

# PHILIPS

## Jargeau LED gen3

### Product declaration



## Environmental product declaration of Jargeau LED gen3 based luminaire ISO 14021 based on ISO 14040/14044

### Product

#### Product family description

Jargeau LED gen3 combines the symbolic features of the first four-sided street lamps of the 19th century with the technical performance of 21st century luminaires. It incorporates the energy-efficient LEDgine optimized platform, while at the same time retaining the character of the original four-sided fixture. Designed for installation at heights of 4–6 meters, this luminaire is well suited to urban landscapes and ideal for illuminating city centers, historical areas, old villages, streets, alleys, squares and parks. As we live in a connected world we design our products to be aligned with all recent innovations and Jargeau LED gen3 is not an exception. By being System Ready our luminaire offers connectivity and dimming options while it can be paired with lighting management systems like Interact City. As a company we are very conscious about the impact of light on the environment so we equipped Jargeau LED gen3 with dedicated light recipes which help maintaining an optimal ecosystem for bats and preserve a dark night sky. The luminaire is designed for a broad range of applications such as boulevards and avenues, roundabouts, pedestrian crossings, residential streets, side streets, squares, parks, cycle and pedestrian paths, playgrounds.



### Product family range

The assembly of the products is implemented on manufacturing site of Signify in Valladolid, Spain. Manufacturing site of the product uses renewable electricity for manufacturing processes and achieved carbon neutrality in 2019.

The current document does not present the assessment of the impacts of the whole range, and focused on representation through the most probable worst case scenario rather than through average impacts with assessment of deviations.

### Representative product

BDP768 is chosen as a representative product for the family as the luminaire with the highest power consumption over the lifetime. Based on multiple LCA studied of the LED based luminaires, it is defined that the use stage (and electricity consumption in particular) tends to contribute the majority of the life-cycle impacts. Thus, a product with the largest power consumption over the lifetime in the family is most likely

to have largest impacts, and thus presents a worst case. That choice of a product aligns with pessimistic assumptions and precautionary principle in view of the task to represent other products in the family.

### Application

The luminaire is designed for a broad range of applications such as boulevards and avenues, roundabouts, pedestrian crossings, residential streets, side streets, squares, parks, cycle and pedestrian paths, playgrounds.

### Technical Data

The system comprises a set of modules that are the key building blocks for the luminaire. A typical application has the following technical features:

- 1x Xitanium driver
- LED board
- Mechanical parts made of aluminium and plastic
- Connectors

### Driver:

i.	Type	Xi FP 75W 0.2-0.7A SNLDAE 230V S240 sXt
ii.	Failure rate (max % @lifetime)	1%
iii.	Dimensions, mm	241 x 59 x 38

### LED board (direct light)

i.	Type	LEDGINE O
ii.	Dimension board, mm	75 x 70
iii.	Amount of PCBA per luminaire	1
iv.	Number of LEDs per PCBA	30

### Constructional data

Name	Value	Unit
Dimensions	755 x 400 x 400	mm x mm x mm
Luminous flux	3500	lm
Luminous efficacy	93	Lm/W
Radiation angle	180	Deg
Colour temperature	3000	K

### Delivery status

Product weight: 12.49 kg (including 1.2kg packaging), dimensions of the packed product: 405mm x 405mm x 853mm

## Base materials/Ancillary materials

Materials	Weight, kg
Electric Comp's / Cables PVC	0,03
Electric Comp's / Electronic ballasts with connectors	0,50
Electric Comp's / OTHERS	0,62
Electric Comp's / PCB board without components	0,20
Gaskets / Silicone	0,12
Glass / Hard glass	0,97
Metals	0,80
Metals / Aluminium	5,67
Metals / Stainless Steel	0,01
Metals / Steel	0,61
Packaging / Paper	1,20
Plastics / PA polyamide	0,01
Plastics / PC (Polycarbonate)	0,74
Plastics / PE	0,40
Plastics / PVC	0,60
<b>Product weight (including packaging)</b>	<b>12.49 kg</b>

## Manufacturing

Manufacturing of the product is partly done by Chinese suppliers for the frame and the cap, partly by Italian suppliers for canopies, and partly by Philips Poland (in Pila) for the driver. The gear tray and the assembly of the product are performed by the manufacturing site of Signify in Valladolid.

## Product processing/Installation

Product is mounted on a stand-alone pole or bracket.

## Packaging

1.2 kg, packaging material is cardboard.

## Condition of use

Designed for use outdoor in European conditions. No extreme exposures to chemicals or pollution is implied. Applications may apply dimming or lighting controls to allow further energy saving.

## Environment and health during use

The product is compliant with the European RoHS Directive 2011/65/EU of 8 June 2011 on Restriction of the use of certain Hazardous Substances in Electrical and Electronic equipment and with the European REACH regulation (EC) No 1907/2006 of 18 December 2006 on the Registration, Evaluation, Authorization and Restriction of Chemicals.

## Reference service life

The RSL is established as 100 000 hours operation, the equivalent of 25 years operation in an outdoor public areas application (4 000 hours per year).

## End of life

In the European Union, luminaires fall within the scope of the WEEE directive. Efforts are made to improve collection, reuse and recycling of the product mainly via collective Collection & Recycling Service Organizations (CRSOs). Luminaire is disposed by the user (assumed 85% of products is collected and 15% end up in general municipal waste). The collected luminaires are disassembled with steel, cable and electronic parts going to recycling. Non-recycled content is disposed to the municipal waste stream where it undergoes separation, preparation and treatment according to the average European statistics.

## Extraordinary effects

### Fire

Effects of fire can lead to emissions of PBDD/F (brominated compounds).

### Water

No known impacts on the environment following unforeseeable influence of water, e.g. flooding.

### Mechanical destruction

No known impacts on the environment following unforeseeable mechanical destruction.

## Further information

Details of the product are published on: <https://www.lighting.philips.com/>

# Calculation rules

## Declared unit

The declared unit is a luminaire with a Xitanium driver, one LED board, cables, connectors, and other aluminium, steel, glass and plastic constructive components totalling a weight of 11 286 grams excluding packaging, providing a luminous flux of 3500 lm, excluding luminaire losses. The luminaire, provides sufficient light for a typical roads and streets application, operated in a European context for 100.000 hours.

## Constructional data

Declared unit	Value	Declared unit
BDP768 LED50/830 II DM50 FG BALL 60 BK	Unit	1 piece

### System boundary

Cradle to grave with options  
Modules A1-A3 include: raw material extraction, processing, energy and materials and manufacture of modules and packaging; energy consumption for housing cutting and bending, as well as steel material losses are included; other energy and materials consumed in the product assembly are excluded.  
The following scenarios are also included:  
Transport to installation (A4);  
Disposal of packaging materials (A5);  
Replacement of drivers (1% rate), LED board (0.06% rate), and flat glass (0.5% rate) (B3);  
Operational energy use (B6);  
Transport to end of life (C2);  
Waste processing (C3);  
Final disposal for WEEE fraction not recycled (C4).  
Benefits and loads beyond system boundary:  
Recycling of cardboard packaging, electronics, cables, aluminium, steel, plastic and glass elements of the luminaire. (D)

### Estimates and assumptions

Background data are used for suppliers' specific processes. Foreground data are used for the assembly of the lighting unit in regards to the components of the luminaire (system). When necessary, generic data was generated based on averaging the data of multiple products of the same category. Data on collection and recycling are based on readily available data taken from the generic European statistics. The end of life scenario assumes recycling of the separated materials, but does not include energy recovery from incineration of the waste. Representation of the family is assumed on the worst case scenario with largest power consumption over the lifetime.

### Cut-off criteria

Where no data was available, items that represent less than 1% of the total product weight were neglected. No excluded flows were of any known particular environmental concern.

### Background data

Necessary background data are sourced from the Signify database and the Ecoinvent database v3.5.

### Data quality

Specific data used is less than 5 years old. Background data is geographically representative of the production location, and is less than 10 years old.

### Period under review

The period under review is the year 2019.

### Allocation

In the aggregated module A1-A3, material losses (steel) in the assembly of the luminaire system in the factory are defined on the averaged specific values. There, allocation was made based on partitioning (per unit manufactured).

Avoided burden approach is applied to allocation of in the use of recycled and/or secondary raw materials, as well as loads and benefits beyond the system boundary from material recycling. No loads and benefits beyond the system boundary from energy recovery from the end of life of the product or packaging is included.

### Comparability

A comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to the Signify/Philips lighting framework and the building context, respectively the product specific characteristics of performance, are taken into account.

## LCA: Scenarios and additional technical information

### Transport to the site (A4)

Name	Value	Unit
Transport distance	1200	Km
Transport mode	truck, unspecified generic	-
Capacity utilisation incl. empty runs	45	%
Bulk density of transported product	89.2	Kg/m <sup>3</sup>

### Installation at the site (A5)

Name	Value	Unit
Packaging waste	1.2	kg

### Reference service life

Name	Value	Unit
Reference service life	25	years
Operating hours per year	4000	hours
Quality of work	L96	-
Environment of operation	Average European conditions	-
Usage conditions	Outdoor	-

## Repair (B3)

Name	Value 1	Value 2	Value 3	Unit
Repair process	Replacement of the driver	Replacement of the LED board	Replacement of the flat glass	-
Repair cycle	0.01	0.0006	0.005	Number/RSL
Resources	0.5	0.22	0.972	kg
Transportation distance	4.8	4.8	4.8	Km
Transportation mode	Van	Van	Van	-

## Operational energy use (B6)

Name	Value	Unit
Electricity consumption	3622	kWh
Equipment output	37.5	W

## End of life (C1-C4)

Name	Value	Unit
Collected separately	10.62	kg
Sent to recycling	8.27	kg
Sent to energy recovery	1.80	kg
Sent to landfilling	2.42	kg
Transportation distance from collection point to recycling	100	Km
Transportation distance from collection point to incineration and landfilling	30	km
Mode of transportation	Truck, unspecified	-

# LCA Results

Description of the system boundary (x = included in LCA; MND = module not declared; MNR = module not relevant)

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundarys
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste Processing	Disposal	Reuse- Recovery- Recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MNR	X	MNR	X	MND	MND	X	X	X	X

## Results of the LCA - environmental impact

Parameter	Unit	A1-A3	A4	A5	B4	B6	C2	C3	C4	D
GWP	[kg CO2Eq.]	1.2E+02	2.0E+00	1.5E-01	5.8E+00	1.6E+03	1.5E-01	1.3E+00	7.9E+00	-3.6E+01
ODP	[kg CFC11Eq]	1.7E-05	3.7E-07	1.4E-08	8.9E-07	1.9E-04	2.9E-08	1.2E-07	2.9E-08	-4.5E-06
AP	[kg SO2Eq.]	6.9E-01	8.4E-03	1.2E-03	2.2E-02	8.6E+00	6.6E-04	7.0E-03	1.5E-03	-3.0E-01
EP	[kg (PO4)3Eq]	1.3E-01	1.6E-03	1.9E-04	4.1E-03	1.2E+00	1.2E-04	1.4E-03	7.1E-04	-6.7E-02
POCP	[kg Ethen Eq.]	4.8E-02	3.3E-04	6.6E-05	1.2E-03	3.3E-01	2.6E-05	4.5E-04	9.1E-05	-1.8E-02
ADPE	[kg Sb Eq.]	9.8E-03	5.2E-06	4.8E-06	1.1E-04	2.7E-03	4.1E-07	2.6E-05	3.4E-07	-4.3E-03
ADPF	[MJ]	1.3E+03	3.0E+01	1.8E+00	7.9E+01	1.8E+04	2.3E+00	1.3E+01	1.7E+00	-3.9E+02
Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non fossil resources; ADPF = Abiotic depletion potential for fossil resources									



Environmental impacts of the product are dominated by the use phase and in particular electricity consumption of the light product. Such, majority of the impacts are embedded in the electricity generation used by the luminaire over its' long lifetime. Electricity consumption in use phase contributes over 85% of the impact in all impact categories except for Abiotic depletion (minerals and metals) (ADPE), with over 92% of the impacts in global warming potential. Luminaire production phase is the second most contributing stage of the life cycle. For ADPE the production phase contributes the majority of the negative impact (over 77%). This impact to the ADPE is mostly due to extraction and processing of aluminum used in

mechanical components of the luminaire, and precious metals used to make electronic components of the driver. The end of life of the product is characterized by high rates of collection of disposed luminaires, and high rates of recycling of the aluminum parts, and metals in electronic components. That reduces the cumulative impact of production (A1-A3), distribution and installation (A4-A5), use (B3, B6), and end of life (C2-C4) by about 34% in Abiotic depletion potential (minerals and metal), by about 5% in Eutrophication potential, and by about 5% in Photochemical oxidation potential. In other impact categories end of life phase of the product has a neglectable contribution to the reduction of overall impacts.

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## Requisite evidence

The measurements are based on documentation and bill of materials of the product.

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## References

ISO 14021:2016, Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling)

ISO 14040:2006, Environmental management — Life cycle assessment — Principles and framework

ISO 14044:2006, Environmental management — Life cycle assessment — Requirements and guidelines

### Disclaimer

All environmental calculations are based on a luminaire used in European context. The calculations are performed on the most commonly used luminaire in the range. The implemented life cycle analysis is compliant with DIN EN ISO 14040:2006: Environmental management - Life Cycle Assessment - Principles and framework. The LCA has been performed to the best of Signify's knowledge. No right or claim might be derived from this. Signify disclaims any and all claims with respect thereto.

### Further information Please contact:

[sustainability@signify.com](mailto:sustainability@signify.com)

Collection and Recycling (brochure)

[Ecoinvent](#) (website)

### Glossary

ADP (Abiotic Depletion Potential): Impact related to the depletion of non-renewable resources, i.e. fossil fuels (ADPF), metals and minerals (ADPE).

AP (Acidification Potential): Contributions of SO<sub>2</sub>, NO<sub>x</sub>, HCl, NH<sub>3</sub> and HF to the potential acid deposition, causing a wide

range of impacts on soil, groundwater, surface water, organisms, ecosystems and buildings.

EP (Eutrophication Potential): Potential to cause over-fertilization of water and soil, which can result in increased growth of biomass.

GWP (Global Warming Potential): Relative measure of how much heat a greenhouse gas (CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>...) traps in the atmosphere. It is calculated over a specific time interval, commonly 20, 100 or 500 years.

LCA: Life cycle assessment.

PCR: Product Category Rules.

PERE: Use of renewable primary energy excluding renewable primary energy resources used as raw materials.

PERM: Use of renewable primary energy resources used as raw materials.

PERT: Total use of renewable primary energy resources.

PENRE: Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials.

PENRM: Use of non-renewable primary energy resources used as raw materials.

PENRT: Total use of non-renewable primary energy resources.

POCP (Photo-chemical Oxidation Potential or photochemical smog): Formation of reactive substances (mainly ozone) which are injurious to human health and ecosystems and which also may damage crops.

RSL: Reference service life.



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