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Powered by EPD-Norway

Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

Lumi Duo 400 IP44 28W 830/840 PCO



AIRAM

EPD-Global

Owner of the declaration:
Airam Electric Oy Ab

Product:
Lumi Duo 400 IP44 28W 830/840 PCO

Declared unit:
1 pcs

This declaration is based on Product Category Rules:
CEN Standard EN 15804:2012+A2:2019 and EN 50693 :2019 serves as core PCR
IBU PCR - Part B for luminaires, lamps, and components for luminaires

Program operator:
EPD-Global

Declaration number:
NEPD-18730-23093

Issue date:
23.10.2026

Valid to:
23.10.2031

EPD software:
LCAno EPD generator ID: 1813137

General information

Product

Lumi Duo 400 IP44 28W 830/840 PCO

Owner of the declaration:

Airam Electric Oy Ab
Contact person:
Phone: +358 20 7545 604
e-mail: helpdesk@airam.fi

Program operator:

EPD-Global
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Phone: +47 977 22 020
web: www.epd-global.com

Manufacturer:

Airam Electric Oy Ab
Sementtitehtaankatu 6
04260 Kerava, Finland

Declaration number:

NEPD-18730-23093

Place of production:

Fujian - Production site of Airam Electric Oy Ab
Fujian, China

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 and EN 50693 :2019 serves as core PCR
IBU PCR - Part B for luminaires, lamps, and components for luminaires

Management system:

ISO 9001, 14001 and 45001

Statement of liability:

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

Organisation no:

FI07335495

Declared unit:

1 pcs Lumi Duo 400 IP44 28W 830/840 PCO

Issue date:

23.10.2026

Declared unit with option:

A1, A2, A3, A4, A5, B1, B2, B3, B4, B5, B6, B7, C1, C2, C3, C4, D

Valid to:

23.10.2031

Year of study:

2025

Functional unit:

2500 lm over 50 000 h (L70B50)

Comparability:

EPDs of construction products may not be comparable if they do not comply with EN 15804 and are not viewed in a building context.

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. Verification of each EPD is made according to EPD-Global's guidelines for verification and approval requiring that tools are i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD-Global, and iii) the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Global's General Programme Instructions for further information on EPD tools

Development and verification of EPD:

The declaration is created using EPD generator v2025.09, developed by LCA.no. The EPD tool is integrated in the company's management system, and has been approved by EPD-Global. NEPDT 221

Developer of EPD: Samuli Salonen

Reviewer of company-specific input data and EPD: Emma Malinen

Verification of EPD tool:

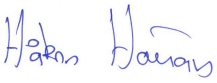
Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPD-Global's procedures and guidelines for verification and approval of EPD tools. Approval number: NEPDT41.

Third party verifier:

Andrea Arntzen Nistad, Asplan Viak

(no signature required)

Approved:



Håkon Hauan, CEO EPD-Global

Product

Product description:

Lumi Duo is a versatile and adjustable general lighting range that allows you to select the colour temperature and power. You can select the most suitable model from several size and control options. The Lumi Duo luminaire offers excellent resistance to cold temperatures, down to -30 °C. It is suitable for wall and ceiling mounting in public indoor and outdoor spaces, and in corridors, staircases and wet spaces in residential buildings. These impact-resistant luminaires are suitable for surface and semi-recessed mounting, with an installation bracket included in the delivery. They are quick to mount, thanks to the easy diffuser installation mechanism and LEDs that are located on the luminaire edge. The luminaire, with its screwless connector, is suitable for surface wiring and linking. A white decorative frame is available as an accessory.

This environmental product declaration can be used for the following luminaires:
4146615 Lumi Duo 400 IP44 28W 830/840 PCO

Product specification

Materials	kg	%
Electronic - Cable	0.00731	0.5557
Electronic - Connector	0.00844	0.6416
Electronic - LED chip	0.00576	0.4379
Electronic - LED driver	0.1244	9.46
Electronic - Printed wiring board	0.0133	1.01
Ethylene propylene diene monomer (EPDM)	0.00049	0.03725
Metal - Aluminium	0.01792	1.36
Metal - Steel	0.1312	9.98
Packaging - Kraft paper	0.03481	2.65
Plastic - Ethylene vinyl acetate (EVA)	0.00579	0.4402
Plastic - Polyamide	0.00132	0.1003
Plastic - Polycarbonate (PC)	0.9473	72.02
Rubber, synthetic	0.0173	1.32
Total	1.32	100.00

Packaging	kg	%
Packaging - Cardboard	0.4906	100.00
Total incl. packaging	1.81	100.00

Technical data:

Luminous flux: 2500 lm
System power: 28 W
Luminaire efficacy: 89 lm/W
Colour temperature (CCT): 3000/4000K
Colour rendering index (CRI): >80
Colour consistency: SDCM3
Ingress Protection: IP44
Impact Protection: IK10
Nominal rated voltage range: 220–240 V, 50–60 Hz
Electrical protection class: II
Quantity of drivers per miniature circuit breaker 16 A Type C: 52 pcs

Please visit our website www.airam.fi for more technical information.

Market:

Finland

Reference service life, product

12 years lifetime for the residential 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 Lumi Duo 400 IP44 28W 830/840 PCO

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 are 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 - Cable	ecoinvent 3.10.1	Database	2023
Electronic - Connector	ecoinvent 3.10.1	Database	2023
Electronic - LED chip	Scholand et al. (2012) + Ecoinvent 3.10.1	Scientific literature + database	2023
Electronic - LED driver	Product composition + ecoinvent 3.10.1	Supplier data + database	2023
Electronic - Printed wiring board	ecoinvent 3.10.1	Database	2023
Ethylene propylene diene monomer (EPDM)	ecoinvent 3.10.1	Database	2023
Metal - Aluminium	Modified ecoinvent 3.10.1	Database	2023
Metal - Steel	ecoinvent 3.10.1	Database	2023
Packaging - Cardboard	ecoinvent 3.10.1	Database	2023
Packaging - Kraft paper	ecoinvent 3.10.1	Database	2023
Plastic - Ethylene vinyl acetate (EVA)	ecoinvent 3.10.1	Database	2023
Plastic - Polyamide	ecoinvent 3.10.1	Database	2023
Plastic - Polycarbonate (PC)	ecoinvent 3.10.1	Database	2023
Rubber, synthetic	ecoinvent 3.10.1	Database	2023

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	X	X	X	X	X	X	X	X	X	X	X	X

System boundary:

The included and excluded modules are shown in the system boundary table.

The system boundary of this EPD is cradle-to-grave with module D, covering the product stage, construction stage, use stage and end-of-life stage of the luminaire.

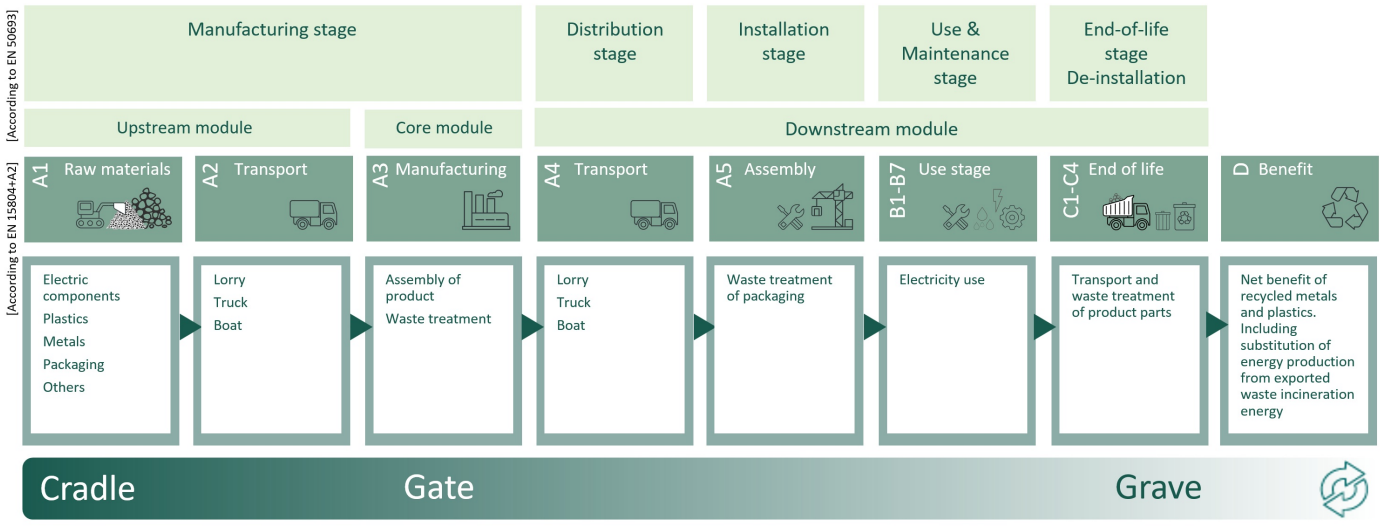
Product stage (A1–A3) includes the extraction and processing of raw materials, transport of materials to the manufacturing site, and manufacturing and assembly of the luminaire and its components.

Construction stage (A4–A5) includes transport of the product to the building site (A4) and installation of the luminaire (A5).

Use stage includes the operational energy use of the luminaire during its reference service life (B6).
Other use stage modules (B1–B5 and B7) are declared, but no maintenance, repair, replacement, refurbishment or operational water use occurs during normal operation of the luminaire.

End-of-life stage (C1–C4) includes deconstruction of the luminaire (C1), transport of waste to treatment facilities (C2), waste processing for reuse, recovery or recycling (C3), and final disposal (C4).

Module D includes potential benefits and loads beyond the system boundary from reuse, recycling and energy recovery of materials at the end of the product life cycle.



Additional technical information:

LCA: Scenarios and additional technical information

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

Module A4:
Transport to the building site is modelled as a multi-leg journey:
- Leg 1: 41 km by Truck, unspecified from Fujian factory to Sea Port in China
- Leg 2: 25587 km by Ship, Freight, Transoceanic from Sea Port in China to Sea Port in Rotterdam
- Leg 3: 1757 km by Transport, freight, sea, container ship from Sea Port in Rotterdam to Sea Port in Helsinki
- Leg 4: 28 km by Truck, over 32 tonnes, EURO 5 from Sea Port in Helsinki to Airam Kerava Warehouse
- Leg 5: 200 km by Truck, over 32 tonnes, EURO 5 from Airam Kerava Warehouse to Average distribution to Finnish market via wholesale warehouses and local wholesale stores

Module A5:
Installation is carried out at the site of use by manual labor. Any electrical equipment used during the installation process falls below the cut-off criteria defined for data completeness and is therefore excluded from the assessment. Product packaging consists of corrugated cardboard and kraft paper.

Modules B1-B5 & B7:
These modules do not contain any activity and hence the value in the EPD results table is 0.

Module B6:
The operational energy use of the luminaire is calculated based on the methodology provided in IBU PCR Part B for luminaires, lamps, and components for luminaires. The energy consumption model for luminaire used in the PCR follows the application scenarios developed in EN 15193:2007. To calculate the electricity use of the luminaire, the following scenario parameters have been applied:

- Application = Residential buildings
- Total power consumption of the luminaire (P) = 28 watt
- Active power of the luminaire (Pa) = 28 watt
- Passive power of the luminaire (Pp) = 0 watt
- Daylight time usage (tD) = 1820 hours
- Non-daylight time usage (tN) = 1680 hours
- Standard year time (ty) = 8760 hours
- The occupancy dependency factor (FO) = 1 (factor, no unit)
- The daylight dependency factor (FD) = 1 (factor, no unit)
- The product specific constant illuminance factor (FCP) = 1 (factor, no unit)
- The non-daylight dimming factor (FN) = 1 (factor, no unit)
- The application specific empiric lifetime of the luminaire in years (a) = 12 years (corresponding to the reference service life of the product).

Module C1:
Deconstruction of the luminaire is assumed to be manual with negligible environmental impact.

Module C2:
Transport of waste is modelled as 150 km by Truck, unspecified, EURO 5.

Modules C3–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)
Ship, Freight, Transoceanic (kgkm) - GLO	50.0 %	25587.00	0.002	l/tkm	51.17
Transport, freight, sea, container ship (km) - GLO	65.0 %	1757.00	0.003	l/tkm	5.27
Truck, over 32 tonnes, EURO 5 (km) - Europe	55.0 %	228.00	0.023	l/tkm	5.24
Truck, unspecified (km) - World	48.7 %	41.00	0.051	l/tkm	2.09

Assembly (A5)	Unit	Value			
Waste, paperboard, for incineration (kg) - inkl. 85 km	kg	0.5254			

Operational energy (B6)	Unit	Value			
Electricity, Finland, medium voltage (kWh)	kWh	1176.00			

De-construction demolition (C1)	Unit	Value			
Waste treatment per kg used electronic components, manual separation (kg)	kg	0.1244			

Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, unspecified, EURO 5 (km) - Europe	50.0 %	150.00	0.033	l/tkm	4.95

Waste processing (C3)	Unit	Value			
Waste plastic, mixture | treatment of waste plastic, mixture, municipal incineration FAE (kg)	kg	0.4908			
Waste treatment per kg used PWB, shredding and separation - C3 (kg)	kg	0.06555			
Waste treatment per kg electronics scrap from PWB, with components, recycling of metals C3 (kg)	kg	0.02713			
Waste municipal solid waste | treatment of municipal solid waste, municipal incineration FAE (kg)	kg	0.00422			
Steel to recycling (kg)	kg	0.1587			
Waste treatment per kg used electronic components, manual separation (kg)	kg	0.00731			
Copper to recycling (kg)	kg	0.001097			
Waste treatment per kg electronics scrap from PWB, without components, recycling of copper - C3 (kg)	kg	0.00565			
Aluminium to recycling (kg)	kg	0.01254			

Disposal (C4)	Unit	Value			
Waste plastic, mixture | treatment of waste plastic, mixture, sanitary landfill (kg)	kg	0.4908			
Landfilling of hazardous waste (kg)	kg	0.03854			
Waste inert waste | treatment of inert waste, sanitary landfill (kg) - RER	kg	0.00422			
Landfilling of steel (kg)	kg	0.03968			
Landfilling of Copper (kg)	kg	0.000731			
Landfilling of aluminium (kg)	kg	0.005376			

Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of electricity (MJ)	MJ	0.0002527			
Substitution of thermal energy, district heating (MJ)	MJ	0.0002659			
Substitution of primary metals with net scrap from PWB, with components (kg)	kg	0.007976			
Substitution of primary copper with net scrap (kg)	kg	0.001023			
Substitution of copper with net scrap from PWB, without components (kg)	kg	0.001348			
Substitution of primary aluminium with net scrap (kg)	kg	0.01434			

LCA: Results

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

Environmental impact										
Indicator		Unit	A1	A2	A3	A4	A5	B1	B2	B3
	GWP-total	kg CO_2 -eq	2.02E+01	2.93E-03	2.64E+00	4.68E-01	8.39E-01	0	0	0
	GWP-fossil	kg CO_2 -eq	2.04E+01	2.93E-03	2.64E+00	4.67E-01	2.34E-02	0	0	0
	GWP-biogenic	kg CO_2 -eq	-3.09E-01	7.08E-07	3.28E-04	1.05E-04	8.16E-01	0	0	0
	GWP-luluc	kg CO_2 -eq	4.05E-02	1.34E-06	1.11E-03	2.67E-04	5.89E-06	0	0	0
	ODP	kg CFC11 -eq	5.74E-07	3.60E-11	1.49E-08	9.71E-10	3.73E-10	0	0	0
	AP	mol H+ -eq	1.22E-01	1.33E-05	1.43E-02	1.13E-02	1.52E-04	0	0	0
	EP-FreshWater	kg P -eq	1.40E-02	2.33E-07	5.44E-04	1.77E-05	2.26E-06	0	0	0
	EP-Marine	kg N -eq	2.43E-02	5.00E-06	2.98E-03	2.70E-03	7.66E-05	0	0	0
	EP-Terrestial	mol N -eq	2.51E-01	5.45E-05	3.17E-02	3.00E-02	6.71E-04	0	0	0
	POCP	kg NMVOC -eq	9.20E-02	1.88E-05	8.58E-03	8.35E-03	1.88E-04	0	0	0
	ADP-minerals&metals[1]	kg Sb-eq	2.92E-03	9.40E-09	1.21E-05	6.07E-07	7.05E-08	0	0	0
	ADP-fossil[1]	MJ	3.01E+02	4.17E-02	2.54E+01	5.84E+00	2.16E-01	0	0	0
	WDP[1]	m^3	6.26E+00	2.01E-04	5.03E-01	1.90E-02	3.90E-02	0	0	0

Indicator		Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
	GWP-total	kg CO_2 -eq	0	0	1.73E+02	0	1.64E-02	4.01E-02	1.20E+00	5.45E-02	-5.79E-01
	GWP-fossil	kg CO_2 -eq	0	0	1.68E+02	0	1.63E-02	4.01E-02	1.20E+00	5.45E-02	-5.74E-01
	GWP-biogenic	kg CO_2 -eq	0	0	2.56E+00	0	6.11E-05	2.76E-05	-5.41E-04	6.42E-06	-1.80E-03
	GWP-luluc	kg CO_2 -eq	0	0	3.37E+00	0	3.23E-05	1.47E-05	5.79E-05	4.11E-05	-3.22E-03
	ODP	kg CFC11 -eq	0	0	3.18E-06	0	1.13E-10	8.13E-10	5.91E-10	2.38E-10	-1.18E-07
	AP	mol H+ -eq	0	0	6.17E-01	0	8.43E-05	1.26E-04	3.38E-04	7.10E-05	-2.96E-02
	EP-FreshWater	kg P -eq	0	0	4.53E-02	0	7.38E-06	2.72E-06	5.83E-06	3.37E-06	-1.58E-03
	EP-Marine	kg N -eq	0	0	1.41E-01	0	1.60E-05	4.25E-05	1.67E-04	1.04E-03	-1.61E-03
	EP-Terrestial	mol N -eq	0	0	1.47E+00	0	1.62E-04	4.62E-04	1.45E-03	2.47E-04	-2.08E-02
	POCP	kg NMVOC -eq	0	0	4.38E-01	0	4.83E-05	2.01E-04	3.91E-04	1.03E-04	-6.34E-03
	ADP-minerals&metals[1]	kg Sb-eq	0	0	9.07E-04	0	9.29E-08	1.26E-07	1.87E-07	2.69E-08	-4.92E-04
	ADP-fossil[1]	MJ	0	0	7.62E+03	0	2.11E-01	5.71E-01	4.06E-01	2.23E-01	-7.90E+00
	WDP[1]	m^3	0	0	2.09E+02	0	4.10E-03	2.90E-03	8.18E-02	3.73E-03	-4.45E-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 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

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

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 LCA results in the EPD are calculated using a specific methodological approach for accounting energy resources, see the additional requirements section for more information. In this EPD the following approach was used: Location-based approach.

Additional environmental impact indicators

Indicator		Unit	A1	A2	A3	A4	A5	B1	B2	B3
	PM	Disease incidence	1.23E-06	2.83E-10	1.96E-07	5.64E-09	1.69E-09	0	0	0
	IRP[2]	kgBq U235 -eq	1.50E+00	3.56E-05	9.45E-02	3.36E-03	5.18E-04	0	0	0
	ETP-fw[1]	CTUe	5.07E+02	6.57E-03	8.07E+00	4.85E-01	1.01E+00	0	0	0
	HTP-c[1]	CTUh	1.45E-08	0.00E+00	3.17E-10	0.00E+00	2.80E-11	0	0	0
	HTP-nc[1]	CTUh	4.09E-07	3.60E-11	2.07E-08	5.60E-10	1.29E-09	0	0	0
	SQP[1]	dimensionless	1.20E+02	3.12E-02	5.37E+00	1.16E+00	9.80E-02	0	0	0

Indicator		Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
	PM	Disease incidence	0	0	5.11E-06	0	7.22E-10	3.52E-09	1.83E-09	1.63E-09	-6.85E-08
	IRP[2]	kgBq U235 -eq	0	0	4.39E+02	0	2.22E-03	7.45E-04	1.70E-03	4.71E-04	-7.51E-02
	ETP-fw[1]	CTUe	0	0	5.09E+02	0	4.33E-02	7.39E-02	2.54E+00	3.19E+00	-3.39E+01
	HTP-c[1]	CTUh	0	0	4.70E-08	0	3.00E-12	0.00E+00	2.14E-10	1.00E-11	-1.07E-09
	HTP-nc[1]	CTUh	0	0	1.77E-06	0	1.56E-10	2.71E-10	3.53E-09	3.49E-10	-7.32E-08
	SQP[1]	dimensionless	0	0	2.45E+03	0	3.79E-02	4.40E-01	1.20E-01	4.77E-01	-5.59E+00

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 = Potential Soil Quality Index (dimensionless)

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

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										
Indicator		**Unit**	A1	A2	A3	A4	A5	B1	B2	B3
	PERE	MJ	2.55E+01	5.92E-04	9.46E+00	5.44E-02	8.15E-03	0	0	0
	PERM	MJ	6.75E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	0	0
	PERT	MJ	3.22E+01	5.92E-04	9.46E+00	5.44E-02	8.15E-03	0	0	0
	PENRE	MJ	2.71E+02	4.17E-02	2.54E+01	5.84E+00	2.16E-01	0	0	0
	PENRM	MJ	3.05E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	0	0
	PENRT	MJ	3.01E+02	4.17E-02	2.54E+01	5.84E+00	2.16E-01	0	0	0
	SM	kg	4.34E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	0	0
	RSF	MJ	8.04E-02	2.36E-07	1.41E-04	9.96E-06	3.61E-06	0	0	0
	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	0	0
	FW	m^3	1.62E-01	5.86E-06	1.20E-02	4.78E-04	6.29E-04	0	0	0

Indicator		**Unit**	B4	B5	B6	B7	C1	C2	C3	C4	D
	PERE	MJ	0	0	2.71E+03	0	3.18E-02	1.00E-02	3.94E-02	3.58E-02	-1.52E+00
	PERM	MJ	0	0	0.00E+00	0	0.00E+00	0.00E+00	-6.75E+00	0.00E+00	0.00E+00
	PERT	MJ	0	0	2.71E+03	0	3.18E-02	1.00E-02	-6.71E+00	3.58E-02	-1.52E+00
	PENRE	MJ	0	0	7.62E+03	0	2.11E-01	5.71E-01	4.06E-01	2.23E-01	-7.90E+00
	PENRM	MJ	0	0	0.00E+00	0	0.00E+00	0.00E+00	-3.19E+01	0.00E+00	0.00E+00
	PENRT	MJ	0	0	7.62E+03	0	2.11E-01	5.71E-01	-3.15E+01	2.23E-01	-7.90E+00
	SM	kg	0	0	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.55E-04
	RSF	MJ	0	0	2.70E-03	0	1.91E-07	3.18E-06	1.81E-05	6.65E-06	-5.63E-05
	NRSF	MJ	0	0	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.03E-06
	FW	m^3	0	0	6.61E+00	0	1.15E-04	8.16E-05	1.45E-03	5.22E-05	-1.10E-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 = Net use of fresh water

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

End of life - Waste

Indicator		Unit	A1	A2	A3	A4	A5	B1	B2	B3
	HWD	kg	1.92E+00	7.30E-05	3.24E-01	8.31E-03	1.73E-04	0	0	0
	NHWD	kg	5.00E+01	1.37E-03	2.64E+00	1.20E-01	5.29E-01	0	0	0
	RWD	kg	2.89E-04	0.00E+00	2.30E-05	7.90E-07	3.82E-05	0	0	0

Indicator		Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
	HWD	kg	0	0	1.03E+01	0	1.42E-03	8.24E-04	2.15E-04	3.85E-02	-1.11E-01
	NHWD	kg	0	0	2.41E+02	0	3.57E-02	1.73E-02	5.66E-01	5.41E-01	-3.10E+00
	RWD	kg	0	0	9.43E-02	0	5.42E-07	0.00E+00	1.17E-07	0.00E+00	-1.93E-05

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

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

End of life - Output flow

Indicator		Unit	A1	A2	A3	A4	A5	B1	B2	B3
	CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	0	0
	MFR	kg	5.11E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	0	0
	MER	kg	1.26E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	0	0
	EEE	MJ	8.31E-04	0.00E+00	0.00E+00	0.00E+00	9.29E-05	0	0	0
	EET	MJ	8.70E-04	0.00E+00	0.00E+00	0.00E+00	9.05E-05	0	0	0

Indicator		Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
	CRU	kg	0	0	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MFR	kg	0	0	0.00E+00	0	1.66E-05	0.00E+00	1.72E-01	0.00E+00	0.00E+00
	MER	kg	0	0	0.00E+00	0	1.02E-08	0.00E+00	4.91E-01	0.00E+00	0.00E+00
	EEE	MJ	0	0	0.00E+00	0	1.99E-04	0.00E+00	1.94E-04	2.19E-05	0.00E+00
	EET	MJ	0	0	0.00E+00	0	1.22E-05	0.00E+00	1.93E-04	6.70E-05	0.00E+00

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

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

Biogenic Carbon Content

Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	1.37E-02
Biogenic carbon content in accompanying packaging	kg C	2.09E-01

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2

Additional requirements

Transparent reporting of energy

The EPD presents environmental impact categories in the main results tables using a specific methodological approach for accounting energy resources. To ensure transparency and support informed interpretation, the table below explains the implications of the chosen methodology. It illustrates the GWP-total for energy resources used in the manufacturing stage, comparing the location-based and market-based approaches. In this EPD the following approach was used in main result tables: Location-based approach.

Electricity mix	Source	Amount	Unit	GWPtotal [kg CO2/Unit]	SUM [kg CO2]
Location-based approach.					
Electricity, low voltage | electricity production, photovoltaic, 3kWp slanted-roof installation, multi-Si, panel, mounted (kWh) - CN-ZJ - ecoinvent 3.10.1	ecoinvent 3.10.1	1.78E+00	kWh	8.43E-02	1.50E-01
Electricity, China, State Grid Corporation of China, medium voltage	ecoinvent 3.10.1	2.48E+00	kWh	1.01E+00	2.49E+00
Market-based approach.					
Electricity, China, low voltage, residual mix (kWh)	Modified ecoinvent 3.11	1.78E+00	kWh	1.53E+00	2.73E+00
Electricity, medium voltage | electricity, medium voltage, residual mix (kWh) - CN	ecoinvent 3.10.1	2.48E+00	kWh	1.47E+00	3.63E+00

"Reading example: 9.0 E-03 = 9.0*10-3 = 0.009"

Dangerous substances

The product contains no substances given by the REACH Candidate list.

Indoor environment

Not relevant

Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products										
Indicator	**Unit**	A1	A2	A3	A4	A5	B1	B2	B3	
GWPIOBC	kg CO_2 -eq	2.06E+01	2.93E-03	2.64E+00	4.68E-01	2.34E-02	0	0	0	
Indicator	**Unit**	B4	B5	B6	B7	C1	C2	C3	C4	D
GWPIOBC	kg CO_2 -eq	0	0	1.72E+02	0	1.63E-02	4.01E-02	1.20E+00	5.45E-02	-5.79E-01

GWP-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

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.
EN IEC 63366: 2025 Product category rules for life cycle assessment of electrical and electronic product systems.
Ecoinvent v3. Allocation, cut-off by classification. Swiss Centre of Life Cycle Inventories.
LCA.no (2025) EPD generator v2025.09 Background information for EPD generator tool system verification, LCA.no September 2025.
EPD generator for IBU PCR Part B for for Luminaires, light sources and control gears, Background information for EPD generator application and LCA data.
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. v12, published 30.09.2024.

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