.05	0.05	0.036	104.3	79.0	79.0	56.9
BDS491 LED90/730	7110.0	55.0	129.3	1.375	0.068	0.051	0.051	0.037	107.4	80.6	80.6	58.5
BDS491 LED100/730	7800.0	62.0	125.8	1.55	0.07	0.053	0.053	0.039	110.6	83.7	83.7	61.6
BDS491 LED10/827	800.0	8.3	96.4	0.208	0.091	0.068	0.068	0.05	143.8	107.4	107.4	79.0
BDS491 LED15/827	1200.0	12.2	98.4	0.305	0.089	0.067	0.067	0.049	140.6	105.9	105.9	77.4
BDS491 LED20/827	1580.0	15.2	103.9	0.38	0.084	0.063	0.063	0.046	132.7	99.5	99.5	72.7
BDS491 LED25/827	1975.0	19.0	103.9	0.475	0.084	0.063	0.063	0.046	132.7	99.5	99.5	72.7
BDS491 LED30/827	2370.0	22.5	105.3	0.562	0.083	0.062	0.062	0.046	131.1	98.0	98.0	72.7
BDS491 LED40/827	3120.0	31.0	100.6	0.775	0.087	0.065	0.065	0.048	137.5	102.7	102.7	75.8
BDS491 LED50/827	3950.0	36.0	109.7	0.9	0.08	0.06	0.06	0.044	126.4	94.8	94.8	69.5
BDS491 LED60/827	4740.0	43.0	110.2	1.075	0.079	0.059	0.059	0.043	124.8	93.2	93.2	67.9
BDS491 LED70/827	5530.0	51.0	108.4	1.275	0.081	0.061	0.061	0.045	128.0	96.4	96.4	71.1

BDS491 LED80/827	6240.0	59.0	105.8	1.475	0.083	0.062	0.062	0.046	131.1	98.0	98.0	72.7
BDS491 LED90/827	7020.0	67.0	104.8	1.675	0.084	0.063	0.063	0.046	132.7	99.5	99.5	72.7
BDS491 LED100/827	7800.0	76.0	102.6	1.9	0.085	0.064	0.064	0.047	134.3	101.1	101.1	74.3
BDS491 LED10/840	800.0	7.6	105.3	0.19	0.083	0.062	0.062	0.046	131.1	98.0	98.0	72.7
BDS491 LED15/840	1200.0	11.0	109.1	0.275	0.08	0.06	0.06	0.044	126.4	94.8	94.8	69.5
BDS491 LED20/840	1600.0	14.8	108.1	0.37	0.081	0.061	0.061	0.045	128.0	96.4	96.4	71.1
BDS491 LED25/840	1975.0	17.2	114.8	0.43	0.076	0.057	0.057	0.042	120.1	90.1	90.1	66.4
BDS491 LED30/840	2370.0	20.5	115.6	0.512	0.076	0.057	0.057	0.042	120.1	90.1	90.1	66.4
BDS491 LED40/840	3160.0	27.5	114.9	0.688	0.076	0.057	0.057	0.042	120.1	90.1	90.1	66.4
BDS491 LED50/840	3900.0	35.0	111.4	0.875	0.079	0.059	0.059	0.043	124.8	93.2	93.2	67.9
BDS491 LED60/840	4740.0	39.0	121.5	0.975	0.072	0.054	0.054	0.04	113.8	85.3	85.3	63.2
BDS491 LED70/840	5530.0	45.5	121.5	1.138	0.072	0.054	0.054	0.04	113.8	85.3	85.3	63.2
BDS491 LED80/840	6320.0	53.0	119.2	1.325	0.073	0.055	0.055	0.04	115.3	86.9	86.9	63.2
BDS491 LED90/840	7020.0	60.0	117.0	1.5	0.075	0.056	0.056	0.041	118.5	88.5	88.5	64.8
BDS491 LED100/840	7800.0	68.0	114.7	1.7	0.076	0.057	0.057	0.042	120.1	90.1	90.1	66.4

** 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 highlighed in yellow:

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO2e	5,88E+00	2,61E-01	-1,25E-01	6,02E+00	3,02E-01	5,41E-01	MND	MND	MND	MND	MND	4,06E+02	MND	MNR	1,77E-02	2,62E-01	1,88E-01	-1,09E+01

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

Thus, the calculation of this example would be:

New B6 GWP tot for Finland = (4,06E+02 / 3,96E-01) x 2,70E-01 = 2,76 E+02

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

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

Source Ecoinvent 3.8