PHILIPS

UniStreet gen2
Lumistreet gen2
Lumistreet gen2 PRO

Product declaration

Environmental product declaration
of the UniStreet gen2, Lumistreet gen2, Lumistreet gen2 PRO LED based luminaire

Product

The new generation of UniStreet and Lumistreet is all about design, future-proof components and a best-in-class light engine with a wide range of optics. With all the strengths of its predecessor combined, the second generation is designed to further minimize your Total Cost of Ownership. A robust design with high quality LED street lanterns, it offers a great solution thanks to its smart design, efficient light engine and future-proof options.

Application

The luminaire is designed for a broad range of applications such as parking garages, cold storage facilities, industrial halls, food production centers and car washes.

Environmental assessment - results

Material content

Table 1: base/ancillary materials

	Weight
Metals / Aluminium Painted	2,26
Glass / Hard glass	0,62
Plastics / PP	0,20
Plastic / Silicone	0,04
Electric Comp's / PCBA without cables	0,04
Plastics / PMMA	0,04
Metals / Steel	0,01
Metals / Stainless Steel	0,11
Electric Comp's / Electronic ballasts with connectors	0,23
Electric Comp's / Connectors	0,01
Electric Comp's / OTHERS	0,05
Plastics / PA polyamide	0,01
Metals / Aluminium	0,54
Packaging / Paper	0,83
Gaskets / Rubber Nature	0,12

Product weight (including packaging): 5,12 kg

LCA results

To measure the environmental footprint of the luminaire, a life cycle assessment was carried out according to ISO 14040/14044. Environmental impacts of reference product are representative of product family.

Table 3: Environmental impacts

Table 3&4 below display the results of the life cycle assessment. For use stage, the RSL is defined as 100,000 hours, the equivalent of 25 years of operation in a roadway luminaire application.

Impact category	Total	Cradle to Gate	Use	End of Life
Abiotic depletion	100,0%	75,9%	62,1%	-38,0%
Abiotic depletion (fossil fuels)	100,0%	2,5%	99,2%	-1,7%
Global warming (GWP100a)	100,0%	2,4%	99,5%	-1,9%
Ozone layer depletion (ODP)	100,0%	2,2%	97,8%	0,0%
Photochemical oxidation	100,0%	5,3%	98,5%	-3,8%
Acidification	100,0%	2,9%	99,5%	-2,3%
Eutrophication	100,0%	3,9%	99,0%	-2,9%

Table 4: Resource use

Indicator (cf glossary)	Total value	Unit	Cradle to Gate	Use	End of Life
PERE	5657	[MJ]	1%	100%	-1%
PERM	7	[MJ]	302%	0%	-202%
PERT	5664	[MJ]	1%	100%	-1%
PENRE	34382	[MJ]	2%	99%	-1%
PENRM	24	[MJ]	115%	1%	-16%
PENRT	34406	[MJ]	2%	99%	-1%

Interpretation of the LCA results

Environmental impacts of the product are dominated by the use phase associated with the electricity consumption of the light product. The use phase contributes over 97% of the impact in all impact categories except for Abiotic depletion (non-fossil) (ADPE), where the production phase contributes the majority of the negative impact. This impact to the ADPE is mostly due to extraction of virgin materials used to make electric components (such as copper, gold and silver), as well as due to extraction and production of aluminium and zinc used for the housing manufacturing. End of life of the product has a marginal contribution to the reduction of overall impacts in all categories apart from ADPE, where recycling in the end of life reduces the cumulative impact of production and use by over 27%, relating to -38% of the total impact over the life cycle in category ADPE. This is achieved by high rates of disposed luminaires collection, and high rates of recycling of the metal components in the end of life of the luminaire.

Environmental Assessment - input data

Product

Declared product
1x LED based luminaire
(BGP281 LED50 4S/740 I DM11 48/60S)

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

- 1x Xitanium driver
- 1x Ledgine O LED boards, containing of 20 LEDs distributed in a single row
- Mechanical parts made of metal or die-casted aluminium
- Connectors
- Cables

Construction data

Name	Value	Unit
Dimension driver	175x46x34	mm
Dimension LED board	75x70	mm
Luminous flux	4692	lm
Luminous efficiency	136	lm/W
Color temperature	4000	K

Delivery
Product weight: 5,12 kg (including 0,83 kg packaging)

Manufacturing
Manufacturing of the product is partly done by Chinese suppliers for the LED boards and partly by Philips Poland (in Pila) for the driver. Mechanical parts are made in China, Spain and Poland (aluminium parts). Final assembly is done at Philips production location in Ketrzyn, Poland.

Packaging
Packaging materials are cardboard and paper, with minor use of ink. Packaging weight is 828 g.

Use conditions
Applications may apply dimming or lighting controls to allow further energy saving.

Environment and health during use
The manufacturing plants of Pila and Valladolid are certified according to ISO 14001 (Environment) and to OHSAS 18001 (Health and Safety). UniStreet gen2 also meets Signify's Regulated Substance List, which includes RoHS and REACH.

Reference Service Life
The RSL is established as 100,000 hours operation, the equivalent of 25 years operation in a roadway luminaire application. During the lifetime, no component is replaced.

End of life
In the European Union, luminaires are in 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). According to Eurostat and other officious collection systems, the collection rate of WEEEs via CRSOs and other non-registrating schemes is estimated at 85%. End of life scenario is further based on a material split and respective recycling rates. Recovery potential for steel and precious metals is evaluated. The energy required for treatment of materials (shredding) is included.

Estimates and assumptions
Background data are used for suppliers' specific processes. Foreground data are used for the assembly of the lighting unit. 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 national Dutch statistics. The end of life scenario assumes recycling of the separated materials, but does not include energy recovery from incineration of the waste.

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.

Calculation rules

Declared unit
The declaired unit is a luminaire system, with a total weight of 5,12 kg including packaging, and providing a luminous flux of 4692 lumens. This luminaire provides sufficient light for a broad range of applications such as parking garages, cold storage facilities, industrial halls, food production centers and car washes, operated in Europe for 100.000 hours (electricity consumption of 3450kWh).

System boundaries
Type of environmental declaration cradle to grave, including recycling benefits (avoided burdain).

The following life cycle stages are included:

- Production: raw materials extraction, processing, energy and materials, manufacture of modules, assembly and packaging.
- Operational energy use (average European energy mix)
- Component replacement (driver) in case of a failure
- Transport
- Waste processing
- Final disposal for WEEE fraction not recycled
- Recycling of steel and metals from PCB and housing

Distribution, maintenance, upgrade and reuse scenarios are not included.

Background data
Necessary background data are sourced from 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.

Method
CML - IA baseline V3.05/EU25/Characterization. Excluding long-term emissions.

Requisite evidence
Data is based on documentation and bill of materials of the product

References
- Ecoinvent www.ecoinvent.org
- ISO 14040-44
- DIN EN ISO 14040:2006: Environmental management - Life Cycle Assessment - Principles and Frameworks (ISO 14040:2006) and Requirements and Guidelines (ISO 14044:2006)

Table 3: LCA scenarios table

Name	Value	Unit
Logistics		
Road freight of components to manufacturing site	10,18	tkm
Air freight of components to manufacturing site	0	tkm
Sea freight of components to manufacturing site	55,72	tkm
Road transport from manufacturing site to the customer	0	km
Packaging	0,828	kg
Operational energy use		
Electricity consumption	3450	kWh
Equipment output	34,5	kW
End of Life		
Collected separately	4,35	kg
Recycled on manufacturing site	0	kg
Sent for recycling to the third parties	4,35	kg
Reference service life		
Useful hours of work	100000	hours
Reference service life in the example of a roadway luminaire application, 4000 hours of full work per year.	25	a

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:
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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 SO2, NOx, HCl, NH3 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 (CO2, N2O, CH4...) 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.