

Environmental Product Declaration



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

[Mustang luminaire]

from

[SIA VIZULO]



Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-05890
Publication date:	2022-06-02
Valid until:	2027-06-01

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

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:

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

LCA author: LCA Studio s.r.o.

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 to fulfil the requirements of IEC 60598-1, IEC 60598-2-3, IEC 60598-2-5. 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

Product name: Mustang

Product identification: MSX XXX XXX XXX XXXXX XXX XXX (see Model number overview in Additional Information)

Product description:

At present, VIZULO produces over 60 different 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 Mustang, the values are as follows:

Voltage: 198 - 264 V

Frequencies: 50-60 Hz

Power: 5 - 200 W

Color temperature: 3000/4000 K

CRI: >70 / >80

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

Degree of protection against the ingress of dust and moisture: IP66

Degree of protection against mechanical impact: IK08

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 Mustang 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 EcoInvent 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.

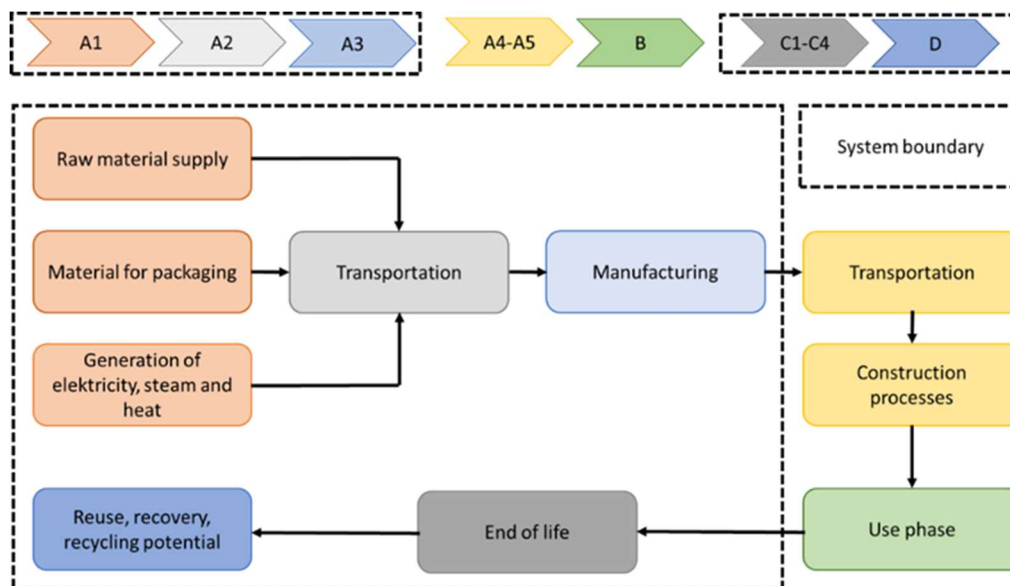


Figure 1 System Boundary of the LCA study conducted on Mustang luminaire produced by SIA VIZULO

More information:

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

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

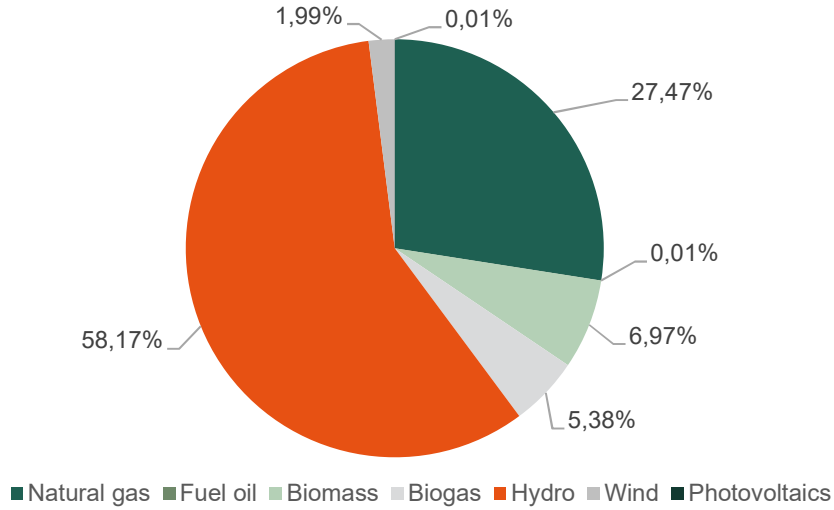


Figure 2 Latvian electricity grid mix from GaBi (reference year 2017)

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

	Product stage			Construction process stage		Use stage						End of life stage				Resource recovery stage	
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing		Disposal
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	x	x	x	ND	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x
Geography	GLO	GLO	LV	NR	NR	NR	NR	NR	NR	NR	NR	NR	GLO	GLO	GLO	GLO	GLO
Specific data used	>99%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	NR					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	NR					-	-	-	-	-	-	-	-	-	-	-	-

Note: X = Declared, Included in LCA, ND = Module Not Declared, NR = Not Relevant

Note: The LCA was modelled for specific product at plant so there is no variation.

Note: All primary data is taken from VIZULO plant (Laucu Lejas, Iecava, Latvia) and GaBi and Ecoinvent were used for secondary data.

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
PMMA	0,8448	0	0
Silicone	0,2962	0	0
Ceramics	0,0132	0	0
Polyamide	0,0594	0	0
Aluminium	26,9120	100	0
Glass	4,8100	0	0
Stainless steel	0,3202	0	0
Steel	0,0000	0	0
PVC	0,0444	0	0
Copper	0,0423	0	0
EPR rubber	0,0000	0	0
Polyester	0,3760	0	0
Carbon steel	1,5200	0	0
Brass	0,0600	0	0
LED driver	4 pcs	0	0
TOTAL	39,2000	69	0
Packaging materials	Weight, kg	Weight-% (versus the product)	
Paper	0,0030	0,01	
Cardboard	1,1400	2,91	
TOTAL	1,1430	2,92	

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
No substances from the SVHC list to report.			

Environmental Information

Potential environmental impact – mandatory indicators according to EN 15804

Results per functional or declared unit										
Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	1,87E+02	5,19E+00	6,67E-01	1,93E+02	0,00E+00	4,91E-01	2,53E-02	1,27E+01	-2,34E+02
GWP-biogenic	kg CO ₂ eq.	-5,13E-01	-5,73E-04	2,04E-01	-3,10E-01	0,00E+00	-6,78E-04	2,28E-04	1,58E+00	-4,04E-02
GWP-luluc	kg CO ₂ eq.	3,38E-02	2,61E-02	2,00E-03	6,19E-02	0,00E+00	2,74E-03	5,35E-06	9,04E-04	-6,68E-02
GWP-total	kg CO ₂ eq.	1,86E+02	5,22E+00	8,73E-01	1,92E+02	0,00E+00	4,93E-01	2,55E-02	1,43E+01	-2,34E+02
ODP	kg CFC 11 eq.	3,21E-09	5,07E-13	1,67E-11	3,23E-09	0,00E+00	2,94E-14	3,70E-13	3,54E-12	-3,58E-11
AP	mol H ⁺ eq.	3,63E-01	7,93E-03	1,10E-03	3,72E-01	0,00E+00	4,98E-04	5,55E-05	3,55E-03	-8,51E-01
EP-freshwater	kg PO ₄ ³⁻ eq.	6,22E-02	1,08E-03	3,39E-04	6,36E-02	0,00E+00	7,36E-05	5,64E-06	4,89E-04	-5,26E-02
EP-freshwater	kg P eq.	3,97E-02	1,63E-05	1,92E-05	3,97E-02	0,00E+00	1,47E-06	7,38E-08	3,32E-06	-1,07E-04
EP-marine	kg N eq.	5,70E-02	2,51E-03	5,09E-04	6,00E-02	0,00E+00	1,61E-04	1,25E-05	1,15E-03	-1,47E-01
EP-terrestrial	mol N eq.	6,10E-01	2,88E-02	4,65E-03	6,43E-01	0,00E+00	1,93E-03	1,31E-04	1,50E-02	-1,60E+00
POCP	kg NMVOC eq.	2,12E-01	6,92E-03	1,01E-03	2,20E-01	0,00E+00	4,38E-04	3,37E-05	3,15E-03	-4,40E-01
ADP-minerals&metals*	kg Sb eq.	9,18E-03	4,48E-07	3,17E-07	9,18E-03	0,00E+00	4,10E-08	6,89E-09	1,45E-07	-1,63E-04
ADP-fossil*	MJ	1,26E+03	6,92E+01	8,42E+00	1,34E+03	0,00E+00	6,56E+00	4,59E-01	1,08E+01	-3,12E+03
WDP	m ³	1,41E+01	6,08E-02	3,17E-02	1,42E+01	0,00E+00	4,40E-03	5,77E-03	2,01E+00	-1,36E+01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit										
Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
GWP-GHG [1]	kg CO ₂ eq.	1,84E+02	5,10E+00	8,60E-01	1,90E+02	0,00E+00	4,82E-01	2,50E-02	1,42E+01	-2,30E+02
Particulate matter	Disease incidences	3,04E-06	5,68E-08	9,16E-09	3,11E-06	0,00E+00	2,90E-09	4,60E-10	6,55E-08	-8,38E-06
Ionising radiation, human health	kBq U235 eq.	9,46E+00	3,04E-02	3,54E-02	9,53E+00	0,00E+00	1,19E-03	1,24E-02	4,73E-02	-5,13E+01
Ecotoxicity, freshwater	CTUe	4,01E+02	4,48E+01	1,31E+00	4,47E+02	0,00E+00	4,55E+00	2,01E-01	7,41E+00	-1,13E+03
Human toxicity, cancer	CTUh	5,76E-07	1,01E-09	1,49E-09	5,79E-07	0,00E+00	9,18E-11	5,77E-12	4,22E-10	-9,74E-08
Human toxicity, non-cancer	CTUh	1,10E-06	5,10E-08	6,32E-09	1,16E-06	0,00E+00	4,76E-09	2,11E-10	6,28E-08	-2,25E-06
Land Use	Pt	1,27E+03	2,82E+01	1,41E+01	1,31E+03	0,00E+00	2,26E+00	1,65E-01	3,08E+00	-2,03E+02

[1] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Use of resources

Results per functional or declared unit										
Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
PERE	MJ	6,88E+02	6,95E+00	2,41E+00	6,97E+02	0,00E+00	3,73E-01	2,55E-01	2,91E+00	-1,01E+03
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	0,00E+00
PERT	MJ	5,48E+02	6,95E+00	2,41E+00	5,57E+02	0,00E+00	3,73E-01	2,55E-01	2,91E+00	-1,01E+03
PENRE	MJ	3,96E+03	6,94E+01	8,43E+00	4,04E+03	0,00E+00	6,57E+00	4,59E-01	1,08E+01	-3,13E+03
PENRM	MJ	2,00E+01	0,00E+00	0,00E+00	2,00E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	2,62E+03	6,94E+01	8,43E+00	2,70E+03	0,00E+00	6,57E+00	4,59E-01	1,08E+01	-3,13E+03
SM	kg	1,95E-01	0,00E+00	0,00E+00	1,95E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	3,08E-10	3,08E-10	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	3,61E-09	3,61E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	5,70E-01	5,93E-03	1,02E-02	5,86E-01	0,00E+00	4,22E-04	2,43E-04	4,82E-02	-2,03E+00
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

Waste production and output flows

Waste production

Results per functional or declared unit										
Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3,25E-07	1,52E-09	3,37E-07	6,64E-07	0,00E+00	3,15E-11	3,97E-11	1,40E-09	-2,29E-07
Non-hazardous waste disposed	kg	1,01E+01	1,35E-02	3,37E-02	1,01E+01	0,00E+00	9,42E-04	3,46E-04	2,79E+00	-5,01E+01
Radioactive waste disposed	kg	5,64E-02	3,04E-04	2,07E-04	5,69E-02	0,00E+00	8,10E-06	7,33E-05	3,98E-04	-2,38E-01

Output flows

Results per functional or declared unit										
Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
Components for re-use	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	0,00E+00
Material for recycling	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	0,00E+00
Materials for energy recovery	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	0,00E+00
Exported energy, electricity	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	0,00E+00
Exported energy, thermal	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	0,00E+00

References

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)

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

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

Sphera: GaBi software version 10, 2021, Sphera solutions

