PRODUCT ENVIRONMENTAL PROFILE

REC-SQ-230 EMEX ESC-LM4 WH ref : SR2Q-DEA-230LT

Open area emergency lighting

Registration N°: **ABBG-00637-V01.01-EN**	Drafting rules: « **PCR-ed4-EN-2021 09 06**» supplemented by « **PSR-0007-ed2.1-EN-2023 12 08** »
Verifier accreditation N°: **VH49**	Information and reference documents: **www.pep-ecopassport.org**
Date of issue: **06-2024**	Validity period: **5 years**
Independent verification of the declaration and data, in compliance with ISO 14025:2006 Internal □ External ☑	
The PCR review was conduct by a panel of experts chaired by Julie ORGELET (DDEMAIN)	
PEP are compliant with NF 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 any other program.	
Document complies with ISO 14025:2006 « Environmental labels and declaration. Type III environmental declarations »	

GENERAL INFORMATION

PRODUCT SPECIFICATIONS

The product range covered by the environmental declaration is a range of self-contained emergency electrical safety devices of the "LCPS for open area emergency lighting" type. The reference product for the environmental footprint assessment is the **REC-SQ-230 EMEX ESC-LM4 WH**, with the following technical specifications:

Technical specification	
Product category	LCPS for open area emergency lighting
Reference product	REC-SQ-230 EMEX ESC-LM4 WH
Weight of the product	2.35E-01 kg
Weight of the packaging	9.40E-02 kg
IP	42
Lumen output	203 lumens
Lighting unit operation	Non-Maintained
Power	5 W
Battery type	No battery
Accessories included	None
Presence of standby function	Yes
Geographical representativeness	Manufacturing in United Kingdom and China; Distribution, Installation, Use and End of Life in Europe
Time representativeness	The data collected are representative of the year 2023.
Lifetime	10 years

Table 1 – Technical specifications of the reference product

PRODUCT RANGE NGL SLAVE RECESSED

The reference product is the product with the highest impact in the range, its impacts are used to cover the other products in the range.

Below are the references of the NGL Slave recessed range covered by the reference product **REC-SQ-230 EMEX ESC-LM4 WH**, the most impactful of the product range.

References	Category
REC 230V ESC-L4M WH	LCPS
REC 230V OA-L4M WH	LCPS
EVA-R-CLI-X	LCPS
EVA-R-CWI-X	LCPS
REC-SQ 230V ESC-L4M WH	LCPS

REC-SQ 230V OA-L4M WH	LCPS
EVA-V-CLI-X	LCPS
EVA-V-CWI-X	LCPS
EVA-R-CLI/LBS	LCPS
EVA-R-CWI/LBS	LCPS
EVA-R-CLI-X/LBS	LCPS
EVA-R-CWI-X/LBS	LCPS
EVA-V-CLI/LBS	LCPS
EVA-V-CWI/LBS	LCPS
EVA-V-CLI-X/LBS	LCPS
EVA-V-CWI-X/LBS	LCPS
REC 230V EMEX ESC-L4M WH	LCPS
REC 230V EMEX OA-L4M WH	LCPS
REC-SQ 230V EMEX ESC-L4M WH	LCPS
REC-SQ 230V EMEX OA-L4M WH	LCPS
EVA-R-CLI	LCPS
EVA-R-CWI	LCPS
EVA-V-CLI	LCPS
EVA-V-CWI	LCPS
SERENGA 73L E-R EVG220	LCPS
SERENGA 75L E-R EVG220	LCPS
SERENGA 73L E-S EVG220	LCPS
SERENGA 75L E-S EVG220	LCPS
SERENGA 73L E-R FLX	LCPS
SERENGA 75L E-R FLX	LCPS
SERENGA 73L E-S FLX	LCPS
SERENGA 75L E-S FLX	LCPS
REC-SQ-230 EMEX ESC-LM4 WH	**LCPS**

PRODUCT CATEGORY

The products studied belong to the category of self-contained emergency electrical safety devices of the “LCPS for open area emergency lighting” type, as defined in PSR-0007-ed2.1-EN-2023 12 08.

FUNCTIONAL UNIT

The functional unit studied is **“Avoid panic by providing 203 lumens of lighting to guarantee the visibility of obstacles for one hour in the event of an electrical power cut. This function, powered by a central power system, is provided for ten years”** as defined in the PSR-0007-ed2.1-EN-2023 12 08.

DECLARED UNIT

The declared unit is identical to the functional unit.

REFERENCE LIFETIME

The reference lifetime of the product studied is 10 years as defined in the PSR-0007-ed2.1-EN-2023 12 08.

CONSTITUENT MATERIALS

The total weight of the reference product is 0.3 kg, including 0.2 kg of product and 0.1 kg of packaging. The constituent materials are:

Constituent materials	Metals		Plastics		Others	
	Aluminium	22,7 %	Polycarbonate (PC)	22,6 %	Cardboard	28,7 %
	Steel	3,7 %	PVC	2,8 %	Paper	4,4 %
	Copper	2,7 %	Epoxy resin	2,6 %	Glass fiber	3,6 %
	Tin	0,7 %	Silicone	0,3 %	Alumine	0,5 %
	Ferrite	0.7 %			Miscellaneous	3.6 %
	Brass	0,4 %				
	Total	**30,9 %**	**Total**	**28,3 %**	**Total**	**40,8 %**

Table - Constituent materials

LIFE CYCLE ASSESMENT METHODOLOGY

The Life Cycle Assessment on which this Product Environmental Profile (PEP) is based is carried out in compliance with the criteria required by the PCR-ed4-EN-2021 09 06 of the PEP ecopassport program®. The functional unit and the use and waste treatment scenarios are in line with the assumptions set out in the PSR-0007-ed2.1-EN-2023 12 08.

Results were calculated using EIME software version 6.2 and its most recent database (database 2023-02).

MANUFACTURING STAGE

The product is assembled in the United Kingdom, and the electronic cards are assembled in the Netherlands.

The product is manufactured in the United Kingdom, while the electronic components are produced in Asia.

Energy models	**Electricity Mix; Production mix; Low voltage; 2018; United Kingdom, UK** **Electricity Mix; Production mix; Low voltage; 2018; China, CN**

DISTRIBUTION STAGE

The distribution of the packaged product from the last logistics platform (Belgium) to the installation location (Europe) was modelled by transport in a 27t truck over 3,500km (Continental transport scenario of PEP-PCR-ed4-EN-2021 09 06).

INSTALLATION STAGE

The product installation generates packaging whose treatment is modelled in accordance with paragraph 3.6.3 of PSR-0007-ed2.1-EN-2023 12 08.

Energy model	**Electricity Mix; Production mix; Low voltage; Europe, UE-27**

USE STAGE

In compliance with PSR-0007-ed2.1-EN-2023 12 08, no energy consumption is considered for LCPS for open area emergency lighting.

END OF LIFE STAGE

The end-of-life treatment of emergency lighting has been modelled using the Ecosystem public ICV datasets (ESR) as recommended by the PCR ed 4.

It is the only European database to assess the environmental footprint of electrical and electronic equipment at the end of its life cycle. 96 materials are modelled and classified according to the different flows processed to quantify the environmental impacts and benefits of WEEE at the end of its life cycle.

The BOM (Bill Of Materials) of the product, electronic boards and cables have been identified in order to use ESR data specific to the end-of-life treatment of the materials contained in each of these sub-categories.

ESR data without virgin material substitution benefits were used.

ESR data for the "Self Contained Emergency Lighting" category were used.

Energy model	**ESR database, French energetic model** **Electricity Mix; Production mix; Low voltage; Europe; UE-27**

ADDITIONAL ENVIRONMENTAL INFORMATION

ADDITIONAL ENVIRONMENTAL INSTALLATION INFORMATION

Installation of ABB products is simplified, and installation instructions are available in dematerialized form.

ADDITIONAL END-OF-LIFE ENVIRONMENTAL INFORMATION

ABB is an ecosystem member for the collection and recycling of WEEE.

ENVIRONMENTAL IMPACTS OF THE REFERENCE PRODUCT AT FUNCTIONAL UNIT LEVEL

The impact results presented below were obtained using the methods defined in PCR-ed4-EN-2021 09 06 and PSR-0007-ed2.1-EN-2023 12 08. The analysis of the contribution of elementary flows to environmental indicators is based on calculations made using the EIME v6 life cycle assessment software. The set of indicators used is the "Indicators for PEF EF 3.0 (Compliance: PEP ed.4, EN15804+A2)" set developed by the CODDE department of Bureau Veritas in compliance with appendix A of PCR-ed4-EN-2021 09 06.

The environmental impacts on the declared unit are identical to the environmental impacts on the functional unit.

Mandatory indicators																
Impact indicators	**Unit**	**Manufacturing**	**Distribution**	**Installation**	**Use**								**End-of-life**	**Total (Off D)**	**Benefits and loads**
		A1-A3	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B1-B7**	**C1-C4**		**D**
Climate change – total	kg CO2 eq	8.53E+00	1.85E-01	7.12E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.83E-01	9.72E+00	-1.65E+00
Climate change – fossil fuels	kg CO2 eq	8.43E+00	1.85E-01	6.31E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.74E-01	9.52E+00	-1.57E+00
Climate change - biogenics	kg CO2 eq	1.07E-01	0.00E+00	8.09E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.36E-03	1.97E-01	-7.91E-02
Climate change – land use and land use transformation	kg CO2 eq	1.10E-04	0.00E+00	-1.07E-09	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	1.10E-04	0.00E+00
Ozone depletion	kg CFC-11 eq	9.76E-07	2.84E-10	1.05E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.75E-08	1.01E-06	-4.97E-08
Acidification	mol H+ eq	5.47E-02	1.17E-03	1.71E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.70E-03	6.03E-02	-1.32E-02
Freshwater eutrophication	kg P eq	2.74E-05	6.94E-08	7.93E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.01E-06	3.84E-05	-8.23E-04
Marine aquatic eutrophication	kg N eq	6.81E-03	5.49E-04	7.79E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.42E-03	9.56E-03	-1.96E-03
Terrestrial eutrophication	mol N eq	7.00E-02	6.02E-03	5.00E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.72E-03	8.37E-02	-2.03E-02
Photochemical ozone formation	kg COVNM eq	2.22E-02	1.52E-03	1.19E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.68E-04	2.58E-02	-5.38E-03

Abiotic resource depletion – elements or resource depletion – metals and minerals	kg Sb eq	2.95E-04	7.28E-09	1.68E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.12E-06	2.96E-04	-1.72E-04
Abiotic resources depletion – fossil fuels or resource depletion - fossils	MJ	1.09E+02	2.58E+00	5.52E+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	3.87E+00	1.21E+02	-1.67E+01
Water requirement	m3 eq	2.28E+00	7.03E-04	7.29E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.09E+01	5.32E+01	-3.47E+02

Inventory flow	Unit	Manufacturing	Distribution	Installation	Use								End-of-life	Total (Off D)	Benefits and loads
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	B1-B7	C1-C4		D
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	7.52E+00	3.44E-03	1.41E+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	2.73E-01	9.21E+00	-1.11E+01
Use of renewable primary energy resources used as raw materials	MJ	1.92E+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	0.00E+00	0.00E+00	0.00E+00	1.92E+00	0.00E+00
Total use of renewable primary energy resources	MJ	9.45E+00	3.44E-03	1.41E+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	2.73E-01	1.11E+01	-1.11E+01
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	MJ	1.06E+02	2.58E+00	5.52E+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	3.87E+00	1.18E+02	-1.67E+01
Use of non-renewable primary energy	MJ	3.25E+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	0.00E+00	0.00E+00	0.00E+00	3.25E+00	0.00E+00

resources used as raw materials														
Total use of non-renewable primary energy resources	MJ	1.09E+02	2.58E+00	5.52E+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	3.87E+00	1.21E+02	-1.67E+01
Use of secondary materials	kg	8.92E-06	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	0.00E+00	0.00E+00	8.92E-06	0.00E+00
Use of renewable secondary fuels	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	m^3	5.44E-02	1.64E-05	1.70E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E+00	1.44E+00	-9.64E+00
Hazardous waste disposed of	kg	1.91E+00	0.00E+00	1.35E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-07	1.92E+00	-2.71E-02
Non-hazardous waste disposed of	kg	1.68E+01	6.49E-03	2.94E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.10E-03	1.71E+01	-2.26E+00
Radioactive waste disposed of	kg	2.90E-03	4.62E-06	2.95E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.18E-10	2.93E-03	-2.20E-04
Components for reuse	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	7.96E-03	0.00E+00	3.79E-02	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	4.59E-02	0.00E+00
Materials for energy recovery	kg	1.44E-03	0.00E+00	1.31E-03	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	2.75E-03	0.00E+00
Exported energy	MJ	1.79E-03	0.00E+00	2.72E-02	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	2.90E-02	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	0.00E+00	0.00E+00	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	3.18E-02	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	0.00E+00	0.00E+00	3.18E-02	0.00E+00

Facultative indicators															
Impact indicators	Unit	Manufacturing	Distribution	Installation	Use								End-of-life	Total (Off D)	Benefits and loads
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	B1-B7	C1-C4		D
Total use of primary energy during the life cycle	MJ	1.18E+02	2.58E+00	6.93E+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	4.15E+00	1.32E+02	-2.78E+01
Emission of fine particles, expressed in incidence of diseases	Death/Kg eq PM2.5	3.26E-07	9.53E-09	1.02E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.46E-08	3.60E-07	-8.57E-08
Ionizing radiation, human health	kBq U235 eq	2.17E+01	4.51E-04	1.46E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.15E-02	3.63E+01	-5.73E-01
Ecotoxicity (fresh water)	CTUe	1.86E+02	1.25E-01	6.72E+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	5.16E+01	2.45E+02	-7.78E+01
Human toxicity, carcinogenic effects	CTUh	2.85E-07	3.25E-12	6.08E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.28E-10	3.46E-07	-2.90E-07
Human toxicity, non-carcinogenic effects	CTUh	7.48E-08	3.52E-10	2.51E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.51E-08	9.28E-08	-7.45E-08
Impacts related to land use/soil quality	No dimension	3.14E-01	0.00E+00	1.54E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E+00	1.33E+00	-1.50E+01

Table 2 - Environmental impacts for the life cycle reference flow at functional unit level

The life cycle assessment is compliant with the specific rules applicable to Self-contained emergency electrical safety devices PSR-0007-ed2.1-EN-2023 12 08, available on the website www.pepecopassport.org.

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