

# Environmental product declaration

In accordance with ISO 14025 and EN 15804 +A2

Arena 1200



The Norwegian EPD Foundation

**Owner of the declaration:**  
Elektroskandia Norge AS

**Declared unit:**  
1 pcs Arena 1200

**This declaration is based on Product Category Rules:**  
CEN Standard EN 15804:2012+A2:2019 serves as core PCR  
IBU PCR - Part B for luminaires, lamps, and components for luminaires

**Program operator:**  
The Norwegian EPD Foundation

**Declaration number:**  
NEPD-4002-3042-EN

**Registration number:**  
NEPD-4002-3042-EN

**Issue date:** 05.12.2022

**Valid to:** 05.12.2027

**EPD Software:**  
LCA.no EPD generator

**System ID:**  
54516

## General information

### Product

Arena 1200

### Program operator:

Post Box 5250 Majorstuen, 0303 Oslo, Norway  
The Norwegian EPD Foundation  
Phone: +47 23 08 80 00  
web: post@epd-norge.no

### Declaration number:

NEPD-4002-3042-EN

### This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR  
IBU PCR - Part B for luminaires, lamps, and components for luminaires

### Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

### Declared unit:

1 pcs Arena 1200

### Declared unit with option:

A1,A2,A3,A4,A5,C1,C2,C3,C4,D

### Functional unit:

1 Arena 1200 LED luminaire manufactured and installed, including waste treatment at end-of-life.

### General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Individual third party verification of each EPD is not required when the EPD tool is i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD Norway, and iii) the process is reviewed annually. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools.

### Verification of EPD tool:

Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPD Norway's procedures and guidelines for verification and approval of EPD tools. Approval number: NEPDT41.

Third party verifier:

Vito D'Incognito - Take Care International  
(no signature required)

### Owner of the declaration:

Elektroskandia Norge AS  
Contact person: Pål Kristiansen  
Phone: +47 97 66 22 12  
e-mail: pkr@elektroskandia.no

### Manufacturer:

SG Armaturen AS  
Skytterheia 25, 4790 Lillesand  
Norway

### Place of production:

SG Armaturen production site Odense (Denmark)  
Egestubben 26, 5270 Odense  
Denmark

### Management system:

ISO 14001, ISO 9001

### Organisation no:

977 454 700

**Issue date:** 05.12.2022

**Valid to:** 05.12.2027

### Year of study:

2021

### Comparability:

EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building context.

### Development and verification of EPD:

The declaration is created using EPD tool Ica.tools ver EPD2021.09, developed by LCA.no. The EPD tool is integrated in the company's management system, and has been approved by EPD Norway.

Developer of EPD:

Sabrina Loman Hansen - SG Armaturen AS

Reviewer of company-specific input data and EPD:

Peter Sør Mikkelsen - SG Armaturen AS

### Approved:



Håkon Hauan  
Managing Director of EPD-Norway

## Product

### Product description:

Energy efficient surface mounted IP23 luminaire for use in industry and storage. It is easy to install with hinged gear tray, and can be mounted either direct on ceiling (screws) or by using the mounting hooks for horizontal wiring. It is available in two lengths and with three different light distributions.

Wattage: 77W. Luminous flux: 11830lm. Efficacy: 154 lm/W. Colour temperature: 4000K. Colour rendering: Ra>80. Housing: Sheet steel. Colour: White (RAL 9010, 20% gloss). Dimensions: 1194 x 138 x 63 mm. EAN: 5703821174480.

The EPD also covers the following products:

EAN: 5703821174541 - Arena 1200 White Medium 9000lm 4000K Ra>80 DALI  
EAN: 5703821174534 - Arena 1200 White Medium 9000lm 4000K Ra>80 On/Off  
EAN: 5703821177030 - Arena 1200 White Wide 8980lm 4000K Ra>80 On/Off  
EAN: 5703821174473 - Arena 1200 White Medium 11830lm 4000K Ra>80 On/Off

### Product specification

Materials	kg	%
Coating materials	0,11	2,88
Electronic - Cable and connector	0,25	6,59
Electronic - LED driver	0,21	5,46
Electronic - LED plate	0,21	5,47
Electronic - Light emitting diode	0,00	0,07
Metal - Steel	2,62	69,84
Plastic - Plexiglass (PMMA)	0,36	9,59
Plastic - Polyethylene (HDPE)	0,00	0,11
Total	3,76	

Packaging	kg	%
Packaging - Cardboard	0,20	100,00
Total incl. packaging	3,96	

### Technical data:

Link to the CE Declaration on our website:

[https://www.sg-as.com/storage/data/130073\\_Arena/50/130073\\_Arena.pdf](https://www.sg-as.com/storage/data/130073_Arena/50/130073_Arena.pdf)

Link to product data on our website:

<https://www.sg-as.com/products/arena/8246092489>

### Market:

Norway.

### Reference service life, product

15 years. Estimated based on the characteristics of the product and the intended application.

### Reference service life, building or construction works

60 years. Standard service life for buildings according to the PCR Part A of EPD Norway.

## LCA: Calculation rules

### Declared unit:

1 pcs Arena 1200

### Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) can be excluded. These cut-off criteria do not apply for hazardous materials and substances.

### Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

### Data quality:

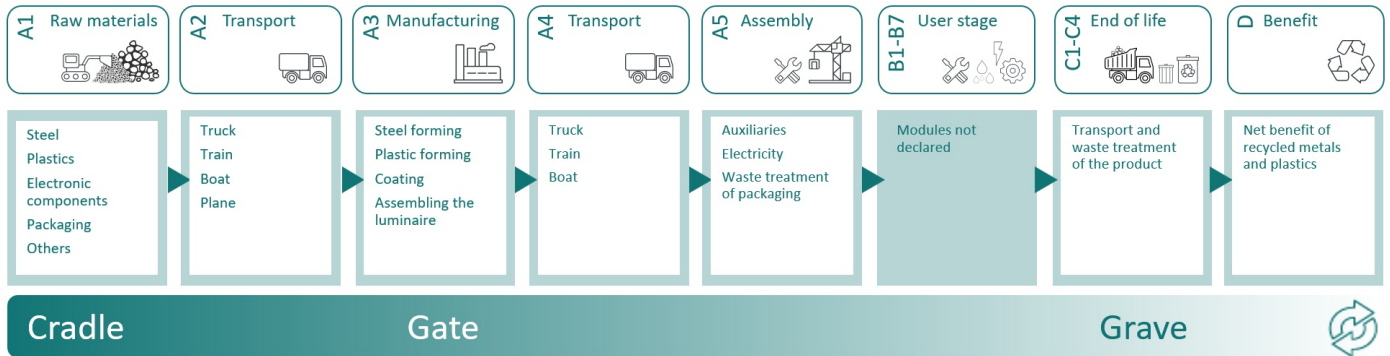
Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.

Materials	Source	Data quality	Year
Electronic - Light emitting diode	Scholand et al. (2012); Ecoinvent 3.6	LCA literature; database	2017
Coating materials	Ecoinvent 3.6	Database	2019
Electronic - Cable and connector	ecoinvent 3.6	Database	2019
Electronic - LED plate	ecoinvent 3.6	Database	2019
Metal - Steel	ecoinvent 3.6	Database	2019
Packaging - Cardboard	ecoinvent 3.6	Database	2019
Plastic - Plexiglass (PMMA)	ecoinvent 3.6	Database	2019
Plastic - Polyethylene (HDPE)	ecoinvent 3.6	Database	2019
Metal - Steel	SG Armaturen + ecoinvent 3.6	Database	2019
Electronic - Cable and connector	ecoinvent 3.6; manufacturer	Database; technical sheet	2019
Electronic - LED driver	ecoinvent 3.6	Supplier specific/database	2019

**System boundaries (X=included, MND=module not declared, MNR=module not relevant)**

Product stage			Construction installation stage		Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

**System boundary:**



**Additional technical information:**

Link to the user manual on our website, for proper use of the product:  
[https://www.sg-as.com/storage/data/130073\\_Arena/20/130073\\_211124\\_Arena%201200%20Short\\_User%20Manual.pdf](https://www.sg-as.com/storage/data/130073_Arena/20/130073_211124_Arena%201200%20Short_User%20Manual.pdf)

## LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

Module A4 = 600 km for the transport from the production site in Odense, Denmark to Elektroskandia, Langhus, Norway + 300 km for Norwegian market.

Module A5 = Installation is performed in Norway and done by manual labor. Auxiliaries are estimated under the cut-off criterion of 1%. Packaging of the final product consist of a corrugated board box.

Module C1 = The de-installation of the luminaire is done by manual labor. The use of portable electrical devices (e.g., drill) usually have low energy requirements falling under the cut-off-criterion of 1% and is therefore neglected.

Module C2 = Transportation from building site to the waste treatment facility with an average distance of 300km.

Modules C3 and C4 = Waste treatment of the product follows the default values provided in EN 50693, Product Category Rules for life cycle assessments of electronic and electrical products and systems, table G.4. This table specified how different types of raw materials used in A1 will likely be treated during the end-of-life of the product. Waste treatments in C3 include material recycling and incineration with and without energy recovery and fly ash extraction. Disposal in C4 consist of landfilling of different waste fractions and of ashes.














Module D = The recyclability of metals, plastics, and electronic components allows the producers a credit for the net scrap that is produced at the end of a product's life. The benefits from recycling of net scrap are described in formula from EN 15804:2012+A2:2019. Substitution of heat and electricity generated by the incineration with energy recovery of plastic insulation and other parts is also calculated in module D.

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 6 (km)	36,7 %	900	0,043	l/tkm	38,70
Assembly (A5)		Unit	Value		
Waste, cardboard and paper, to average treatment - A5 including transport (kg)	kg	0,20			
Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 6 (km)	36,7 %	300	0,043	l/tkm	12,90
Waste processing (C3)		Unit	Value		
Copper to recycling (kg)	kg	0,07			
Steel to recycling (kg)	kg	2,13			
Waste treatment of plastic mixture, incineration with energy recovery and fly ash extraction (kg)	kg	0,27			
Waste treatment of polyethylene (PE), incineration with energy recovery and fly ash extraction (kg)	kg	0,00			
Waste treatment per kg electronics scrap from PWB, with components, recycling of metals, with lead - C3 (kg)	kg	0,06			
Waste treatment per kg electronics scrap from PWB, without components, recycling of copper - C3 (kg)	kg	0,10			
Waste treatment per kg used electronic cable, manual separation (kg)	kg	0,21			
Waste treatment per kg used electronic LED driver, manual separation (kg)	kg	0,21			
Waste treatment per kg used electronic plug connector, manual separation (kg)	kg	0,04			
Waste treatment per kg used PWB, shredding and separation - C3 (kg)	kg	0,32			
Disposal (C4)		Unit	Value		
Landfilling of ashes from incineration of Hazardous waste, process per kg ashes and residues - C4 (kg)	kg	0,02			
Landfilling of ashes from incineration of Plastic mixture, process per kg ashes and residues (kg)	kg	0,01			
Landfilling of ashes from incineration of Polyethylene (PE), process per kg ashes and residues (kg)	kg	0,00			
Landfilling of copper (kg)	kg	0,05			
Landfilling of hazardous waste (kg)	kg	0,16			
Landfilling of plastic mixture (kg)	kg	0,27			
Landfilling of steel (kg)	kg	0,53			
Waste treatment of hazardous waste, incineration with fly ash extraction (kg)	kg	0,11			

Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of primary copper with net scrap from printed wiring board (g)	g	38,19			
Substitution of primary gold with net scrap from printed wiring board (g)	g	0,01			
Substitution of primary lead with net scrap from printed wiring board (g)	g	0,92			
Substitution of primary nickel with net scrap from printed wiring board (g)	g	1,92			
Substitution of primary palladium with net scrap from printed wiring board (g)	g	0,02			
Substitution of primary silver with net scrap from printed wiring board (g)	g	0,32			
Substitution of primary copper with net scrap (kg)	kg	0,05			
Substitution of primary steel with net scrap (kg)	kg	0,31			
Substitution of electricity, in Norway (MJ)	MJ	0,42			
Substitution of thermal energy, district heating, in Norway (MJ)	MJ	6,35			

## LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environmental impact											
Parameter	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
 GWP-total	kg CO <sub>2</sub> -eq	5,81E+01	1,66E-01	2,47E+00	5,82E-01	3,43E-01	0,00E+00	1,94E-01	7,49E-01	3,24E-01	-1,56E+00
 GWP-fossil	kg CO <sub>2</sub> -eq	5,78E+01	1,65E-01	2,32E+00	5,82E-01	3,24E-03	0,00E+00	1,94E-01	7,48E-01	3,23E-01	-1,56E+00
 GWP-biogenic	kg CO <sub>2</sub> -eq	1,67E-01	6,83E-05	1,39E-01	2,41E-04	3,40E-01	0,00E+00	8,02E-05	2,32E-04	6,38E-04	-3,99E-03
 GWP-luluc	kg CO <sub>2</sub> -eq	8,66E-02	5,94E-05	7,92E-03	2,07E-04	1,07E-06	0,00E+00	6,90E-05	2,90E-04	3,72E-04	-3,05E-03
 ODP	kg CFC11-eq	4,54E-06	3,75E-08	1,29E-07	1,32E-07	6,83E-10	0,00E+00	4,39E-08	7,22E-09	3,28E-08	-2,68E-03
 AP	mol H <sup>+</sup> -eq	4,38E-01	5,18E-04	8,83E-03	1,67E-03	1,53E-05	0,00E+00	5,57E-04	5,59E-04	6,18E-04	-9,54E-02
 EP-FreshWater	kg P -eq	8,09E-03	1,32E-06	1,60E-04	4,65E-06	2,66E-08	0,00E+00	1,55E-06	3,76E-06	7,56E-06	-5,94E-04
 EP-Marine	kg N -eq	6,25E-02	1,05E-04	1,77E-03	3,31E-04	5,07E-06	0,00E+00	1,10E-04	1,42E-04	1,73E-04	-4,93E-03
 EP-Terrestrial	mol N eq	6,95E-01	1,17E-03	2,31E-02	3,70E-03	5,49E-05	0,00E+00	1,23E-03	1,53E-03	1,57E-03	-6,86E-02
 POCP	kg NMVOC-eq	2,32E-01	4,33E-04	5,37E-03	1,42E-03	1,58E-05	0,00E+00	4,72E-04	4,02E-04	5,21E-04	-1,99E-02
 ADP-minerals&metals <sup>1</sup>	Kg Sb-eq	6,98E-03	4,54E-06	1,77E-05	1,61E-05	7,87E-08	0,00E+00	5,35E-06	7,06E-07	1,14E-06	-1,63E-03
 ADP-fossil <sup>1</sup>	MJ	7,48E+02	2,50E+00	3,07E+01	8,79E+00	4,53E-02	0,00E+00	2,93E+00	1,14E+00	1,68E+00	-1,81E+01
 WDP <sup>1</sup>	m <sup>3</sup>	2,82E+03	2,40E+00	3,62E+02	8,50E+00	5,74E-02	0,00E+00	2,83E+00	9,74E+00	1,06E+01	-1,11E+01

GWP total Global Warming Potential total; GWP fossil Global Warming Potential fossil fuels ; GWP biogenic Global Warming Potential biogenic; GWP luluc Global Warming Potential land use change; ODP Ozone Depletion; AP Acidification; EP freshwater Eutrophication aquatic freshwater; EP marine Eutrophication aquatic marine; EP terrestrial Eutrophication terrestrial ;POCP Photochemical zone formation; ADPE Abiotic Depletion Potential minerals and metals; ADPf Abiotic Depletion Potential fossil fuels;

<sup>1</sup>Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed







1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

### Remarks to environmental impacts

The product is compliant with the European RoHS Directive 2011/65/EU on Restriction of the use of certain Hazardous Substances in Electrical and Electronic equipment and with the European REACH regulation (EC) No 1907/2006 on Registration, Evaluation, Authorization and Restriction of Chemicals.



### Additional environmental impact indicators











Parameter	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
 PM	Disease incidence	3,16E-06	1,00E-08	1,18E-07	3,56E-08	2,26E-10	0,00E+00	1,19E-08	3,53E-09	1,00E-08	-2,33E-07
 IRP <sup>2</sup>	kgBq U235 eq.	2,93E+00	1,09E-02	1,30E-01	3,84E-02	1,94E-04	0,00E+00	1,28E-02	5,66E-03	6,96E-03	-5,32E-02
 ETP-fw <sup>1</sup>	CTUe	3,45E+03	1,85E+00	5,39E+01	6,52E+00	6,04E-02	0,00E+00	2,17E+00	3,14E+00	3,64E+02	-7,60E+02
 HTP-c <sup>1</sup>	CTUh	1,49E-07	0,00E+00	1,07E-09	0,00E+00	2,00E-12	0,00E+00	0,00E+00	1,32E-09	4,08E-10	-7,99E-09
 HTP-nc <sup>1</sup>	CTUh	3,67E-06	2,01E-09	3,94E-08	7,12E-09	7,60E-11	0,00E+00	2,37E-09	7,79E-08	3,06E-09	-4,75E-07
 SQP <sup>1</sup>	Pt	2,20E+02	1,74E+00	5,38E+01	6,15E+00	3,04E-02	0,00E+00	2,05E+00	2,39E-01	2,05E+00	-1,70E+01

PM Particulate Matter emissions; IRP Ionizing radiation – human health; ETP-fw Eco toxicity – freshwater; HTP-c Human toxicity – cancer effects; HTP-nc Human toxicity – non cancer effects; SQP Soil Quality (dimensionless)

"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed




1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator
2. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Resource use												
Parameter	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D	
 PERE	MJ	7,50E+01	3,56E-02	3,20E+01	1,26E-01	7,45E-04	0,00E+00	4,20E-02	1,70E-01	3,50E-01	-5,42E+00	
 PERM	MJ	1,64E+00	0,00E+00	0,00E+00	0,00E+00	-1,64E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 PERT	MJ	7,66E+01	3,56E-02	3,20E+01	1,26E-01	-1,64E+00	0,00E+00	4,20E-02	1,70E-01	3,50E-01	-5,42E+00	
 PENRE	MJ	7,32E+02	2,50E+00	3,07E+01	8,79E+00	4,53E-02	0,00E+00	2,93E+00	1,14E+00	1,68E+00	-1,81E+01	
 PENRM	MJ	1,73E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,88E+01	0,00E+00	0,00E+00	
 PENRT	MJ	7,49E+02	2,50E+00	4,07E+01	8,79E+00	4,53E-02	0,00E+00	2,93E+00	-1,76E+01	1,68E+00	-2,04E+01	
 SM	kg	3,87E+00	0,00E+00	2,13E-02	0,00E+00	4,59E-05	0,00E+00	0,00E+00	1,87E-04	6,99E-03	1,95E-01	
 RSF	MJ	2,40E+00	1,27E-03	7,49E-01	4,50E-03	2,47E-05	0,00E+00	1,50E-03	2,69E-03	5,00E-03	-6,95E-03	
 NRSF	MJ	7,88E+00	4,58E-03	8,45E-01	1,61E-02	1,02E-04	0,00E+00	5,37E-03	-1,36E-03	3,07E-02	1,72E-01	
 FW	m <sup>3</sup>	6,30E-01	2,66E-04	8,17E-02	9,40E-04	2,14E-05	0,00E+00	3,13E-04	1,56E-03	1,54E-03	-1,88E-02	

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 resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; FW Use of net fresh water

\*Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"






\*INA Indicator Not Assessed

End of life - Waste												
Parameter		Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
	HWD	kg	3,50E-01	1,29E-04	2,10E-02	4,53E-04	2,00E-04	0,00E+00	1,51E-04	3,25E-04	1,85E-01	-7,52E-03
	NHWD	kg	1,08E+01	1,21E-01	2,29E-01	4,28E-01	2,26E-03	0,00E+00	1,43E-01	5,71E-02	9,14E-01	-4,10E-01
	RWD	kg	2,37E-03	1,70E-05	9,04E-05	5,99E-05	2,99E-07	0,00E+00	2,00E-05	4,63E-06	8,37E-06	-4,61E-05

HWD Hazardous waste disposed; NHWD Non-hazardous waste disposed; RWD Radioactive waste disposed;

"Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3} = 0,009$ "

\*INA Indicator Not Assessed

End of life - Output flow												
Parameter		Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
	CRU	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
	MFR	kg	2,04E-01	0,00E+00	2,36E+00	0,00E+00	1,86E-01	0,00E+00	0,00E+00	2,20E+00	3,85E-03	1,60E-01
	MER	kg	9,01E-04	0,00E+00	7,37E-03	0,00E+00	2,72E-07	0,00E+00	0,00E+00	2,73E-05	1,13E-04	-7,23E-05
	EEE	MJ	2,90E-02	0,00E+00	7,15E-02	0,00E+00	1,14E-02	0,00E+00	0,00E+00	4,20E-01	8,42E-04	-5,44E-04
	EET	MJ	4,39E-01	0,00E+00	1,08E+00	0,00E+00	1,73E-01	0,00E+00	0,00E+00	6,35E+00	1,27E-02	-8,23E-03

CRU Components for re-use; MFR Materials for recycling; MER Materials for energy recovery; EEE Exported electrical energy; EET Exported Energy Thermal

"Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3} = 0,009$ "

\*INA Indicator Not Assessed

Biogenic Carbon Content		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in accompanying packaging	kg C	9,26E-02

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>

## Additional Norwegian requirements

### Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Electricity mix	Data source	Amount	Unit
Electricity, Denmark (kWh)	ecoinvent 3.6	338,20	g CO2-eq/kWh

### Dangerous substances

The product contains substances given by the REACH Candidate list and the Norwegian priority list that are less than 0,1 % by weight.

Name	CASNo	Amount
Lead	7439-92-1	<0,1%

### Indoor environment

No effect on indoor environment.

## Additional Environmental Information

Environmental impact indicators EN 15804+A1 and NPCR Part A v2.0											
Parameter	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
GWP	kg CO <sub>2</sub> -eq	5,61E+01	1,64E-01	3,04E+00	5,76E-01	3,43E-01	0,00E+00	1,92E-01	7,46E-01	3,14E-01	-1,51E+00
ODP	kg CFC11 -eq	4,65E-06	3,04E-08	1,30E-07	1,07E-07	5,50E-10	0,00E+00	3,56E-08	6,68E-09	3,06E-08	-8,56E-08
POCP	kg C <sub>2</sub> H <sub>4</sub> -eq	2,63E-02	2,08E-05	4,65E-04	7,03E-05	4,59E-07	0,00E+00	2,34E-05	1,92E-05	4,52E-05	-3,33E-03
AP	kg SO <sub>2</sub> -eq	3,49E-01	3,62E-04	6,64E-03	1,15E-03	8,22E-06	0,00E+00	3,83E-04	4,31E-04	4,48E-04	-8,07E-02
EP	kg PO <sub>4</sub> <sup>3-</sup> -eq	4,70E-02	3,85E-05	1,33E-03	1,22E-04	1,41E-06	0,00E+00	4,07E-05	6,97E-05	8,65E-05	-3,52E-03
ADPM	kg Sb -eq	6,98E-03	4,54E-06	1,77E-05	1,61E-05	7,87E-08	0,00E+00	5,35E-06	7,06E-07	1,14E-06	-1,63E-03
ADPE	MJ	6,32E+02	2,45E+00	3,03E+01	8,61E+00	4,42E-02	0,00E+00	2,87E+00	9,72E-01	1,56E+00	-1,67E+01
GWPIOBC	kg CO <sub>2</sub> -eq	5,77E+01	1,66E-01	2,95E+00	5,82E-01	0,00E+00	0,00E+00	1,94E-01	7,49E-01	2,60E-01	-1,67E+00

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources; GWP-IOBC/GHG Global warming potential calculated according to the principle of instantaneous oxidation (except emissions and uptake of biogenic carbon)

## Bibliography

ISO 14025:2010. Environmental labels and declarations - Type III environmental declarations - Principles and procedures. International Organization for Standardization.

ISO 14044:2006. Environmental management - Life cycle assessment - Requirements and guidelines. International Organization for Standardization.

EN 15804:2012+A2:2019. Environmental product declaration - Core rules for the product category of construction products. European Committee for Standardization.

ISO 21930:2017. Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products. International Organization for Standardization.

EN 50693:2019. Product category rules for life cycle assessments of electronic and electrical products and systems. European Committee for Standardization.






Ecoinvent v3, 2019. Allocation, cut-off by classification. Swiss Centre of Life Cycle Inventories.

Iversen et al., (2021). eEPD v2021.09, background information for EPD generator tool system verification, LCA.no. Report number: 07.21. System verification report.

Philis et al., (2022). EPD generator for IBU PCR part B for luminaires, lamps, and components for luminaires, background information for EPD generator application and LCA data, LCA.no. Report number: 04.22. PCR verification report.

EPD Norway (2022). NPCR Part A: Construction products and services. The Norwegian EPD foundation. Version 2.0 published 24.03.2021.

IBU (2017). PCR part B for luminaires, lampes and components for luminaires. Institut Bauen und Umwelt e.V. Version 1.7, published 30.11.2017.

 <small>Global Program Operator</small>	<b>Program operator and publisher</b> The Norwegian EPD Foundation Post Box 5250 Majorstuen, 0303 Oslo, Norway	Phone: +47 23 08 80 00 e-mail: post@epd-norge.no web: www.epd-norge.no
 <small>REXEL GROUP</small>	<b>Owner of the declaration:</b> Elektroskandia Norge AS Postboks 143, 1403 Langhus	Phone: +47 97 66 22 12 e-mail: pkr@elektroskandia.no web: elektroskandia.no
	<b>Author of the Life Cycle Assessment</b> LCA.no AS Dokka 6B, 1671	Phone: +47 916 50 916 e-mail: post@lca.no web: www.lca.no
	<b>Developer of EPD generator</b> LCA.no AS Dokka 6B, 1671 Kråkerøy	Phone: +47 916 50 916 e-mail: post@lca.no web: www.lca.no
	ECO Platform ECO Portal	Web: www.eco-platform.org Web: ECO Portal

# **EPD for the best environmental decision**

The Norwegian EPD Foundation  
[www.epd-norge.no](http://www.epd-norge.no)

