



PHILIPS

CoreLine Tempo

Product declaration



Environmental Product Declaration of the CoreLine Tempo product range (ISO 14021, based on ISO 14040/14044, EN 15804)

Product

CoreLine Tempo is a highly efficient floodlight designed for 1:1 retrofit replacement of conventional technology, while retaining the same electrical installation and poles. This luminaire offers lumen packages for many different application areas as well as a choice of high-performance asymmetrical and symmetrical optics. Low maintenance is achieved thanks to the long lifetime of the luminaire (70,000 hours).

Application

The applications range from area and sports lighting to building facades, and from billboards to landscapes.



Environmental Assessment - results

Material content

Table 1: base/ancillary materials

| | |
|---|-------|
| Aluminum | 50.9% |
| Glass optical cover | 21.5% |
| Electronics (driver, LED board) | 8.0% |
| Packaging (cardboard, paper, labels) | 7.1% |
| Elements of potting | 6.8% |
| Plastics (PA) | 2.7% |
| Plastics (PMMA) | 1.5% |
| Other (steel, alumina & silicon polymer, silicon, cables) | 1.5% |
| Plastic/other (PP, soft flexible plastic) | 0.1% |
| Product weight (including packaging): 8.25 kg | |

Table 2: LCA boundaries

| | | |
|---|---|----|
| Product stage | Raw material supply | A1 |
| | Transport | A2 |
| | Manufacturing | A3 |
| Construction process stage | Transport from the gate to the site | A4 |
| | Assembly | A5 |
| Use stage | Operational energy use | B6 |
| End of life stage | Transport | C2 |
| | Waste processing | C3 |
| | Disposal | C4 |
| Benefits and loads beyond the system boundaries | Reuse - Recovery- Recycling - potential | D |

LCA results

To measure the environmental footprint of the luminaire, a life cycle assessment was carried out according to ISO 14040/14044. The CEN Norm EN 15804 serves as the core PCR. Environmental impacts of reference product are representative of product family. LCA boundaries are described in table 2.

Table 3: Environmental impacts

Table 3&4 below display the results of the life cycle assessment. For module B6, the RSL is defined as 70,000 hours, the equivalent of 17.5 years in operation in a roadway luminaire application.

| Indicator (cf. glossary) | Total value | Unit | A1-A3 | A4 | A5 | B6 | C2 | C3 | C4 | D |
|--------------------------|-------------|-------------------|--------|-------|-------|--------|-------|-------|-------|--------|
| GWP | 7,26E+03 | [kg CO2-Eq.] | 1,36% | 0,04% | 0,00% | 98,50% | 0,00% | 0,00% | 0,09% | -0,85% |
| ODP | 7,87E-04 | [kg CFC11-Eq.] | 2,38% | 0,07% | 0,00% | 97,55% | 0,00% | 0,00% | 0,00% | -0,26% |
| AP | 3,28E+01 | [kg SO2-Eq.] | 2,59% | 0,03% | 0,00% | 97,37% | 0,00% | 0,00% | 0,01% | -1,07% |
| EP | 4,23E+00 | [kg (PO4)3-- Eq.] | 3,10% | 0,04% | 0,00% | 96,84% | 0,00% | 0,00% | 0,02% | -0,60% |
| POCP | 1,48E+00 | [kg Ethen Eq.] | 4,66% | 0,03% | 0,00% | 95,30% | 0,00% | 0,00% | 0,00% | -1,41% |
| ADPE | 1,57E-02 | [kg Sb Eq.] | 47,76% | 0,05% | 0,00% | 52,07% | 0,00% | 0,01% | 0,11% | -0,26% |
| ADPF | 8,73E+04 | [MJ] | 1,98% | 0,05% | 0,00% | 97,96% | 0,00% | 0,00% | 0,00% | -0,65% |

Table 4: Resource use

| Indicator (cf. glossary) | Total value | Unit | A1-A3 | A4 | A5 | B6 | C2 | C3 | C4 | D |
|--------------------------|-------------|------|-------|-------|-------|--------|-------|-------|-------|--------|
| PERE | 1,05E+04 | [MJ] | 0,67% | 0,00% | 0,02% | 99,31% | 0,00% | 0,00% | 0,00% | -0,85% |
| PERM | 0,00E+00 | [MJ] | 0,00% | 0,00% | 0,00% | 0,00% | 0,00% | 0,00% | 0,00% | 0,00% |
| PERT | 1,05E+04 | [MJ] | 0,67% | 0,00% | 0,02% | 99,31% | 0,00% | 0,00% | 0,00% | -0,85% |
| PENRE | 1,49E+05 | [MJ] | 1,37% | 0,03% | 0,01% | 98,58% | 0,01% | 0,00% | 0,00% | -0,36% |
| PENRM | 2,11E+01 | [MJ] | 100% | 0,00% | 0,00% | 0,00% | 0,00% | 0,00% | 0,00% | 0,00% |
| PENRT | 1,49E+05 | [MJ] | 1,37% | 0,03% | 0,01% | 98,58% | 0,00% | 0,00% | 0,00% | -0,36% |

Interpretation of the LCA results

For all impact categories except the Abiotic Depletion Potential (ADPE, non-fossil), the dominant phase is the use phase, associated with electricity consumption and its related generation. In particular, the contribution to global warming potential (GWP) is for 95% associated with the use phase and 5% with the production phase. The production phase has a minor contribution to the overall environmental impact, but is nevertheless the main contributor to the ADPE. This arises from the extraction of virgin material, mainly gold, silver and copper used to make electronic components.

Environmental Assessment – input data

Product

Declared product

1x CoreLine Tempo
12NC: 912300023660

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:

- 2x built-in Xitanium drivers
- 2x LED boards, containing 40 LEDs each
- 1x glass optical cover
- Die cast aluminum housing
- Mechanical parts made of metal or plastic (driver box, mounting elements...)
- Connectors
- Cables

Construction data

| Name | Value | Unit |
|-------------------------|---------------------|------|
| Dimension driver | 340.5 x 422 x 67.4 | mm |
| Dimension LED board | 240.5 x 58.6 x 37.8 | mm |
| Dimension luminaire | 219 x 125 x 1 | mm |
| Luminous flux | 26000 | lm |
| Luminous efficacy | 120 | lm/W |
| Color temperature | 4000 | K |
| Power | 217 | W |
| Lifetime L80B10 Ta=25°C | 70 | hr |

Delivery status

Product weight: 8.25 kg (incl. 0.58 kg packaging).

Manufacture

Manufacturing of the product is divided between Philips Lighting Poland in Pila (for the drivers), Philips Lighting Spain in Valladolid (for the LED boards and the final assembly of the product), and suppliers located in other European countries.

Environment and health during manufacturing

The manufacturing plants of Pila and Valladolid are certified according to ISO 14001 (Environment). In addition, Pila is certified according to OHSAS 18001 (Health and Safety).

Packaging

Packaging materials are cardboard and polyethylene (PE). Packaging weight is 0.58 kg.

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 70,000 hours operation, the equivalent of 17.5 years operation in a roadway luminaire application. During the lifetime, no component is replaced.

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). According to Eurostat and other official collection systems, the collection rate of WEEEs via CRSOs is 85% at maximum. 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.

Further information

Details of the product are published on:
www.lighting.philips.com/coreline-tempo

Calculation rules

Declared unit

The declared unit is a luminaire system, with a total weight of 8.25 kg including packaging, and providing a luminous flux of 26,000 lumens. This luminaire provides sufficient light for various outdoor applications, operated in Europe for 70,000 hours (electricity consumption of 15,190 kWh).

System boundaries

Type of environmental declaration: cradle-to-grave, including recycling benefits (avoided burden).

The following life stages are included:

- Production: raw material extraction, processing, energy and materials; manufacture of modules; assembly and packaging
- Operational energy use (average European energy mix)
- Transport to the area of the user
- Waste processing
- Final disposal for WEEE fraction not recycled
- Recycling of metals from PCBs.

Maintenance, upgrade and reuse scenarios are not included.

Estimates and assumptions

- Background data are used for suppliers' specific processes
- Foreground data are used for the assembly of the luminaire and drivers
- Data on collection and recycling are based on readily available data taken from generic national statistics

Cut-off criteria

Where no data was available, items that represented 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 Ecoinvent database v3.3.

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.

Allocation

In the aggregated module A1-A3, allocation of energy and auxiliaries was used for assembly of the luminaire in the Valladolid factory and assembly of the drivers in the Pila factory.

Methods

- CML - IA baseline V3.04/EU25/ Characterization Excluding long-term emissions.
- Cumulative energy demand V1.1.

Requisite evidence

Data is based on documentation and bill of materials of the product.

References

- Ecoinvent www.ecoinvent.org
- Life Cycle Assessment - Principles and framework (ISO 14040:2006)
- Life Cycle Assessment - Requirements and guidelines (ISO 14044:2006)

LCA scenarios

| Name | Value | Unit |
|---|--------|------|
| Transport to the building site (A4) | | |
| Road transport from manufacturing plant to the customer | | |
| Transport distance | 2200 | km |
| Capacity utilization (including empty runs) | 90 | % |
| Installation into the building (A5) | | |
| Packaging | 0.58 | kg |
| Operational energy use (B6) | | |
| Electricity consumption | 15.190 | kWh |
| Equipment output | 0.217 | kW |
| End of life (C1-C4) | | |
| Collected separately | 6.5 | kg |
| Recycling | 5.0 | kg |
| Incineration | 2.7 | kg |
| Reference service life | | |
| Using the example of a roadway luminaire application | | |
| Reference service life | 17.5 | a |

Disclaimer

All environmental calculations are made in a European context. The calculations are performed on the most commonly used luminaire in the range. The LCA has been performed in accordance with the processes as used by Philips Lighting. Note that the information provided herein is subject to change. Philips Lighting does not give any representation or warranty as to the accuracy or completeness of the information included herein and shall not be liable for any action in reliance thereon. The information presented in this document is not intended as any commercial offer and does not form part of any quotation or contract. Philips Lighting assumes no legal liability or responsibility for any loss or damage resulting from the use of the information thereto given here. For purposes hereof "Philips Lighting" means Philips Lighting N.V. and its subsidiaries and associated companies (directly or indirectly).

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, NO_x, 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.

