



Product Environmental Profile of ARQUE

Escape route emergency lighting

Reference product: Q-200L



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Registration number: NORM-00005-V01.01-EN	Rules "PCR-ed4-EN 2021 09 06" Supplemented by "PSR-0007-ed2.1-EN-2023 12 08"
Verifier accreditation number: V45	Information and reference documents: www.pep-ecopassport.org
Date of issue: 11-2025	Validity period: 5 years
Independent verification of the declaration and data, in compliance with ISO 14025:2010: Internal <input type="checkbox"/> External <input checked="" type="checkbox"/>	
The PCR review was conducted by a panel of experts chaired by [...]	
PEP are compliant with XP C08-100-1:2016 and EN 50693:2019 or NF E38-500 :2022 The components of the present PEP may not be compared with components from another program.	
Document in compliance with ISO 14025:2010 "Environmental labels and declarations. Type III environmental declarations"	



Environmentally Light!





Emergency lighting



NORMALUX
by Normagrup



1. GENERAL INFORMATION

1.1 COMPANY INFORMATION

*"Lighting the future with efficient, safe and sustainable
efficient, safe and sustainable technological solutions"*

The strategic approach of our corporate culture is based on a commitment to innovation, industrial excellence, and sustainability as fundamental pillars for moving toward a responsible future.

At Normagrup Technology, we are firmly committed to domestic manufacturing, ongoing research and technological development, and respect for sustainability, through a comprehensive approach that encompasses environmental, social, and economic dimensions, driving ethical and responsible growth.

Since its founding in 1971, the company has undergone a continuous process of development and expansion, becoming a benchmark in the technical lighting and safety sector, with a presence in various international markets. Its production model is governed by a commitment to innovation, care for the planet, occupational safety, equal opportunities, and contribution to local development.

We strive to bring innovative solutions to the market, always guided by a sixth sense engraved in our DNA: **the sense of technology.**





Everything we do is driven by the core principles of the Normagrup DNA:



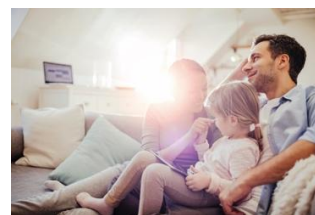
Innovation

Imagining, creating, and daring to take the road less traveled is the only way to build the future.



Safety

Our very first development was an emergency light fixture, and since then, safety has remained a constant priority at Normagrup.



Confort y control

Our developments aim to make life more comfortable for everyone, with simple and intuitive operation.



Design

We care about the aesthetics and appearance of our products to create pleasant environments



Quality

The customer is the absolute priority of our work, and the quality of our products and services is always aimed at achieving their maximum satisfaction.



Sustainability

We design efficient products based on eco-design principles and with a life cycle aligned with circular economy principles.



Owner of the PEP: Normagrup Technology, S.A.

★ Location of production and assembly site:
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ENVIRONMENTAL COMMITMENT OF THE COMPANY

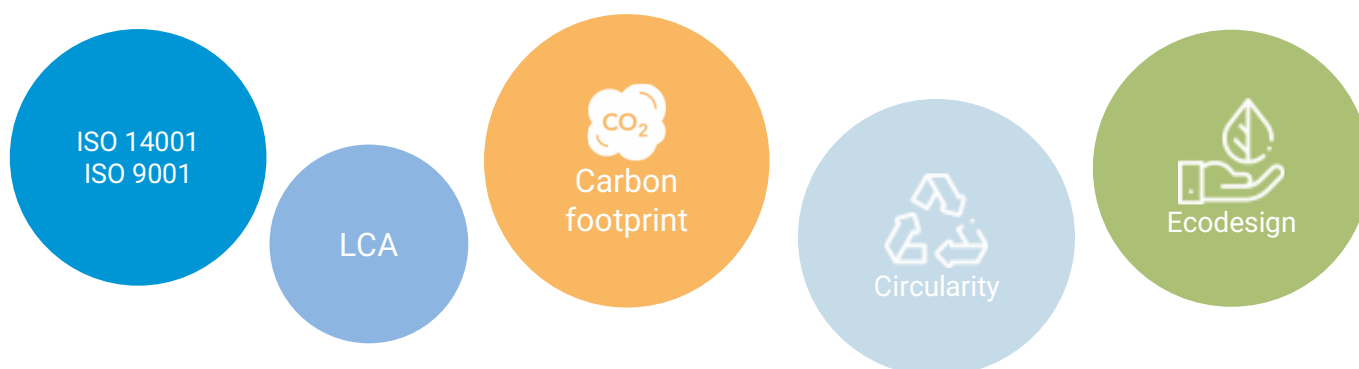
Normagrup Technology is a global company dedicated to the design, manufacture, and marketing of innovative technological solutions in lighting, signage, and emergency and detection systems, backlit fabrics, and hospital headwalls.

Since its origins, Normagrup has integrated environmental protection as a key pillar of its activity, implementing measures aimed at preventing, reducing, and controlling the environmental impacts associated with its production processes and products.

Driven by this strong commitment, an integrated quality and environmental management system was established according to ISO 9001:2015 and ISO 14001:2015, respectively, based on a holistic approach to the continuous improvement of our processes. This enables us to advance toward efficient and resource-optimized manufacturing, minimize waste and emissions, and incorporate sustainability and efficiency criteria at every stage of our products' life cycle.

This vision is embodied in a strong commitment to evaluating the environmental impact of our products through Life Cycle Assessment (LCA), a key tool for objectively quantifying impacts from the manufacturing phase to end-of-life disposal. This approach allows us to progress toward designing safer products that integrate sustainability criteria from the outset, guiding our decisions toward continuous improvement.

The results of this study are reflected in this Environmental Product Declaration (EPD), which serves as a key element for the improvement and transparency of our products.





1.2 PRODUCT DESCRIPTION AND METHODOLOGY

This Environmental Product Declaration (EPD), represents the Arque Q-200L emergency lighting family, distinguished by the following technical characteristics:

Table 1. Technical characteristics

NORMALUX Arque		Emergency Lighting Ref. Q-200L
LED		UNE 60598-2-22 230V 50/60HZ
Emergency Lighting: ARQUE. Reference: Q-200L, manufactured by Normalux. Lumens 190 lm. Autonomy (h) 1h. Operating mode: Non-Maintained. Installation: Surface Mounting. Light source: Led. Battery of: Ni-Cd 3.6V/750mAh. IP: 44. IK: 09. Version: Standard. Color: White. Casing: Polycarbonate. Voltage: 230V 50/60Hz. Dimensions (mm): 97 x 97 x 47 mm. Manufactured according to UNE 60598-2-22 regulations. Compatible with S-TE remote control.		
	Lumens (lm)	190
	Color temperatures (K)	5700
	Light source	Led
	Autonomy (h)	1
	Battery	Ni-Cd 3.6V/750mAh
	Charging	Máx.12h
	Power (W)	1
	Operating mode	Non-Maintained
	Class	II
	IP	44
	IK	09
	Operating temperature (°C)	5 to 35
	Remote control	Yes

For more information please visit: <https://www.normalux.com/Arque>



Alumbrado
de emergencia compacto
Compact emergency lighting

Arque

El lado estético de la seguridad The aesthetic side of security

NORMALUX
by Normagrup



The fusion of design and functionality

Based on an innovative and minimalist circular design, the new family of ARQUE emergency lighting stands out for its **small format, ease of maintenance and great versatility** thanks to the standard (IP44) and watertight (IP65) versions, completed by a wide range of special accessories, as well as special models with transparent diffuser and opal diffuser, and with black and white finishes.



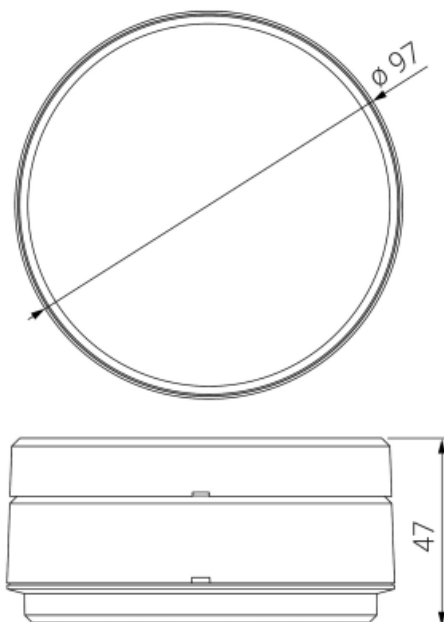


The EPD is structured according to the life cycle stages established by the standards Product Category Rules (PCR-ed4-EN-2021 09 06) and the Product Specific Rules (PSR-0007-ed2.1-EN-2023 12 08) and is based on the UNE-EN 15804:2012+A2:2020 standard. These stages cover the “cradle to grave” phases (A1-C4). The primary data used in the LCA calculation are representative of Arque Q-200L production and sales for 2024.

FUNCTIONAL UNIT | REFERENCE PRODUCT

The **reference product** is the self-contained emergency luminaire Arque with the reference code Q-200L. It is the highest-selling product within the Arque family, accounting for 17,52% of the total sales in this product line during the period considered. The reference product, and homogeneous family, correspond to the escape route emergency lighting systems, specifically SCELL products, designed to facilitate the evacuation of personnel by lighting up exit routes and obstacles in the event of a power outage.

The **functional unit (FU)** of the study is to facilitate the evacuation of the public by providing 45 lumens of lighting for 1 hour in the event of an electrical power cut, operating in a non-maintained mode. This function is provided for ten years by its self-contained power supply. This functional unit is chosen in accordance with the specifications of the Product Category Rules (PCR-ed4-EN-2021 09 06) and the Product Specific Rules (PSR-0007-ed2.1-EN-2023 12 08), which apply to self-contained emergency lighting systems.





The following information has been used to generate the Environmental Product Declaration.

Table 2. Methodological information

Methodological information	
Product name	Arque Q-200L
Functional unit	Facilitate the evacuation of the public by providing 45 lumens of lighting for 1 hour in the event of an electrical power cut, operating in a non-maintained mode. This function is provided for ten years by its self-contained power supply.
Reference Flow	0,2368
Declared unit	One Arque Q200-L luminaire providing a luminous output of 190 lumens and with an autonomy of 1 hour over an assigned lifetime of 10 years.
Reference service life	10 years
Life cycle stages covered	Cradle to grave
Product category according to PSR	Self-Contained Emergency Lighting
Subproduct category according to PSR	Escape route emergency Lighting (SCCELL)

The **reference flow** for this study is defined as:

$$\frac{87.600 \text{ (h)}}{\text{assigned product lifetime of the reference product (h)}} \times \frac{45 \text{ (lm)}}{\text{outgoing luminous flux of the reference product (lm)}} =$$

Consequently, the reference flow of the reference product corresponds to:

$$(87.600\text{h}/87.600\text{h}) \times (45 \text{ lm}/ 190 \text{ lm}) = 0,2368$$

The **reference service life (RSL)** is 10 years, based on an annual usage period of 8.751 hours of energy consumption and 9 hours of non-consumption per year, over a total period of 10 years, in accordance with the Product Specific Rules (PSR-0007-ed2.1-EN-2023 12 08) for escape route lighting. The **declared service life (DSL)** refers to the period during which the luminaire is expected to operate under normal conditions before being taken out of service and is also 10 years.

In addition to the functional unit, the **declared unit** is defined as a single Arque Q-200L luminaire that provides 190 lumens of emergency lighting over a reference service life of 10 years.



1.3 HOMOGENEOUS ENVIRONMENTAL FAMILY

The reference product represents the Arque Q-200L family. All the products in this family of emergency luminaires (escape route) differ in terms of power and weight.

Table 3 shows the range of variations.

Table 3. Range of variation within the family of products.

Arque family	Unit	Reference product's value Arque Q-200L	Minimum value in product range	Maximum value in product range
Product weight (without packaging)	kg	0,380	0,374	0,399
Power	W	1	0,45	4,5
Lumens	Lumen	190	20	545

The rest of the products that belong to the same homogeneous family and are covered by this PEP are listed in **Table 4**.



Table 4. Product references included in the Arque Q-200L homogeneous family.

Product reference of the ARQUE family			
IP 44		IP 65	
QS-100L	QL-100	QSE-100L	QSEAL3-250Li
QV-100L	QL-200	QVE-100L	QVEAL3-250Li
QS-200L	QL3-100	QSE-200L	QSEIDL-150Li
QV-200L	QA-100L	QVE-200L	QVEIDL-150Li
QS-300L	QA-200L	QSE-300L	QSEIDL-250Li
QV-300L	QA-300L	QVE-300L	QVEIDL-250Li
QS3-100L	QA-500LLi	QSE3-100L	QSEIDL3-250LLi
QV3-100L	QA3-250LLi	QVE3-100L	QSEIDL3-250Li
QSL-100	QIDL-150Li	QSEL-100L	QVEIDL3-250Li
QVL-100	QIDL-250Li	QVEL-100L	QE-100L
QSL-200	QTS-100L	QSEL-200L	QE-200L
QVL-200	QTV-10L	QVEL-200L	QE-300L
QSL3-100	QTS-200L	QSEL3-100	QE3-100L
QVL3-100	QSV-200L	QVEL3-100	QEL-100
QSA-100L	QTV-300L	QSEA-100L	QEL-200
QVA-100L	QRS-300L	QVEA-100L	QEL3-100
QSA-200L	QTSA-100L	QSEA-200L	QEA-100L
QVA-200L	QTVA-100L	QVEA-200L	QEA-200L
QSA-300L	QTSA-200L	QSEA-300L	QEA-300L
QVA-300L	QTVA-200L	QVEA-300L	QEA-500LLi
QVA-500LLi	QTSA-300L	QSEA-500LLi	QEAL-150Li
QSA-500LLi	QTVA-300L	QVEA-500LLi	QEAL-250Li
QVA3-250LLi	QTSA3-250LLi	QSEAL-150Li	QEAL3-250Li
QSA3-250LLi	QTVA3-250LLi	QVEAL-150Li	QEIDL-150Li
QSAL-150Li	QTSAL-250Li	QSEAL-250Li	QEIDL-250Li
QVAL-150Li	QTVAL-250Li	QVEAL-250Li	
QSAL-250Li	QTSIDL-250Li		
QVAL-250Li	QTVIDL-250Li		
QVAL3-250Li	QT-100L		
QSAL3-250Li	QT-200L		
QSID-500LLi	QT-300L		
QVI-500LLi	QTA-100L		
QSIDL-150Li	QTA-200L		
QVIDL-150Li	QTA-300L		
QSIDL-250Li	QTA3-250LLi		
QVIDL-250Li	QTAL-250Li		
QVIDL3-250Li	QTIDL-250Li		
QSIDL-250Li			
QVIDL-250Li			

The present PEP declaration is valid for all the products in the described homogeneous environmental family. The extrapolation coefficients at product level (declared unit) and the information of the products included in the homogeneous environmental family can be found in the spreadsheets provided as annex. This information shall be used by the PEP user to extrapolate the impact of a product from the Arque Q-200L family, based on technical parameters of the considered product, as shown in **Annex II** (Annex II. Extrapolation coefficients).

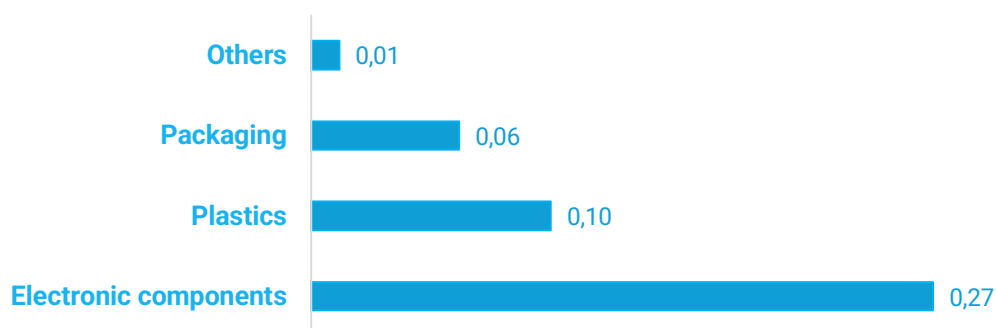


2. CONSTITUENT MATERIALS

Table 5. Weigh by material of the reference product.

	kg	%
Plastics		
Polycarbonate	0,101	0,86
Rubber	8,80E-04	99,14
TOTAL	0,102	100
Electric components		
Electronic	0,086	32,45
LED circuit	0,075	28,30
Battery	0,064	24,15
PCB circuits	0,04	15,09
TOTAL	0,265	100
Packaging		
100% recycled cardboard	0,061	96,88
Pallet	4,54E-05	0,07
Polyethylene film	1,82E-03	2,89
Instruction	1,00E-04	0,16
TOTAL	0,062	100
Others		
PC dye	0,011	99,82
Rubber dye	2E-05	0,18
TOTAL	0,011	100

Graph 1. Weight distribution by material type.





3. ADDITIONAL ENVIRONMENTAL INFORMATION

Normagrup has integrated environmental protection as a key pillar of its activity, implementing measures aimed at preventing, reducing, and controlling the environmental impacts associated with its production processes and products. Since 2019, we have been calculating our organizational carbon footprint and are working to reduce our greenhouse gas emissions. In line with this goal, we have created an emission absorption project: [Normagrup Forest](#).

The following sections outline the measures taken by Normagrup to minimise the product's environmental impact across all stages of the product's life cycle.



MANUFACTURING: A1-A3

A1 – Supply of raw materials.

A2 – Transport of raw materials.

A3 – Manufacturing.

Regarding the supply of raw materials, all suppliers with whom we maintain supply relationships have been previously assessed to be aligned with our corporate principles. They have accepted our [Code of Conduct](#) and are committed to meeting our [environmental requirements](#).

For Q-200Ls packaging, Normagrup uses only 100% recycled cardboard as primary and secondary packaging.

As for the manufacturing, Normagrup has a photovoltaic electricity production centre at the main production plant, which allows to reduce the need for non-renewable electricity in our facilities.



DISTRIBUTION AND INSTALLATION: A4-A5

A4 – Distribution.

A5 – Installation.

The reduced dimensions of the product allow for a smart transportation by maximising the available space during the distribution stage. The product comes in collective boxes of 20 units each. One pallet (1200x800mm) carries 55 collective boxes of 20 units each, that is, one pallet carries 1.100 units of Arque Q-200L.

During installation, energy consumption is considered negligible because it is carried out manually, although electric tools such as drills may be used. The product comes ready to be installed by the end-user. In this stage, the product is unpacked and therefore the packaging waste is generated during the installation. The waste of packaging materials is treated using default values according to PCR-ed4-EN-2021 09 06 and PSR-0007-ed2.1-EN-2023 12 08 for distances and waste treatment statistics are based on Eurostat.



USE: B1-B7

B1 - Use.

B2 - Maintenance.

B3 - Repair.

B4 - Replacement.

B5 - Rehabilitation.

B6 – In service energy use.

B7 - In-service water use

The use stage concerns the maintenance (B2) during the product's life cycle and the electricity consumption (B6) associated with the operation of the product.

As a maintenance task, two batteries will be replaced over the product's service life, since a service life of 4 years is ensured for the battery, and it is a replaceable component. The waste treatment of the initial battery is considered in this stage.

The electricity consumption during the use phase is calculated based on the Spain electrical mix, since more than 54,95% of the sales are made in this country, and the remaining sales happened in the European market. Therefore, the electricity consumption scenario is based on the average Spanish electricity grid mix and is estimated over a lifetime of 10 years, for 8.760 operating hours a year and for 1W of power.



The product has no direct emissions (B1) and is designed so that no parts replacement is necessary (B4). Additionally, no standard repairs (B3) or refurbishments (B5) take place as of now. The use of the product does not involve water consumption (B7).



C1-C4 END OF LIFE

C1 - Deconstruction/Demolition

C2 – Waste transport

C3 – Waste processing

C4 - Provision

The product is required to be professionally collected and recycled in accordance with the EU Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE). The company fulfils its responsibility within the EU by participating in national WEEE schemes. We meet our extended producer responsibility obligations by adhering to a national SCRAP.

The waste treatment scenario of each material and component was determined based on public data provided by Eurostat in 2022 and available datasets.

Table 5. Waste treatment scenarios considered.

Scenario	Recycling and incineration with energy recovery	Incineration and landfill	Modelling assumptions
Wire	62%	38%	Transport (100 km) and treatments based on Eurostat for Europe 2022.
Metal	77%	23%	Transport (100 km) and treatments based on Eurostat for Europe 2022.
Plastic	40%	60%	Transport (100 km) and treatments based on Eurostat for Europe 2022.
Electronic	70%	30%	Transport (100 km) and treatments based on available datasets.



4. ENVIRONMENTAL IMPACTS

The environmental impact assessment examines the stages of the reference product's life cycle: manufacturing, distribution, installation, use, and end of life. It is representative of the products marketed and used in Europe.

The Life Cycle Assessment (LCA) model was developed using the online tool *edit®* in combination with the SimaPro 10.2.0.2 software to evaluate the environmental impact associated with the reference product. Data concerning material and energy flows entering the product system were primarily sourced from the Ecoinvent v3.11.1 database.

The impact indicators and models used are those specified by the reference standards PCR-ed3-EN-2015 04 02 and PSR-0007-ed2.1-EN-2023 12 08. The environmental indicators are calculated for the total life cycle and each life cycle stage (i.e., manufacturing, distribution, installation, use and end-of-life) of the reference product. This environmental declaration has been developed by considering an outgoing luminous flux of 45 lumens for 1 hour in the event of an electrical power cut, over a reference lifetime of 10 years.

For the use stage, the electricity consumption scenario considers the geographic area of Europe, specifically Spain, since 54,95% of the sales were made in Spain. Overall, datasets were selected based on their geographical representativeness, prioritizing those most closely aligned with the location of each life cycle stage.



RESULTS

Table 6. Results of mandatory inventory indicators per F.U (for 45 lumens for 1 hour in the event of an electrical power cut, over 10 years) of Arque Q-200L emergency lighting.

Stage	Unit	1. Manufacturing			2. Distribution	3. Installation	4. Use		5. End of life			Total
Impact category		A1	A2	A3	A4	A5	B2	B6	C2	C3	C4	
Climate change - total	kg CO2 eq.	6,940	0,019	0,040	0,0180	0,002	0,888	4,020	0,001	0,057	0,072	12,060
Climate change - fossil fuels	kg CO2 eq.	6,935	0,019	0,038	0,018	3,43E-04	0,883	3,955	0,001	0,057	0,023	11,933
Climate change - land use and land use transformation	kg CO2 eq.	0,013	7,29E-06	2,41E-05	5,98E-06	1,23E-07	0,003	0,055	5,66E-07	2,79E-05	2,83E-06	0,069
Climate change - biogenic	kg CO2eq.	0,0125	3,85E-06	0,001	3,79E-06	0,001	0,001	0,0124	3,60E-07	1,67E-05	4,76E-06	0,030
Ozone depletion	kg CFC-11 eq.	0	0	0	0	0	0	0	0	0	0	0
Acidification	mol H+ eq.	-0,021	0	0	0	0	0	0	0	0	0,048	0,027
Freshwater eutrophication	kg P eq.	-0,008	3,85E-06	0,001	3,79E-06	0,001	0,001	0,0124	3,60E-07	1,67E-05	0,048	0,057
Marine aquatic eutrophication	kg N eq.	6,68E-05	3,84E-10	4,47E-10	3,927E-10	7,055E-12	1,08E-06	9,28E-08	3,73E-11	5,68E-10	7,12E-11	6,80E-05
Terrestrial eutrophication	mol N eq.	0,072	1,81E-04	1,78E-04	6,021E-05	1,55E-06	0,022	0,018	5,49E-06	7,76E-05	1,53E-05	0,113
Photochemical ozone formation	kg NMVOC eq.	0,005	1,16E-06	1,09E-05	1,228E-06	2,80E-08	4,32E-04	9,90E-04	1,16E-07	1,73E-05	2,16E-06	0,007
Abiotic resource depletion - metals and minerals	kg Sb eq.	0,017	4,90E-05	3,47E-05	2,00E-05	1,425E-06	0,016	0,003	1,85E-06	1,91E-05	2,56E-05	0,037
Abiotic resource depletion - fossils	MJ	0,099	5,41E-04	3,32E-04	2,18E-04	5,585E-06	0,011	0,035	2,01E-05	1,85E-04	4,57E-05	0,147
Water requirement	m3 depriv.	0,033	1,72E-04	1,14E-04	8,93E-05	2,63E-06	0,004	0,013	8,33E-06	7,36E-05	1,46E-05	0,052



Table 7. Results of mandatory inventory indicators per F.U (for 45 lumens for 1 hour in the event of an electrical power cut, over 10 years) of Arque Q-200L emergency lighting.

Stage	Unit	1. Manufacturing			2. Distribution	3. Installation	4. Use		5. End of life			Total
Impact category		A1	A2	A3	A4	A5	B2	B6	C2	C3	C4	
Use of renewable primary energy (excl. resources used as raw materials)	MJ	12,327	-2.621,13	-29,43	-3.207,09	-49,599	-57,783	51,898	-305,945	0,030	0,324	-6.206,39
Use of renewable primary energy resources (used as raw materials)	MJ	0,247	2.621,14	29,99	3.207,10	49,60	61,83	0	305,95	0	-0,320	6.275,53
Total use of renewable primary energy resources	MJ	12,575	0,003	0,564	0,004	8,99E-05	4,049	51,898	3,96E-04	0,030	0,003	69,130
Use of non-renewable primary energy (excl. resources used as raw materials)	MJ	53,943	-6074,85	-68,964	-7432,88	-114,953	-139,152	73,002	-709,072	0,083	0,013	-14.412,83
Use of non-renewable primary energy resources (used as raw materials)	MJ	0,012	6074,870	69,517	7432,906	114,953	143,307	0	709,073	0	0	14.544,64
Total use of non-renewable primary energy resources	MJ	53,956	0,018	0,552	0,020	4,44E-04	4,155	73,002	0,001	0,083	0,013	131,804
Use of secondary materials	kg	0,014	0	0	0	0	0	0	0	0	0	0,014
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels	MJ	0	0	0	0	0	0	0	0	0	0	0
Net use of fresh water	m3	0,076	2,97E-05	1,72E-04	3,163E-05	-3,042E-06	0,031	0,061	3,01E-06	1,13E-04	-7,38E-06	0,169
Hazardous waste	kg	0,004	5,84E-06	4,56E-04	6,43E-06	1,68E-05	0,006	0,005	6,12E-07	0,022	2,95E-04	0,038
Non-hazardous waste	kg	0,420	0,010	0,003	0,012	0,001	0,342	0,517	0,001	0,005	0,011	1,326
Radioactive waste	kg	4,81E-04	6,70E-08	5,98E-06	7,49E-08	1,54E-09	5,97E-04	9,29E-04	7,13E-09	3,76E-07	6,45E-08	0,002



Table 8. Results of mandatory inventory indicators per F.U (for 45 lumens for 1 hour in the event of an electrical power cut, over 10 years) of Arque Q-200L emergency lighting.

Stage	Unit	1. Manufacturing			2. Distribution	3. Installation	4. Use		5. End of life			Total
Impact category		A1	A2	A3	A4	A5	B2	B6	C2	C3	C4	
Components for reuse	kg	1,07E-05	0	0	0	0	0	0	0	0	0	1,07E-05
Materials for recycling	kg	0	0	0,003	0	0,005	0,011	0	0	0	0	0,020
Materials for energy recovery	kg	0	0	0	0	0	0	0	0	0	0	0
Exported energy	MJ	0	0	0,004	0	0,078	0	0	0	0	0	0,083
Total use of primary energy during the life cycle	MJ	66,531	0,022	1,117	0,024	5,33E-04	8,204	124,900	0,002	0,114	0,016	200,934
Emission of fine particles	incidence of diseases	3,84E-04	1,30E-09	4,20E-09	1,43E-09	2,82E-11	6,61E-08	1,04E-07	1,36E-10	1,08E-09	1,50E-10	3,84E-04
Ionizing radiation, human health	kBq U-235 eq.	0,934	2,72E-04	0,026	3,04E-04	6,25E-06	0,378	4,056	2,89E-05	0,001	2,51E-04	5,398
Ecotoxicity (fresh water)	CTUe	119,834	0,031	0,1519	0,033	0,060	69,847	13,424	0,003	0,798	0,1713	204,356
Human toxicity, carcinogenic effects	CTUh	1,39E-04	3,44E-12	6,83E-11	3,063E-12	1,724E-13	1,05E-09	1,78E-09	2,90E-13	6,52E-11	8,23E-12	1,39E-04
Human toxicity, non-carcinogenic effects	CTUh	1,34E-07	1,43E-10	4,89E-10	1,588E-10	1,22E-11	1,49E-08	8,49E-08	1,51E-11	1,80E-10	1,46E-10	2,35E-07
Impacts related to land use/soil quality	-	37,147	0,126	0,049	0,150	0,0038	18,527	33,194	0,014	0,132	0,014	89,361
Biogenic carbon content of the associated packaging	kg of C	-0,005	0	0	0	0	0	0	0	0	0,013	0,007
Biogenic carbon content of the product	kg of C	0	0	0	0	0	0	0	0	0	0	0



Table 9. Results of mandatory inventory indicators per D.U (for 190 lumens for 10 years) of Arque Q-200L emergency lighting.

Stage	Unit	1. Manufacturing			2. Distribution	3. Installation	4. Use		5. End of life			Total
Impact category		A1	A2	A3	A4	A5	B2	B6	C2	C3	C4	
Climate change - total	kg CO2 eq.	29,307	0,081	0,169	0,076	0,009	3,753	16,978	0,007	0,243	0,305	50,932
Climate change - fossil fuels	kg CO2 eq.	29,288	0,081	0,162	0,076	0,001	3,730	16,704	0,007	0,243	0,099	50,395
Climate change - land use and land use transformation	kg CO2 eq.	0,056	3,08E-05	1,02E-04	2,52E-05	5,20E-07	0,015	0,221	2,39E-06	1,18E-04	1,19E-05	0,293
Climate change - biogenic	kg CO2eq.	0,052	1,62E-05	0,006	1,60E-05	0,008	0,007	0,052	1,52E-06	7,07E-05	2,01E-05	0,127
Ozone depletion	kg CFC-11 eq.	0	0	0	0	0	0	0	0	0	0	0
Acidification	mol H+ eq.	-0,090	0	0	0	0	0	0	0	0	0,206	0,115
Freshwater eutrophication	kg P eq.	-0,037	1,62E-05	0,006	1,60E-05	0,008	0,007	0,052	1,52E-06	7,07E-05	0,206	0,243
Marine aquatic eutrophication	kg N eq.	2,82E-04	1,62E-09	1,887E-09	1,65E-09	2,97E-11	4,58E-06	3,92E-07	1,57E-10	2,39E-09	3,00E-10	2,87E-04
Terrestrial eutrophication	mol N eq.	0,304	7,62E-04	7,53E-04	2,54E-04	6,56E-06	0,094	0,077	2,32E-05	3,28E-04	6,49E-05	0,479
Photochemical ozone formation	kg NMVOC eq.	0,023	4,90E-06	4,62E-05	5,18E-06	1,18E-07	0,001	0,004	4,93E-07	7,31E-05	9,13E-06	0,030
Abiotic resource depletion - metals and minerals	kg Sb eq.	0,072	2,07E-04	1,47E-04	8,46E-05	6,01E-06	6,95E-02	1,41E-02	7,81E-06	8,07E-05	1,08E-04	1,57E-01
Abiotic resource depletion - fossils	MJ	0,418	0,002	0,001	9,21E-04	2,35E-05	0,047	0,1496	8,49E-05	7,81E-04	1,93E-04	6,22E-01
Water requirement	m3 depriv.	0,140	7,24E-04	4,80E-04	3,77E-04	1,11E-05	0,019	0,057	3,51E-05	3,11E-04	6,20E-05	0,219



Table 10. Results of mandatory inventory indicators per D.U (for 190 lumens for 10 years) of Arque Q-200L emergency lighting.

Stage	Unit	1. Manufacturing			2. Distribution	3. Installation	4. Use		5. End of life			Total
Impact category		A1	A2	A3	A4	A5	B2	B6	C2	C3	C4	
Use of renewable primary energy (excl. resources used as raw materials)	MJ	52,060	-11.068,9	-124,282	-13543,444	-209,456	-244,019	219,166	-1291,99	0,130	1,368	-26.209,45
Use of renewable primary energy resources (used as raw materials)	MJ	1,046	11.068,99	126,667	13543,461	209,457	261,12	0	1292	0	-1,35507	26.501,39
Total use of renewable primary energy resources	MJ	53,106	0,016	2,384	0,0175	3,80E-04	17,100	219,166	0,001	0,130	0,013	291,937
Use of non-renewable primary energy (excl. resources used as raw materials)	MJ	227,803	-25.653,9	-291,23	-31.388,879	-485,445	-587,637	308,286	-2994,39	0,352	0,055	-60.865,02
Use of non-renewable primary energy resources (used as raw materials)	MJ	0,052	25.654,01	293,569	31.388,964	485,447	605,184	0	2994,4	0	0	61.421,63
Total use of non-renewable primary energy resources	MJ	227,855	0,079	2,333	0,084	0,001	17,546	308,286	0,008	0,352	0,055	556,605
Use of secondary materials	kg	0,061	0	0	0	0	0	0	0	0	0	0,061
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels	MJ	0	0	0	0	0	0	0	0	0	0	0
Net use of fresh water	m3	0,321	1,26E-04	7,26E-04	1,34E-04	-1,28E-05	0,131	0,261	1,27E-05	4,76E-04	-3,11E-05	0,716
Hazardous waste	kg	0,018	2,46E-05	0,001	2,718E-05	7,11E-05	0,026	0,021	2,58E-06	0,093	0,001	0,163
Non-hazardous waste	kg	1,777	0,047	0,013	0,051	0,006	1,448	2,185	0,004	0,029	0,048	5,602
Radioactive waste	kg	0,002	2,83E-07	2,52E-05	3,16E-07	6,53E-09	0,002	0,003	3,01E-08	1,59E-06	2,72E-07	0,008



Table 11. Results of mandatory inventory indicators per D.U (for 190 lumens for 10 years) of Arque Q-200L emergency lighting.

Stage	Unit	1. Manufacturing			2. Distribution	3. Installation	4. Use		5. End of life			Total
Impact category		A1	A2	A3	A4	A5	B2	B6	C2	C3	C4	
Components for reuse	kg	4,50E-05	0	0	0	0	0	0	0	0	0	4,50E-05
Materials for recycling	kg	0	0	0,012	0	0,023	0,049	0	0	0	0	0,085
Materials for energy recovery	kg	0	0	0	0	0	0	0	0	0	0	0
Exported energy	MJ	0	0	0,019	0	0,332	0	0	0	0	0	0,352
Total use of primary energy during the life cycle	MJ	280,962	0,095	4,717	0,102	0,002	34,647	527,453	0,009	0,483	0,068	848,542
Emission of fine particles	incidence of diseases	0,001	5,51E-09	1,77E-08	6,066E-09	1,19E-10	2,79E-07	4,43E-07	5,77E-10	4,58E-09	6,36E-10	0,001
Ionizing radiation, human health	kBq U-235 eq.	3,947	0,001	0,110	0,001	2,640E-05	1,598	17,132	1,22E-04	0,005	0,001	22,798
Ecotoxicity (fresh water)	CTUe	506,057	0,132	0,640	0,142	0,254	294,962	56,693	0,013	3,370	0,723	862,993
Human toxicity, carcinogenic effects	CTUh	5,85E-04	1,45E-11	2,88E-10	1,29E-11	7,28E-13	4,44E-09	7,55E-09	1,22E-12	2,75E-10	3,47E-11	5,85E-04
Human toxicity, non-carcinogenic effects	CTUh	5,69E-07	6,03E-10	2,06E-09	6,70E-10	5,18E-11	6,29E-08	3,58E-07	6,38E-11	7,62E-10	6,19E-10	9,95E-07
Impacts related to land use/soil quality	-	156,874	0,536	0,208	0,635	0,013	78,240	140,181	0,060	0,558	0,060	377,370
Biogenic carbon content of the associated packaging	kg of C	-0,024	0	0	0	0	0	0	0	0	0,056	0,031
Biogenic carbon content of the product	kg of C	0	0	0	0	0	0	0	0	0	0	0



5. EXTRAPOLATION RULES

The extrapolation rules followed are based on the specifications of the PCR-ed4-EN-2021 09 06 and the Product Specific Rules (PSR-0007-ed2.1-EN-2023 12 08).

Arque Q-200L was selected as the representative product due to the market share of Arque family. It is the highest-selling product within the ARQUE family, accounting for 17,52% of the total sales in this product line during the period considered.

The different products within the Arque Q-200L family differ in terms of power and lumens. Other product parameters that vary among the various products of the family are weight of parts, product mass and energy consumption. A sensitivity analysis was carried out to assess the potential variability of the most influential parameters: product mass and energy consumption. Additionally, extrapolation coefficients were calculated and evaluated. In cases where multiple coefficients were available for a given stage, the most representative one was selected. For example, in the use stage, the extrapolation rule applicable to the electricity consumption was chosen.

The rules defined shall be applied using the Extrapolation coefficients file provided as annex (ANNEX II. Extrapolation coefficients.xlsx). Please refer to the table below for the data on reference product 'Arque Q-200L, needed to calculate the coefficients.

Table 12. Parameters of the reference product.

Parameter	Unit	Value for reference product Arque Q-200L
Power*	W	1
Lumen*	lm	190
Luminaire structure weight	kg	0,265
Power supply equipment weight	kg	0,064
Lighting source weight	kg	0,075
Packaging weight	kg	0,062
Product weight (no packaging)	kg	0,380
Product weight (including packaging)	kg	0,443

**The lumens and power are considered in the LCA to establish the total energy consumption and calculate the results at FU level.*

The calculation of extrapolation coefficients at the functional unit level shall be performed using the following formula:

$$\text{Extrapolation coefficient at the product level} \times \frac{\text{Lighting output of reference product (lm)}}{\text{Lighting output of concerned product (lm)}}$$