

Product Environmental Profile for outdoor urban lighting

Reference Product:
LUNIO



Registration number: ACL6-00001-V01.01-EN		Drafting Rules	PCR-ed4-EN-2021 09 06
		Supplemented by	PSR-0014-ed2.0-EN-2023 07 13
Verifier accreditation number: VH51		Information and reference documents: www.pep-ecopassport.org	
Date of issue: 10-2025		Validity period	5 years
Independent verification of the declaration and data, in compliance with ISO 14025 : 2006			
Internal ☐ / External ☒			
The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain)			
PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019 The components of the present PEP may not be compared with components from any other program.			
Document complies with ISO 14025:2006 Environmental labels and declarations. Type III environmental declarations.			

GENERAL INFORMATION



COMPANY

Arcluce S.p.A. is an Italian company specialized in the design and manufacture of indoor and outdoor lighting solutions. Arcluce designs, develops, and engineers its products within its Research & Development department located in Via I Maggio, 6, 20070 San Zenone al Lambro MI.

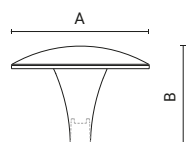
For more details regarding Arcluce and the products cover by the PEP, visit
<https://www.arcluce.it/>

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REFERENCE ARTICLE

Urban lighting LUNIO (art. code 0875002)

LUNIO is a post-top luminaire for urban lighting which combines elegance and innovation with the highest quality of light, without producing light pollution. Body in die-cast aluminum alloy with low copper content (EN 47100). QUALICOAT2 validated multi-stage painting process tested in salt spray according to ISO 9227 for aggressive environments of class C4. On request, resistance class C5. Gaskets in silicone rubber with controlled hardness, stabilized against UV rays. External screws in AISI 316 stainless steel chemically passivated to contrast galvanic corrosion. Color of the screws combined with the color of the fixture for better aesthetic coordination. Driver LED with protection against overheating and voltage spikes or network overvoltage in common and differential mode. Luminaire built in compliance with EN 60598-1 and EN 60598-2-3 standards, complete with CE marking in compliance with EU directives.



Technical information	
Light source:	LED, 3000K, CRI>80
Luminaire efficacy:	92lm/W
Luminaire:	20W, 1850 lm
Luminaire lifetime:	100.000 hours
High colour consistency:	< 3 SDCM
Power supply:	220-240V 50/60Hz
Wiring:	DALI
Optics:	type IV
Performances tested at:	25°C
Size:	A: Ø 520mm / B: 377mm

Elements supplied with the luminaire	
Light Source	LED module
Control Gear	Constant current dimmable driver

FUNCTIONAL UNIT

Provide lighting that delivers an outgoing artificial luminous flux of 1.000 lumens during a reference lifetime of 35.000 hours.

Based on the assigned lifetime according to EN 13201-5:2016 for Outdoor application (urban zone/ open space), the luminaire has an operational lifetime of 25 years

Consequently, the reference flow is calculated as: $(1.000/1.850) \times (35.000/100.000) = \mathbf{0,1892}$



PRODUCTS INCLUDED IN THE PEP

The following series belong to the same homogeneous environmental family as the reference product.

PRODUCT	CODE	Weight [kg]	Power [W]	Lumen@Ta=25°C [lm]
LUNIO	0875010	8.691	41	4300
LUNIO	0875018	9.071	57	6050
LUNIO	0875022	9.071	80	8400
MIKO GRANDE	0886010	4.235	30	3200
MIKO GRANDE	0886011	4.615	48	5400
BERG	0887000	8.849	18	1950
BERG	0887001	8.855	38	4300
BERG	0887002	9.235	68	7650
LUNIO7	0876020	11.64	21	2850
LUNIO7	0876021	11.646	40	5600
LUNIO7	0876022	12.026	77	10500
LUNIO-STREET	0877020	10.462	21	2850
LUNIO-STREET	0877021	10.468	40	5600
LUNIO-STREET	0877022	10.848	77	10500
FORMAT1	0884020	6.857	21	2700
FORMAT1	0884021	6.863	40	5200
FORMAT1	0884022	7.243	77	9500
ECO1	0841010	4.998	15	1750
ECO1	0841020	4.998	27	3300
ECO2	0842010	6.575	52	6800
ECO2	0842020	6.443	106	12900
CONO	0883000	5.813	35	4300
VICTORY	0880030	12.061	40	5150
VICTORY	0880031	12.441	75	10050
VICTORY	0880032	12.309	113	14900

Technical Data Sheet of the products included in the Environmental Profile available at <https://www.arcluce.it>



MATERIALS AND SUBSTANCES

All useful measures have been adopted to ensure that the materials used in the composition of the product do not contain any substances banned by the legislation in force at the time of marketing.

MATERIAL TYPE	Weight [kg]	Share (%)
Product		
Aluminium	5.580	52.0%
Glass	2.119	19.7%
Other Metals	0.357	3.3%
Other	0.279	2.6%
Driver LED	0.189	1.8%
Plastic	0.100	0.9%
LED	0.085	0.8%
Packaging		
Paper	1.991	18.5%
Other	0.035	0.3%
Total mass of reference product:	10.735	



MANUFACTURING

These products are manufactured by Arcluce at the plant located in Via I Maggio, 6, 20070 San Zenone al Lambro, Italy. Within its production process, Arcluce makes use of selected subcontractors to perform specific manufacturing stages. These typically include specialized operations such as surface treatments.

By outsourcing these phases to qualified partners, Arcluce ensures high-quality finishes and compliance with technical standards, while retaining full control over design, assembly, and final testing in-house.



DISTRIBUTION

From Arcluce S.p.A. plant the bollard lights are shipped to the final destinations around the world. as described below:

Country	Share
EMEA	70%
UAE	30%



INSTALLATION

The impact associated with the installation of the product is considered negligible and therefore not accounted for. Only the end of life scenario of the packaging material is considered in this phase. The scenario set up by the PSR-0014-ed2.0-EN-2023 07 13 was used.



USE AND MAINTENANCE

The module LED has a declared service life of 150.000 hours L70 – B50. During the service life, no maintenance nor replacement is required.

The driver has a declared service life of 100.000 h B10. Therefore, no replacement has been considered.

Luminaire with light management function applied.

The electricity mix has been modelled in accordance with the product distribution.

Electricity, low voltage {RER} market group for electricity, low voltage Cut-off, U	70%
Electricity, low voltage {AE} market for electricity, low voltage Cut-off, U	30%



END OF LIFE

Considering the complexity and the lack of knowledge of the electric and electronic recycling channel and processes, the scenario set up by the PSR-0014-ed2.0-EN-2023 07 13 was used.



ENVIRONMENTAL IMPACTS

Evaluation of the environmental impact covers the following life cycle stages: raw materials, manufacturing, distribution, installation, use and end of life (EoL). This environmental declaration has been developed by considering an outgoing artificial luminous flux of 1,000 lumens over a reference lifetime of 35,000 hours.

Software	Simapro 10.2.0.2
Database	Ecoinvent 3.11
Data reference year	2024
Geographical representativeness	Global
Energy models	Manufacturing: Italian residual mix – Medium Voltage Use: Mix in accordance with distribution – Low Voltage
Reference flow/declared unit	$(1.000/1.850) \times (35.000/100.000) = 0,1892$

Damage Classification	Unit	Manufacturing	Distribution	Installation	Use	End of Life	Tot
Climate change - total	kg CO2 eq	8.35E+00	3.40E-01	2.32E-01	7.05E+01	9.40E-01	8.03E+01
Climate change - Fossil	kg CO2 eq	8.43E+00	3.40E-01	6.84E-02	6.87E+01	4.38E-01	7.80E+01
Climate change - Biogenic	kg CO2 eq	-1.02E-01	5.97E-05	1.64E-01	1.61E+00	5.01E-01	2.17E+00
Climate change - Land use and LU change	kg CO2 eq	1.66E-02	1.63E-05	2.77E-06	1.35E-01	1.15E-04	1.52E-01
Ozone depletion	kg CFC11 eq	5.06E-04	4.17E-09	1.09E-10	1.21E-06	1.72E-09	5.07E-04
Acidification	mol H+ eq	1.01E-01	2.73E-03	5.56E-05	2.49E-01	6.21E-04	3.53E-01
Eutrophication. freshwater	kg P eq	6.18E-04	1.98E-06	9.57E-08	4.51E-03	9.50E-06	5.14E-03
Eutrophication. marine	kg N eq	1.56E-03	7.56E-04	3.44E-05	3.68E-02	4.29E-04	3.96E-02
Eutrophication. terrestrial	mol N eq	2.27E-01	8.38E-03	2.42E-04	4.10E-01	1.86E-03	6.48E-01
Photochemical ozone formation	kg NMVOC eq	3.71E+01	2.56E-03	7.87E-05	1.67E-01	7.01E-04	3.73E+01
Resource use. minerals and metals	kg Sb eq	1.67E-04	2.31E-08	2.36E-09	3.26E-06	1.44E-06	1.72E-04
Resource use. fossils	MJ	1.56E+01	4.39E+00	9.46E-02	1.48E+03	1.35E+00	1.51E+03
Water use*	m3 depriv.	9.59E+01	5.08E-03	9.66E-04	1.12E+01	-1.04E-01	1.07E+02
Particulate matter	disease inc.	6.77E-04	1.91E-08	6.40E-10	5.50E-07	1.08E-08	6.78E-04
Ionising radiation	kBq U-235 eq	1.91E+01	3.39E-04	2.48E-05	1.03E+01	2.50E-03	2.95E+01
Ecotoxicity. freshwater	CTUe	1.58E+01	3.88E-01	1.25E+00	9.67E+01	1.02E+01	1.24E+02
Human toxicity. cancer	CTUh	6.99E-10	2.88E-11	2.84E-11	6.17E-09	7.39E-11	7.00E-09
Human toxicity. non-cancer	CTUh	1.85E-08	1.90E-09	8.70E-10	2.57E-07	9.86E-09	2.88E-07
Land use	Pt	1.87E+00	3.91E-02	2.44E-02	1.22E+02	5.96E-01	1.24E+02
Use of renewable primary energy. excluding renewable primary energy resources used as raw materials	MJ	1.30E+01	7.83E-03	8.77E-04	2.74E+02	6.85E-02	2.87E+02
Use of renewable primary energy resources used as raw materials	MJ	2.60E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.60E-02

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Damage Classification	Unit	Manufacturing	Distribution	Installation	Use	End of Life	Tot
Total use of renewable primary energy resources	MJ	1.30E+01	7.83E-03	8.77E-04	2.74E+02	6.85E-02	2.87E+02
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	MJ	1.62E+01	4.39E+00	9.48E-02	1.51E+03	1.37E+00	1.53E+03
Use of non-renewable primary energy resources used as raw materials	MJ	4.25E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.25E-03
Total use of non-renewable primary energy resources	MJ	1.62E+01	4.39E+00	9.48E-02	1.51E+03	1.37E+00	1.53E+03
Secondary material	kg	5.13E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.13E+00
Renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water*	m3	5.87E-01	1.75E-04	5.37E-05	7.01E-01	-2.14E-03	1.29E+00
Total use of primary energy during the life cycle	MJ	2.91E+01	4.40E+00	9.57E-02	1.78E+03	1.44E+00	1.82E+03
Hazardous waste disposed	kg	3.04E-03	6.76E-05	2.74E-05	7.52E-07	6.71E-03	9.85E-03
Non-hazardous waste disposed	kg	1.17E-01	1.66E-02	3.19E-04	2.73E-02	6.74E-01	8.36E-01
Radioactive waste disposed	kg	1.40E-04	1.20E-05	1.89E-07	1.55E-08	8.41E-03	8.56E-03
Component for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	2.36E-02	0.00E+00	1.16E+00	0.00E+00	3.61E+00	4.80E+00
Material for energy recovery	kg	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
Biogenic carbon content of the product	kg of C	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon content of the associated packaging	kg of C	5.25E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.25E-01



EXTRAPOLATION COEFFICIENTS

The extrapolation coefficients are given for the environmental impact of the FU, which is the emission of an outgoing artificial luminous flux of 1,000 lumens over 35,000 hours. For each life cycle stage, the environmental impacts of the product are calculated by multiplying the reference product impacts of the declaration with the extrapolation coefficient. The "Total" column shall be calculated by adding the environmental impacts of each life cycle stage.

PRODUCT	ARTICLE CODE	A1-A3; C1-C4	A4	B2	B6
LUNIO	0875010	0.429	0.430	0,430	0.882
LUNIO	0875018	0.318	0.316	0,306	0.871
LUNIO	0875022	0.229	0.228	0,220	0.881
MIKO GRANDE	0886010	0.281	0.278	0,265	0.867
MIKO GRANDE	0886011	0.182	0.177	0,157	0.822
BERG	0887000	0.964	0.961	0,948	0.854
BERG	0887001	0.437	0.436	0,430	0.817
BERG	0887002	0.256	0.254	0,242	0.822
LUNIO7	0876020	0.868	0.859	0,825	0.682
LUNIO7	0876021	0.442	0.438	0,402	0.661
LUNIO7	0876022	0.243	0.240	0,224	0.678
LUNIO-STREET	0877020	0.780	0.709	0,403	0.682
LUNIO-STREET	0877021	0.397	0.361	0,205	0.661
LUNIO-STREET	0877022	0.219	0.199	0,109	0.678
FORMAT1	0884020	0.539	0.468	0,159	0.719
FORMAT1	0884021	0.280	0.243	0,083	0.712
FORMAT1	0884022	0.162	0.140	0,045	0.750
ECO1	0841010	0.607	0.548	0,294	0.793
ECO1	0841020	0.322	0.290	0,156	0.757
ECO2	0842010	0.205	0.184	0,093	0.707
ECO2	0842020	0.106	0.095	0,049	0.760
CONO	0883000	0.287	0.252	0,101	0.753
VICTORY	0880030	0.497	0.495	0,483	0.718
VICTORY	0880031	0.263	0.260	0,247	0.690
VICTORY	0880032	0.175	0.174	0,167	0.702