

Environmental Product Declaration



In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

Mini Martin luminaire

from

SIA VIZULO



Programme:	The International EPD® System, www.environdec.com
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General information

Programme information

Programme: The International EPD® System
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CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14 Construction products (version 1.11)
PCR review was conducted by: The Technical Committee of the International EPD® System. Chair of the PCR review is Claudia A. Peña. The review panel may be contacted via info@environdec.com .
Independent third-party verification of the declaration and data, according to ISO 14025:2006: <input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification
Third party verifier: Hüdai Kara, Metsims Sustainability Consulting, United Kingdom, www.metsims.com 
Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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Company information

Owner of the EPD: SIA VIZULO

Contact: Sergejs Burtovojs, sergejs.burtovojs@vizulo.com

Description of the organisation:

SIA VIZULO was established in 2012 and since its founding day has grown rapidly into a company exporting luminaires into 38 countries worldwide. VIZULO is a technology driven producer of nature-inspired territory, street, commercial, industrial and architectural LED luminaires. The company puts great emphasis on research and development of high-quality lighting products that deliver outstanding performance throughout the years.

Product-related or management system-related certifications:

LED luminaires are manufactured according to IEC 60598.

SIA VIZULO is certified for ISO 9001, ISO 14001, ISO 45001 and ISO 50001.

Name and location of production site(s):

VIZULO Production, Laucu Lejas, Iecava, LV-3913, Latvia

Product information

At present, VIZULO produces 62 luminaires, and the technical parameters (such as power, correlated colour temperature, lumen output etc.) for each of them can be selected from several options to best suit our clients' needs.

For Mini Martin, the parameters are as follows:

Voltage: 198 - 264 V

Frequencies: 50 - 60 Hz

Power: 5 – 110 W

Color temperature: 2200 - 5700 K

Ambient temperature (ta): -40 ... +50 oC

Estimated life-time: 100 000 h aka 20 years (assuming an average working intensity)

UN CPC code: 465 Electric filament or discharge lamps; arc lamps; lighting equipment; parts thereof (46539)

LCA information

Functional unit / declared unit: Declared unit is 1 piece of Mini Martin luminaire

Reference service life: 100 000 h aka 20 years (assuming an average working intensity)

Time representativeness: Site specific data from producer are based on 1 year average for process data (reference year 2020). Time scope less than 10-years were applied for background data. Time scope less than 2-years were applied for specific data.

Database(s) and LCA software used: GaBi software, GaBi database and EcolInvent database

Description of system boundaries:

The system boundary is Cradle to gate with modules C1–C4 and module D according to EN 15804 + A2. It covers the production of raw materials, all relevant transport down to factory gate, manufacturing by SIA VIZULO, Latvia, transport of deconstructed materials, waste processing and disposal of used luminaires. The review framework comprises the following details:

- Raw materials acquisition and transport,
- Further processing of raw materials,
- Production operations,
- Energy and water consumption,
- Waste management,
- Packaging of the final product for delivery,
- Transport and waste processing,
- Waste incineration with energy recovery, production of recyclable materials.

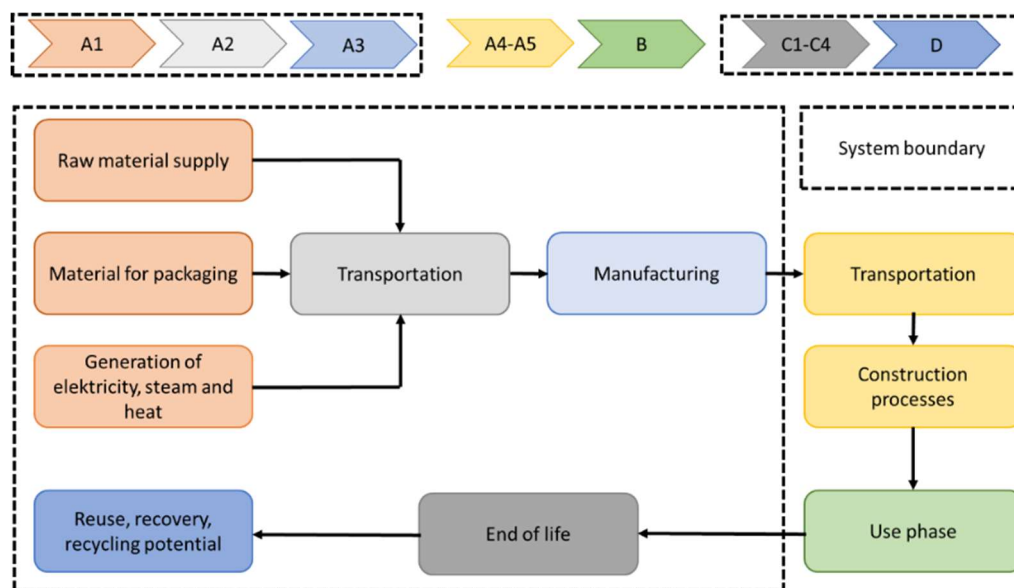


Figure 1 System Boundary of the LCA study conducted on Mini Martin luminaire produced by SIA VIZULO

Cut off rules: The cut-off criterion was chosen based on the used PCR. According to the used PCR, more than 95 % of flows were included.

Allocations: All material and energy flows were assigned to one product. Allocation was not necessary. No secondary fuels or materials are used in production. Generic process data for production of input materials and components were used.

Geographical scope: Europe, Global

More information:

Generation of electricity consumed within VIZULO production was based on the Latvian electricity grid mix.

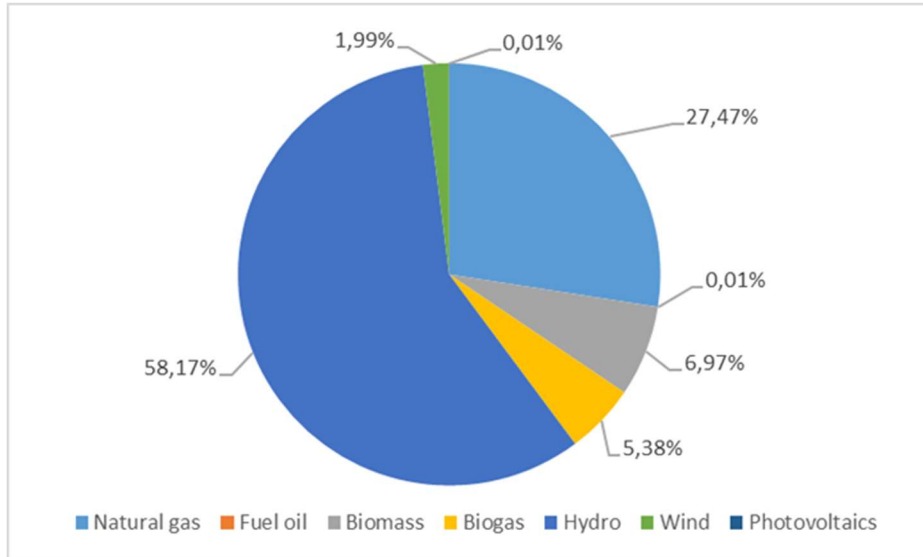


Figure 2 Latvian electricity grid mix from GaBi (reference year 2017)

Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

Table 1 Description of the system boundary

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

(X = Declared, Included in LCA, ND = Module Not Declared)

Content information

The luminaires produced by SIA VIZULO consist of a die-cast aluminium case, tempered glass, protective rubber, LED diodes mounted on a printed circuit board (PCB), screws, wires and electronic controlgear. None of the materials of the luminaire that are exposed to public are listed on the list of Substances of Very High Concern (SVHC).

Table 2 Product content declaration

Material/Component	Mini Martin
Die-cast aluminium (kg)	3,1330
PMMA (kg)	0,0384
Epoxy resin (kg)	0,0544
Stainless steel (kg)	0,0896
Glass (kg)	0,9802
Silicone (kg)	0,0348
Polyester (kg)	0,0050
Polyethylene (kg)	0,0114
Copper (kg)	0,0286
Polycarbonate (kg)	0,0088
Polychloroprene rubber (kg)	0,0172
Aluzinc (kg)	0,0995
LED driver (pcs)	1

PMMA (Polymethyl methacrylate)

Environmental Information

Environmental performance

Environmental indicators shown below are calculated according to ISO 14025 and EN 15804+A2:2019. Results per declared unit – 1 piece of Mini Martin luminaire are presented.

Table 3 Environmental indicators by modules A1-A3, C1-C4 and D

Parameter	A1	A2	A3	C1	C2	C3	C4	D
Climate Change - total [kg CO2 eq.]	3,77E+01	1,04E+00	4,78E-01	0,00E+00	3,14E-02	3,47E-03	1,30E+00	-2,71E+01
Climate Change, fossil [kg CO2 eq.]	3,76E+01	1,04E+00	3,47E-01	0,00E+00	3,11E-02	3,44E-03	4,95E-01	-2,71E+01
Climate Change, biogenic [kg CO2 eq.]	7,41E-02	-7,03E-04	1,30E-01	0,00E+00	-4,00E-05	2,92E-05	8,03E-01	-2,52E-03
Climate Change, land use and land use change [kg CO2 eq.]	1,17E-02	6,65E-03	2,58E-04	0,00E+00	2,57E-04	4,86E-06	1,43E-04	-8,66E-03
Ozone depletion [kg CFC-11 eq.]	4,06E-08	1,22E-16	7,92E-12	0,00E+00	4,00E-18	8,23E-17	9,86E-16	-8,25E-14
Acidification [Mole of H+ eq.]	1,63E-01	1,71E-03	5,71E-04	0,00E+00	3,16E-05	7,15E-06	4,62E-04	-1,01E-01
Eutrophication, freshwater [kg P eq.]	1,97E-03	2,45E-06	9,73E-06	0,00E+00	9,30E-08	9,22E-09	3,68E-07	-1,23E-05
Eutrophication, marine [kg N eq.]	2,25E-02	6,60E-04	2,67E-04	0,00E+00	1,02E-05	1,70E-06	1,81E-04	-1,72E-02
Eutrophication, terrestrial [Mole of N eq.]	2,46E-01	7,49E-03	2,47E-03	0,00E+00	1,21E-04	1,78E-05	2,17E-03	-1,87E-01
Photochemical ozone formation, human health [kg NMVOC eq.]	6,89E-02	1,82E-03	5,39E-04	0,00E+00	2,75E-05	4,61E-06	4,80E-04	-5,14E-02
Resource use, mineral and metals [kg Sb eq.]	7,14E-04	6,95E-08	1,61E-07	0,00E+00	2,39E-09	1,01E-09	1,43E-08	-8,92E-05
Resource use, fossils [MJ]	4,19E+02	1,40E+01	4,19E+00	0,00E+00	4,17E-01	6,11E-02	1,01E+00	-3,61E+02
Water use [m³ world equiv.]	4,67E+00	7,35E-03	1,96E-02	0,00E+00	2,72E-04	5,51E-04	2,55E-01	-1,66E+00

Table 4 Resource use indicators by modules A1-A3, C1-C4 and D

Parameter	A1	A2	A3	C1	C2	C3	C4	D
Use of renewable primary energy (PERE) [MJ]	1,76E+02	6,11E-01	1,19E+00	0,00E+00	2,33E-02	2,82E-02	2,64E-01	-1,17E+02
Primary energy resources used as raw materials (PERM) [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy resources (PERT) [MJ]	1,69E+02	6,11E-01	1,19E+00	0,00E+00	2,33E-02	2,82E-02	2,64E-01	-1,17E+02
Use of non-renewable primary energy (PENRE) [MJ]	5,47E+02	1,40E+01	4,20E+00	0,00E+00	4,18E-01	6,11E-02	1,01E+00	-3,62E+02
Non-renewable primary energy resources used as raw materials (PENRM) [MJ]	9,42E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy resources (PENRT) [MJ]	4,84E+02	1,40E+01	4,20E+00	0,00E+00	4,18E-01	6,11E-02	1,01E+00	-3,62E+02
Input of secondary material (SM) [kg]	9,21E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels (RSF) [MJ]	6,37E-24	0,00E+00	4,72E-10	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non renewable secondary fuels (NRSF) [MJ]	7,48E-23	0,00E+00	5,54E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water (FW) [m3]	4,18E-01	7,04E-04	5,26E-03	0,00E+00	2,66E-05	2,74E-05	6,06E-03	-2,38E-01

Table 5 Output flows and waste categories by modules A1-A3, C1-C4 and D

Parameter	A1	A2	A3	C1	C2	C3	C4	D
Hazardous waste disposed (HWD) [kg]	1,25E-07	5,64E-10	1,71E-07	0,00E+00	2,10E-11	1,62E-11	2,13E-10	-2,71E-08
Non-hazardous waste disposed (NHWD) [kg]	8,14E+00	1,92E-03	1,90E-02	0,00E+00	6,20E-05	4,34E-05	1,70E-01	-5,78E+00
Radioactive waste disposed (RWD) [kg]	2,11E-02	1,57E-05	1,04E-04	0,00E+00	5,05E-07	9,10E-06	3,90E-05	-2,73E-02
Components for re-use (CRU) [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for Recycling (MFR) [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for Energy Recovery (MER) [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported electrical energy (EEE) [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported thermal energy (EET) [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Table 6 Optional indicators by modules A1-A3, C1-C4 and D

Parameter	A1	A2	A3	C1	C2	C3	C4	D
Particulate matter [Disease incidences]	1,64E-06	7,69E-09	4,82E-09	0,00E+00	1,86E-10	6,03E-11	7,94E-09	-9,94E-07
Ionising radiation, human health [kBq U235 eq.]	4,36E+00	2,22E-03	1,72E-02	0,00E+00	7,23E-05	1,49E-03	4,52E-03	-5,91E+00
Ecotoxicity, freshwater [CTUe]	1,79E+02	1,01E+01	6,87E-01	0,00E+00	3,01E-01	2,57E-02	5,11E-01	-1,32E+02
Human toxicity, cancer [CTUh]	1,52E-07	2,00E-10	1,43E-09	0,00E+00	6,08E-12	7,28E-13	2,14E-11	-1,15E-08
Human toxicity, non-cancer [CTUh]	3,89E-07	1,00E-08	3,14E-09	0,00E+00	3,15E-10	2,75E-11	1,11E-09	-2,62E-07
Land Use [Pt]	2,29E+01	3,72E+00	7,91E+00	0,00E+00	1,43E-01	1,93E-02	3,33E-01	-2,40E+01

Additional information

For more information follow <https://www.vizulo.com/>.

Release of dangerous substances during the use stage

There is no health and environmental impacts known during use.

References

ISO 14020:2000 Environmental labels and declarations — General principles, 2000-09

ISO 14025: EN ISO 14025:2006-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures

ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework, 2006-07

ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines, 2006-07

EN 15804+A2:2019 European Committee for Standardization: Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products, 2019

General Programme Instructions of The International EPD® System. Version 3.01.

Product Category Rules (PCR) document for Construction Products (PCR 2019:14 Version 1.1, 2021-02-05)

Ecoinvent: Ecoinvent Centre, www.Eco-invent.org

Sphera: GaBi software version 10, 2021, Sphera solutions.

