Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A1:2013 for:

OAK 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 EPD International AB
Address:	Box 210 60 SE-100 31 Stockholm Sweden
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CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2012:01 Construction products and construction services (version 2.33)
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: ☐ EPD process certification ☒ 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: ☐ Yes ☒ No
EPD owner: SIA VIZULO Bukultu street 11, Riga LV-1005, Latvia **www.vizulo.com,** Contact person: Sergejs Burtovojs, **sergejs.burtovojs@vizulo.com**
LCA author: prof. Ing. Vladimír Kočí, Ph.D.,MBA, Ing. et Ing. Tatiana Trecáková, Ph.D. Šárecká 1962/5, 16000 Prague 6, Czech Republic www.lcastudio.cz

The EPD owner has the sole ownership, liability, and responsibility for the EPD.
EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: SIA VIZULO
Contact: Sergejs Burtovojs, sergejs.burtovojs@vizulo.com
Description of the organisation:
SIA VIZULO has been 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 OAK, the parameters are as follows:
Voltage: 220-240 V
Frequencies: 50-60 Hz
Power: up tp 90 W
Lumen output: up to 14000 lm
Efficacy: up to 170 lm/W
Color temperature: 2200 - 5700 K
CRI: >80
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 OAK luminaire
Reference service life: Reference Service Lives depend on the respective applications.
Time representativeness: Site specific data from producer are based on 1 year average for process data (reference year 2020) and on direct measurements (performed in 2021) of the data related to composition of the product. 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 EcoInvent database
Description of system boundaries:
The system boundary is "Cradle to gate" (A1–A3). It covers the production of raw materials, all relevant transport down to factory gate and manufacturing by SIA VIZULO, Latvia. 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.

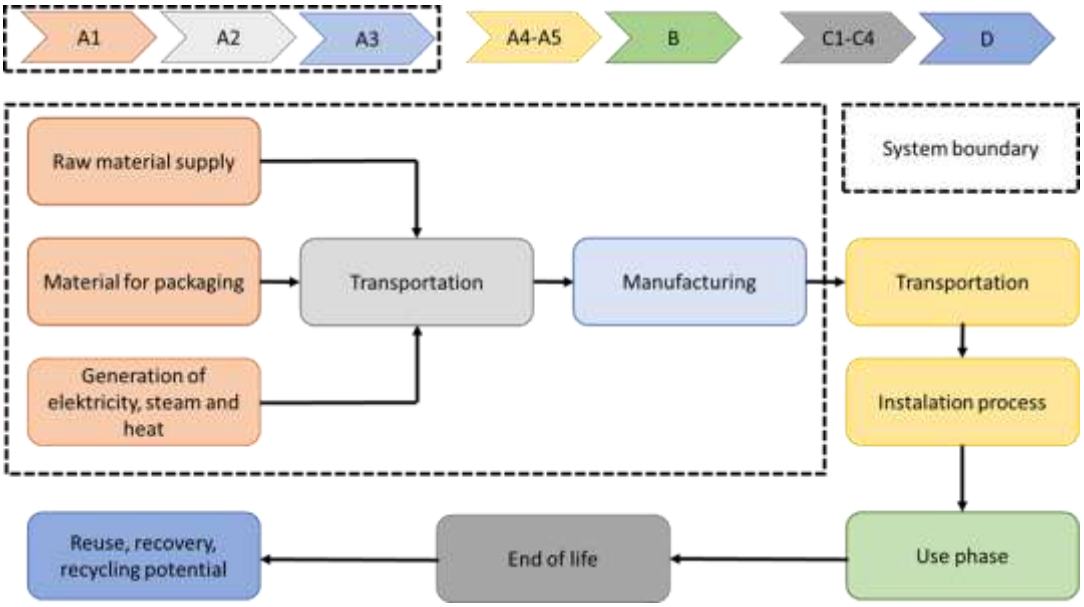

Figure 1 System Boundary of the LCA study conducted on OAK luminaire produced by SIA VIZULO

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:
Production of electricity spent within VIZULO production was based on the Latvian electricity grid mix.

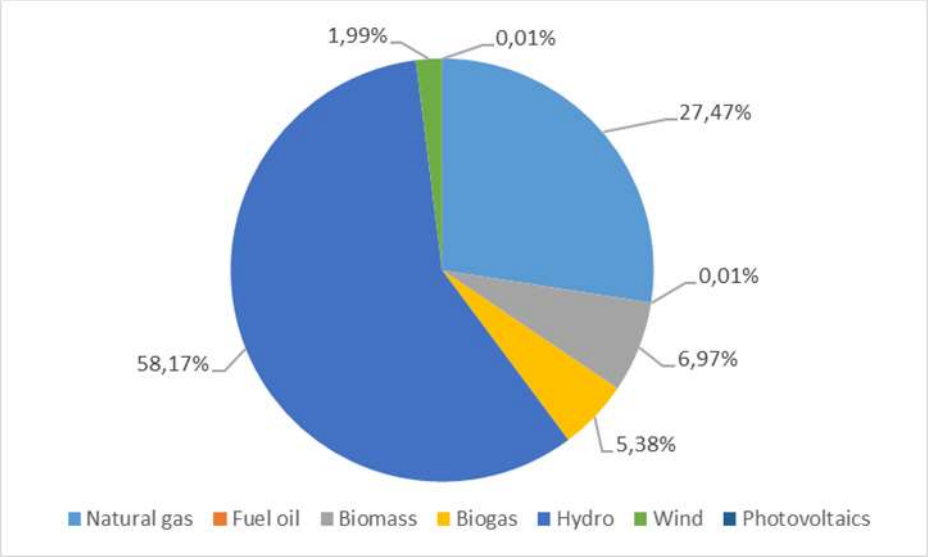

Figure 2 Latvian electricity grid mix from GaBi (reference year 2017)

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	MND
	Assembly	A5	MND
B1 - B7 Use stage	Use	B1	MND
	Maintenance	B2	MND
	Repair	B3	MND
	Replacement	B4	MND
	Refurbishment	B5	MND
	Operational water use	B6	MND
	Operational energy use	B7	MND
C1 - C4 End of life stage	De-construction	C1	MND
	Transport	C2	MND
	Waste processing	C3	MND
	Disposal	C4	MND
D Benefits and loads beyond the system boundaries	Reuse- Recycling - Recovery Potential	D	MND

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

Content information

The luminaires produced by SIA VIZULO consist of a steel case, PMMA prism, LED diodes mounted on a printed circuit board (PCB), screws, wires and electronic controlgear. None of the materials of the luminaire that are accessible to the public are listed on the list of Substances of Very High Concern (SVHC).

Table 2 Product content declaration

Material/Component	**OAK**
Aluzinc steel (kg)	1,4338
Epoxy resin (kg)	0,0804
Polyester (kg)	0,005
PMMA (kg)	0,056
EPDM rubber (kg)	0,0076
Copper (kg)	0,0193
PPA (kg)	0,0024
Tin (kg)	0,002
Polyolefin (kg)	0,00015
Polycarbonate (kg)	0,014
Polyethylene (kg)	0,01488
Stainless steel (kg)	0,0193
Aluminium alloy 6063-T5 (kg)	0,31
Aluminium (kg)	0,3613
Brass (kg)	0,0001
Zinc (kg)	0,0006
PVC (kg)	0,0002
LEDs (pcs)	352
LED driver (pcs)	1

PMMA (Polymethyl methacrylate), EPDM (Ethylene propylene diene monomer), PPA (Polyphthalamide), PVC(Polyvinyl chloride)

Environmental Information

Environmental performance

Environmental indicators shown below are calculated according to ISO 14025 and EN 15804+A1:2013. Results per declared unit – 1 piece of OAK luminaire are presented.

Table 3 Environmental indicators by modules A1-A3

Stage	A1	A2	A3
Global warming potential (GWP) [kg CO2 eq.]	2,17E+01	8,57E-01	4,66E-01
Ozone Depletion Potential (ODP) [kg R11 eq.]	3,76E-07	4,17E-15	1,21E-11
Acidification potential (AP) [kg SO2 eq.]	6,89E-02	2,06E-03	5,66E-04
Eutrophication potential (EP) [kg Phosphate eq.]	2,34E-02	4,30E-04	2,17E-04
Photochemical Ozone Creation Potential (POCP) [kg Ethene eq.]	9,72E-03	1,73E-04	3,01E-05
Abiotic depletion potential for non fossil resources (ADPE) [kg Sb eq.]	8,47E-04	7,41E-08	1,91E-07
Abiotic depletion potential for fossil resources (ADPF) [MJ]	2,69E+02	1,14E+01	5,20E+00

Table 4 Resource use indicators by modules A1-A3

Stage	A1	A2	A3
Use of renewable primary energy (PERE) [MJ]	4,56E+01	1,23E+00	2,67E+00
Primary energy resources used as raw materials (PERM) [MJ]	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy resources (PERT) [MJ]	3,90E+01	1,23E+00	2,67E+00
Use of non-renewable primary energy (PENRE) [MJ]	3,64E+02	1,23E+01	5,57E+00
Non-renewable primary energy resources used as raw materials (PENRM) [MJ]	9,42E-01	0,00E+00	0,00E+00
Total use of non-renewable primary energy resources (PENRT) [MJ]	3,01E+02	1,23E+01	5,57E+00
Input of secondary material (SM) [kg]	9,21E-03	0,00E+00	0,00E+00
Use of renewable secondary fuels (RSF) [MJ]	1,01E-23	0,00E+00	5,19E-09
Use of non renewable secondary fuels (NRSF) [MJ]	1,19E-22	0,00E+00	6,10E-08
Use of net fresh water (FW) [m3]	1,32E-01	1,24E-03	5,74E-03

Table 5 Output flows and waste categories by modules A1-A3

Stage	A1	A2	A3
Hazardous waste disposed (HWD) [kg]	6,82E-08	7,94E-10	2,06E-07
Non-hazardous waste disposed (NHWD) [kg]	8,73E-01	2,75E-03	1,68E-02
Radioactive waste disposed (RWD) [kg]	4,16E-03	3,45E-04	1,35E-04

Additional information

The LED luminaires by VIZULO are manufactured according to IEC 60598.

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

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

Release of dangerous substances during the use stage

No health and environmental impacts during use is observed.

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+A1:2013 European Committee for Standardization: Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products, 2012
General Programme Instructions of The International EPD® System. Version 3.01.
Product Category Rules (PCR) document for Construction Products (PCR 2012:01 Version 2.33, 2020-09-18)
Ecoinvent: Ecoinvent Centre, www.Eco-invent.org
Sphera: GaBi software version 10, 2021, Sphera solutions.

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