

# ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2

Origi Origi Linear, Suspended, Retail, Clean Industry, Logistics, Industrial, Storage 1800  
Greenled Oy

ORIGI SUSPENDED BL



ORIGI SUSPENDED MP



ORIGI LINEAR



ORIGI RETA



ORIGI INDUSTRIAL



ORIGI LOGISTICS



ORIGI CLEAN INDUSTRY



ORIGI STORA



10.2.2026

## GENERAL INFORMATION

### MANUFACTURER

Manufacturer	Greenled Oy
Address	Oritkarintie 4, 90400, Oulu, FI
Contact details	info@greenled.fi
Website	www.greenled.fi

### EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	-
Reference standard	EN 15804:2012+A2:2019/AC:2021
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Electrical product
Category of EPD	ISO 14021 self-declared EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-B7, and modules C1-C4, D
EPD author	Greenled Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025:  <input type="checkbox"/> Internal verification <input type="checkbox"/> External verification
EPD verifier	-

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

### PRODUCT

Product name	Origo 1800
Additional labels	Origo Retail, Origo Linear, Origo Suspended, Origo Storage, Origo Clean Industry, Origo Industrial, Origo Logistics
Product reference	
Place(s) of raw material origin	Global, mainly EU
Place of production	Finland
Place(s) of installation and use	Europe
Period for data	2025
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	+22
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	56,3

## ENVIRONMENTAL DATA SUMMARY

Declared unit	Origi 1800
Declared unit mass	4,3 kg
Mass of packaging	0,42 kg
GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)	29,4
GWP-total, A1-A3 (kgCO <sub>2</sub> e)	29,4
Secondary material, inputs (%)	62,36
Secondary material, outputs (%)	60,7
Total energy use, A1-A3 (kWh)	152
Net freshwater use, A1-A3 (m <sup>3</sup> )	57,5

## PRODUCT AND MANUFACTURER

### ABOUT THE MANUFACTURER

Greenled is a pioneer in responsible professional lighting. We manufacture the most energy-efficient and longest lasting luminaires on the market at our factory in Oulu, the world's northernmost luminaire factory. We also offer complete solutions for companies, municipalities and contractors who want to make sustainable decisions.

### PRODUCT DESCRIPTION

Origi's modular design allows for unprecedented flexibility. The same luminaire can be used in many different applications for example, in office, retail, industry, logistics, warehouses, storages, data centers etc. Origi can be also upgraded to a new application more easily than any other luminaire. As needs change, Origi remains. Origi takes the energy efficiency of lighting to a new level. It helps to reduce the energy consumption of properties and at the same time increase the value of properties.

Further information can be found at:  
[www.greenled.fi](http://www.greenled.fi)

### PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	87,1	Global, mainly EU
Minerals	0	
Fossil materials	12,9	Global
Bio-based materials	0	

### BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0,11

### FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	Origi 1800
Mass per declared unit	4,3 kg
Functional unit	1 luminaire
Reference service life	100 000h

### SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

# PRODUCT LIFE-CYCLE

## SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	ND	ND	ND	ND	ND	x	ND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Not declared = ND.

## MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

A market-based approach is used in modelling the electricity mix utilized in the factory.

The product is made of metals, plastics and electronic components. The components are transported to Greenled production facility, where the main manufacturing being assembled together. The finished product is packaged in polyethylene and cardboard before being sent to the installation site on a wooden pallet. Luminaire frame is 100% recycled aluminium.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

## TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Average distance of transportation from production plant to building site is assumed as 500 km and the transportation method is assumed to be lorry. Transportation does not cause losses as products are packaged properly. Transportation impacts that occur from delivery of the product cover direct exhaust emissions of fuel, environmental impacts of fuel production, as well as related infrastructure emissions. Environmental impacts from installation into the building include waste packaging materials (A5). The impacts of energy consumption and the used ancillary materials during installation are considered negligible.

## PRODUCT USE AND MAINTENANCE (B1-B7)

During the use phase, the product consumes electricity from Swedish electricity grid mix (B6). Impacts due to electricity production include direct emissions to air, transformation and transmission losses.

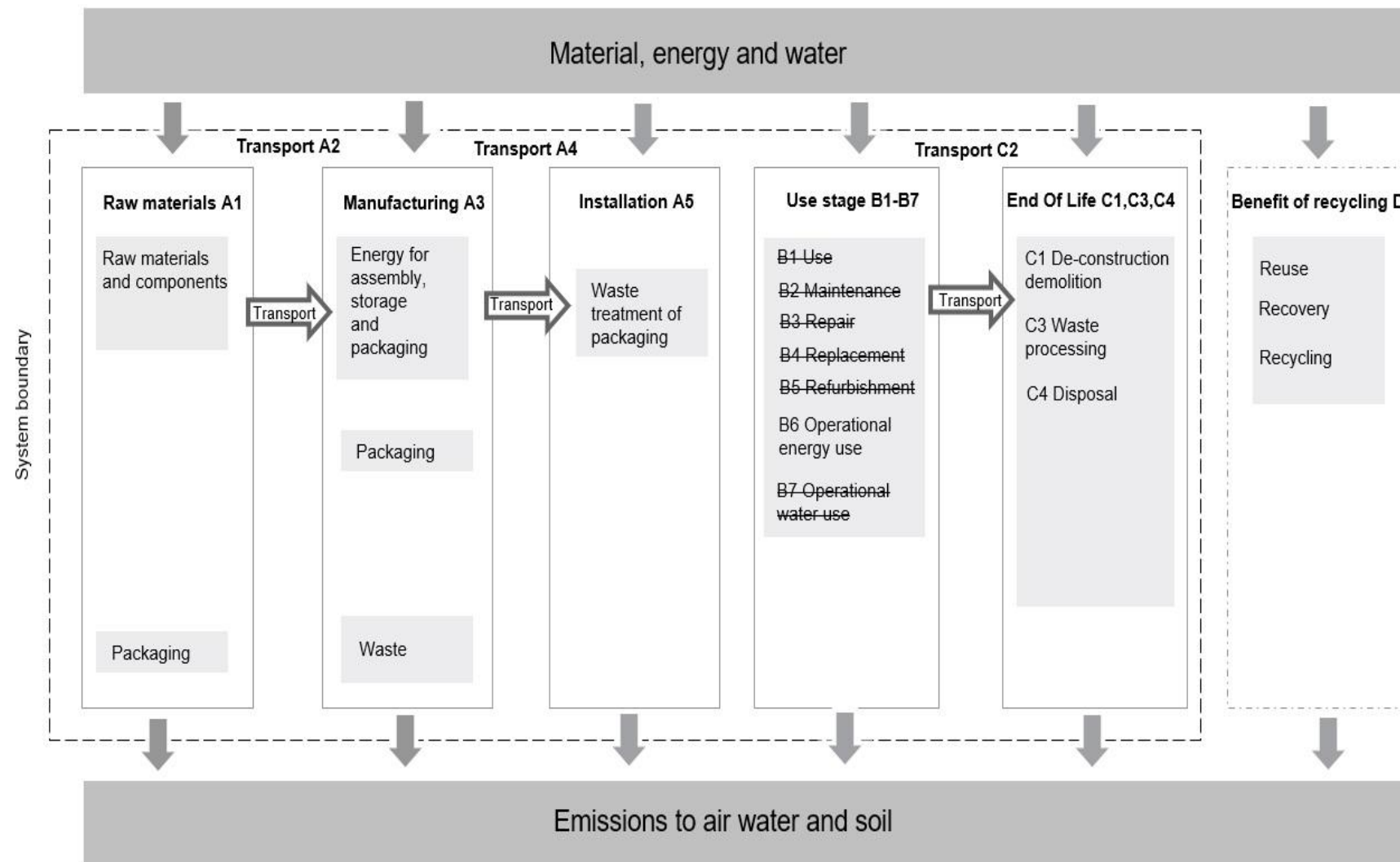
Air, soil, and water impacts during the use phase have not been studied.

#### PRODUCT END OF LIFE (C1-C4, D)

Consumption of energy and natural resources in demolition process is assumed to be negligible. It is assumed that the waste is collected separately and transported to the waste treatment center. According to EN 50693:2019, the sequence of treatment operations occurring to the product shall include de-pollution, fractions separation and preparation (dismantling, crushing, shredding, sorting), recycling, other material recovery, energy recovery and disposal. In this study, the default values from table G.4 of EN 50693 is used for treating materials in different waste treatment methods Due to the material and energy recovery potential of parts in the lighting system, the end-of-life product is converted into recycled raw materials, while the energy recovered from incineration displaces electricity and heat production (D). The wooden pallet and other plastic packaging used during transportation is also incinerated for energy recovery and/or recycled. The benefits and loads of incineration and recycling are included in Module D.



# MANUFACTURING PROCESS



## LIFE-CYCLE ASSESSMENT

### CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

### VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

### ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

### PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products
Grouping method	Based on a representative product
Variation in GWP-fossil for A1-A3, %	+22

This is an average EPD calculation including all Origi product families with length version of 1800. The worst case is represented by the article with the largest mass (Industrial) and luminaire integrated sensor and the best case is represented by an article with lowest mass (Linear, Retail). The difference between average case and worst case is +22% in GWP fossil for A1-A3. The



difference between average case and best case is -22 % in GWP fossil for A1-A3. Variation in GWP A1-A3: 5,4 - 8,4 kgCO<sub>2</sub>e/kg.

## LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD Process Certification v3.2.3. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

### [Verified tools](#)

Tool verification validity: 27 March 2025 - 26 March 2028

## ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

### CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total <sup>1)</sup>	kg CO <sub>2</sub> e	2,89E+01	1,58E-01	2,96E-01	2,94E+01	2,58E-01	4,19E-01	ND	ND	ND	ND	ND	2,84E+02	ND	0,00E+00	1,51E-01	6,17E-01	2,98E-01	-2,59E+00
GWP – fossil	kg CO <sub>2</sub> e	2,86E+01	1,58E-01	6,82E-01	2,94E+01	2,58E-01	2,09E-02	ND	ND	ND	ND	ND	2,59E+02	ND	0,00E+00	1,51E-01	6,17E-01	2,98E-01	-2,49E+00
GWP – biogenic	kg CO <sub>2</sub> e	1,64E-01	3,18E-05	-3,95E-01	-2,31E-01	5,85E-05	3,98E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	3,29E-05	-2,36E-04	-9,11E-05	-9,82E-02
GWP – LULUC	kg CO <sub>2</sub> e	1,29E-01	5,67E-05	9,79E-03	1,39E-01	1,16E-04	1,65E-05	ND	ND	ND	ND	ND	2,52E+01	ND	0,00E+00	6,67E-05	8,66E-05	3,70E-05	-2,38E-03
Ozone depletion pot.	kg CFC <sub>-11</sub> e	8,01E-07	3,15E-09	6,35E-08	8,67E-07	3,81E-09	1,91E-10	ND	ND	ND	ND	ND	8,85E-06	ND	0,00E+00	2,11E-09	9,68E-10	6,18E-10	-9,85E-09
Acidification potential	mol H <sup>+</sup> e	2,03E-01	3,29E-04	3,79E-03	2,07E-01	8,81E-04	7,51E-05	ND	ND	ND	ND	ND	3,03E+00	ND	0,00E+00	5,02E-04	8,78E-04	2,20E-04	-1,44E-02
EP-freshwater <sup>2)</sup>	kg Pe	5,96E-03	1,06E-05	1,74E-04	6,14E-03	2,01E-05	3,86E-06	ND	ND	ND	ND	ND	2,22E-01	ND	0,00E+00	1,17E-05	4,01E-05	4,81E-06	-2,88E-03
EP-marine	kg Ne	2,89E-02	7,90E-05	1,23E-03	3,02E-02	2,89E-04	7,75E-05	ND	ND	ND	ND	ND	4,75E-01	ND	0,00E+00	1,63E-04	2,38E-04	3,29E-04	-2,83E-03
EP-terrestrial	mol Ne	3,69E-01	8,52E-04	1,12E-02	3,82E-01	3,15E-03	2,80E-04	ND	ND	ND	ND	ND	5,05E+00	ND	0,00E+00	1,77E-03	2,49E-03	9,01E-04	-3,40E-02
POCP (“smog”) <sup>3)</sup>	kg NMVOCe	9,46E-02	5,47E-04	3,45E-03	9,86E-02	1,30E-03	9,76E-05	ND	ND	ND	ND	ND	1,29E+00	ND	0,00E+00	6,99E-04	7,08E-04	2,70E-04	-9,90E-03
ADP-minerals & metals <sup>4)</sup>	kg Sbe	1,79E-03	5,26E-07	1,59E-06	1,79E-03	7,21E-07	6,61E-08	ND	ND	ND	ND	ND	2,73E-02	ND	0,00E+00	4,95E-07	4,22E-06	8,79E-08	-5,82E-05
ADP-fossil resources	MJ	4,24E+02	2,22E+00	9,87E+00	4,36E+02	3,75E+00	1,76E-01	ND	ND	ND	ND	ND	3,19E+04	ND	0,00E+00	2,11E+00	9,39E-01	5,27E-01	-3,53E+01
Water use <sup>5)</sup>	m <sup>3</sup> e depr.	3,98E+03	1,11E-02	1,25E+01	4,00E+03	1,85E-02	5,81E-03	ND	ND	ND	ND	ND	1,47E+03	ND	0,00E+00	9,80E-03	4,94E-02	2,72E-02	-8,23E-01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO<sub>4</sub>e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1,99E-06	1,16E-08	9,03E-08	2,09E-06	2,59E-08	2,11E-09	ND	ND	ND	ND	ND	2,59E-05	ND	0,00E+00	1,20E-08	1,11E-08	3,34E-09	-2,47E-07
Ionizing radiation <sup>6)</sup>	kBq 11235e	8,40E-01	2,87E-03	5,33E-02	8,96E-01	3,26E-03	4,81E-04	ND	ND	ND	ND	ND	2,27E+03	ND	0,00E+00	1,71E-03	3,57E-03	1,02E-03	-4,38E-02
Ecotoxicity (freshwater)	CTUe	7,75E+02	2,96E-01	8,19E+01	8,58E+02	5,30E-01	2,51E+00	ND	ND	ND	ND	ND	3,08E+04	ND	0,00E+00	3,34E-01	1,56E+00	1,65E+02	-3,60E+01
Human toxicity, cancer	CTUh	2,44E-08	2,65E-11	6,81E-10	2,51E-08	4,26E-11	1,34E-11	ND	ND	ND	ND	ND	3,99E-07	ND	0,00E+00	2,56E-11	1,03E-10	4,15E-11	-4,46E-10
Human tox. non-cancer	CTUh	1,92E-06	1,41E-09	1,12E-08	1,94E-06	2,43E-09	6,25E-10	ND	ND	ND	ND	ND	2,38E-05	ND	0,00E+00	1,32E-09	5,26E-09	4,79E-09	-2,51E-09
SQP <sup>7)</sup>	-	1,94E+02	1,34E+00	4,51E+01	2,40E+02	3,78E+00	1,55E-01	ND	ND	ND	ND	ND	8,39E+03	ND	0,00E+00	1,26E+00	1,61E+00	7,88E-01	-6,33E+00

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy <sup>8)</sup>	MJ	1,48E+02	3,89E-02	1,51E+01	1,63E+02	5,14E-02	-6,30E+00	ND	ND	ND	ND	ND	2,02E+04	ND	0,00E+00	2,90E-02	1,36E-01	1,55E-02	-1,51E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	5,77E+00	5,77E+00	0,00E+00	-5,77E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,59E-01
Total use of renew. PER	MJ	1,48E+02	3,89E-02	2,09E+01	1,69E+02	5,14E-02	-1,21E+01	ND	ND	ND	ND	ND	2,02E+04	ND	0,00E+00	2,90E-02	1,36E-01	1,55E-02	-5,51E-01
Non-re. PER as energy	MJ	3,73E+02	2,22E+00	8,26E+00	3,83E+02	3,75E+00	-6,70E-02	ND	ND	ND	ND	ND	3,19E+04	ND	0,00E+00	2,11E+00	-7,42E+00	-7,47E+00	-3,69E+01
Non-re. PER as material	MJ	1,24E+01	0,00E+00	4,32E-01	1,28E+01	0,00E+00	-4,32E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	-9,28E+00	-3,09E+00	7,99E+00
Total use of non-re. PER	MJ	3,85E+02	2,22E+00	8,69E+00	3,96E+02	3,75E+00	-4,99E-01	ND	ND	ND	ND	ND	3,19E+04	ND	0,00E+00	2,11E+00	-1,67E+01	-1,06E+01	-2,89E+01
Secondary materials	kg	2,68E+00	1,03E-03	2,38E-01	2,92E+00	1,60E-03	1,79E-04	ND	ND	ND	ND	ND	5,90E+00	ND	0,00E+00	9,50E-04	1,07E-03	2,28E-04	5,88E-01
Renew. secondary fuels	MJ	3,02E-02	1,31E-05	1,60E-01	1,90E-01	2,03E-05	1,43E-06	ND	ND	ND	ND	ND	3,10E-02	ND	0,00E+00	1,21E-05	4,73E-05	4,17E-06	-1,78E-04
Non-ren. secondary fuels	MJ	6,41E-02	0,00E+00	0,00E+00	6,41E-02	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m <sup>3</sup>	5,75E+01	3,03E-04	8,79E-03	5,75E+01	5,54E-04	-3,37E-04	ND	ND	ND	ND	ND	3,42E+01	ND	0,00E+00	2,80E-04	9,89E-04	-3,61E-03	-2,64E-02

8) PER = Primary energy resources.

# END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,87E+00	3,23E-03	3,43E-02	1,91E+00	6,35E-03	1,81E-03	ND	ND	ND	ND	ND	3,23E+01	ND	0,00E+00	3,68E-03	1,58E-02	7,63E-03	-3,41E-01
Non-hazardous waste	kg	3,49E+01	6,82E-02	6,86E-01	3,56E+01	1,18E-01	3,90E-01	ND	ND	ND	ND	ND	1,18E+03	ND	0,00E+00	6,91E-02	4,39E-01	5,75E+00	2,62E-01
Radioactive waste	kg	4,51E-03	7,13E-07	1,11E-05	4,53E-03	7,99E-07	1,19E-07	ND	ND	ND	ND	ND	4,84E-01	ND	0,00E+00	4,19E-07	8,86E-07	2,50E-07	-1,08E-05

# END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	7,86E-03	0,00E+00	4,95E-02	5,74E-02	0,00E+00	2,27E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	2,61E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	2,89E-02	0,00E+00	0,00E+00	2,89E-02	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	1,62E-01	0,00E+00	0,00E+00	1,62E-01	0,00E+00	4,76E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	2,64E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,04E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	1,11E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,72E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	1,53E+00	0,00E+00	0,00E+00

# ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO <sub>2</sub> e	1,25E+01	1,57E-01	6,96E-01	1,34E+01	2,57E-01	4,68E-02	ND	ND	ND	ND	ND	2,86E+02	ND	0,00E+00	1,50E-01	6,17E-01	2,97E-01	-2,47E+00
Ozone depletion Pot.	kg CFC <sub>11</sub> e	8,07E-08	2,50E-09	4,56E-08	1,29E-07	3,04E-09	1,55E-10	ND	ND	ND	ND	ND	8,25E-06	ND	0,00E+00	1,68E-09	8,13E-10	5,04E-10	-8,97E-09
Acidification	kg SO <sub>2</sub> e	9,25E-02	2,64E-04	2,93E-03	9,57E-02	6,73E-04	5,66E-05	ND	ND	ND	ND	ND	2,51E+00	ND	0,00E+00	3,85E-04	6,94E-04	1,61E-04	-1,15E-02
Eutrophication	kg PO <sub>4</sub> <sup>3</sup> e	1,73E-02	6,67E-05	4,46E-03	2,18E-02	1,64E-04	3,69E-05	ND	ND	ND	ND	ND	3,62E-01	ND	0,00E+00	9,35E-05	1,18E-04	9,86E-05	-1,70E-03
POCP (“smog”)	kg C <sub>2</sub> H <sub>4</sub> e	5,38E-03	2,79E-05	3,00E-04	5,71E-03	6,00E-05	1,12E-05	ND	ND	ND	ND	ND	1,39E-01	ND	0,00E+00	3,44E-05	4,17E-05	1,34E-05	-9,07E-04
ADP-elements	kg Sbe	7,13E-04	5,14E-07	1,57E-06	7,15E-04	7,03E-07	6,44E-08	ND	ND	ND	ND	ND	2,73E-02	ND	0,00E+00	4,83E-07	4,20E-06	8,01E-08	-5,77E-05
ADP-fossil	MJ	1,47E+02	2,18E+00	9,27E+00	1,59E+02	3,70E+00	1,68E-01	ND	ND	ND	ND	ND	1,98E+03	ND	0,00E+00	2,09E+00	8,82E-01	5,10E-01	-3,38E+01

## ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG <sup>9)</sup>	kg CO <sub>2</sub> e	2,87E+01	1,58E-01	6,91E-01	2,96E+01	2,58E-01	2,09E-02	ND	ND	ND	ND	ND	2,84E+02	ND	0,00E+00	1,51E-01	6,17E-01	2,98E-01	-2,49E+00

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH<sub>4</sub> fossil, CH<sub>4</sub> biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO<sub>2</sub> is set to zero.

## SCENARIO DOCUMENTATION

### DATA SOURCES

#### Manufacturing energy scenario documentation

1. District Heat, Finland, 2023, Finland, One Click LCA, 0.14 kgCO<sub>2</sub>e/kWh
2. Electricity production, hydro, run-of-river, Finland, Ecoinvent, 0.0044 kgCO<sub>2</sub>e/kWh

#### Transport scenario documentation - A4 (Transport resources)

1. Market for transport, freight, lorry >32 metric ton, EURO5, 500,0 km

#### Transport scenario documentation A4

Scenario parameter	Value
Capacity utilization (including empty return) %	100
Bulk density of transported products	2,62E+02
Volume capacity utilization factor	<1

#### Installation scenario documentation - A5 (Installation waste)

1. Exported Energy: Electricity, Ecoinvent, 0.015 MJ
2. Exported Energy: Electricity, Ecoinvent, 0.029 MJ
3. Exported Energy: Electricity, Ecoinvent, 0.16 MJ
4. Exported Energy: Thermal, Ecoinvent, 0.021 MJ
5. Exported Energy: Thermal, Ecoinvent, 0.041 MJ
6. Exported Energy: Thermal, Ecoinvent, 0.21 MJ

7. Treatment of waste polyethylene, for recycling, unsorted, sorting, Ecoinvent, Materials for recycling, 0.0024 kg
8. Treatment of waste polyethylene, municipal incineration, Ecoinvent, 0.0022 kg
9. Treatment of waste polyethylene, sanitary landfill, Ecoinvent, 0.0014 kg
10. Treatment of waste paperboard, unsorted, sorting, Ecoinvent, Materials for recycling, 0.15 kg
11. Treatment of waste packaging paper, municipal incineration, Ecoinvent, 0.014 kg
12. Treatment of waste packaging paper, sanitary landfill, Ecoinvent, 0.016 kg
13. Treatment of waste wood, post-consumer, sorting and shredding, Ecoinvent, Materials for recycling, 0.075 kg
14. Treatment of waste wood, untreated, municipal incineration, Ecoinvent, 0.07 kg
15. Treatment of waste wood, untreated, sanitary landfill, Ecoinvent, 0.089 kg

#### Use stages scenario documentation - B6 (Energy data source)

1. Market for electricity, low voltage, Sweden, Ecoinvent, 6750.0 kWh
2. 100 000h, 135W, x 0,5 (Luminaire can be integrated to control system)

#### Use stages scenario documentation - B7 (Water data source)

**Use stages scenario documentation - B6-B7 Use of energy and use of water**

Scenario information	Value
Ancillary materials specified by material / kg or units as appropriate	
Characteristic performance, e.g., energy efficiency, emissions, variation of performance with capacity utilization, etc.	100 000h, 135 W, x 0,5 (Luminaire can be integrated to control system), Swedish country mix low voltage electricity
Further assumptions for scenario development, e.g., frequency and period of use, number of occupants	

Scenario information	Value
Scenario assumptions e.g. transportation	Transport to recycling 250km, landfill 50km, incineration 150km

**End-of-life scenario documentation - C1-C4 (Data source)**

1. Sorting and pressing of iron scrap, Ecoinvent, Materials for recycling, 2.16 kg
2. Sorting and pressing of iron scrap, Ecoinvent, Materials for recycling, 0.17 kg
3. Sorting and pressing of iron scrap, Ecoinvent, Materials for recycling, 0.02 kg
4. Treatment of waste aluminium, sanitary landfill, Ecoinvent, 0.93 kg
5. Treatment of scrap steel, inert material landfill, Ecoinvent, 0.043 kg
6. Treatment of scrap steel, inert material landfill, Ecoinvent, 0.013 kg
7. Treatment of scrap steel, inert material landfill, Ecoinvent, 0.26 kg
8. Sorting and pressing of iron scrap, Ecoinvent, Materials for recycling, 0.26 kg
9. Treatment of waste plastic, mixture, municipal incineration, Ecoinvent, 0.23 kg
10. Treatment of waste plastic, mixture, municipal incineration, Ecoinvent, 0.11 kg
11. Exported Energy: Electricity, Ecoinvent, 1.1095 MJ
12. Exported Energy: Thermal, Ecoinvent, 1.53 MJ
13. Treatment of waste plastic, mixture, sanitary landfill, Ecoinvent, 0.11 kg



## ANNEX 1.

### Luminaire versions included in this calculation:

GLORCI18052 Origi Clean Industry 1800 52W  
 GLORCI18066 Origi Clean Industry 1800 66W  
 GLORCI18095 Origi Clean Industry 1800 95W  
 GLORCI18126 Origi Clean Industry 1800 126W  
 GLORIN18145 Origi Industrial 1800 145W  
 GLORIN18204 Origi Industrial 1800 204W  
 GLORIN18250 Origi Industrial 1800 250W  
 GLORLI18020 Origi Linear 1800 20W  
 GLORLI18033 Origi Linear 1800 33W  
 GLORLI18048 Origi Linear 1800 48W  
 GLORLI18071 Origi Linear 1800 71W  
 GLORLO18051 Origi Logistics 1800 51W  
 GLORLO18066 Origi Logistics 1800 66W  
 GLORLO18093 Origi Logistics 1800 93W  
 GLORLO18125 Origi Logistics 1800 125W  
 GLORRE18051 Origi Retail 1800 51W  
 GLORRE18066 Origi Retail 1800 66W  
 GLORRE18068 Origi Retail 1800R2 68W  
 GLORRE18073 Origi Retail 1800R2 73W  
 GLORRE18093 Origi Retail 1800 93W  
 GLORRE18125 Origi Retail 1800 125W  
 GLORSB18035 Origi Suspended BL 1800 35W  
 GLORSB18054 Origi Suspended BL 1800 54W  
 GLORSB18059 Origi Suspended BL 1800 59W  
 GLORSB18062 Origi Suspended BL 1800 62W  
 GLORSM18035 Origi Suspended MP 1800 35W  
 GLORSM18047 Origi Suspended MP 1800 47W  
 GLORSM18059 Origi Suspended MP 1800 59W

GLORSM18074 Origi Suspended MP 1800 74W  
 GLORST18052 Origi Storage 1800 52W  
 GLORST18066 Origi Storage 1800 66W  
 GLORST18095 Origi Storage 1800 95W  
 GLORST18126 Origi Storage 1800 126W

Controllability: On/Off, DALI2, NLC, NLC+PIR sensor,  
 Casambi+PIR sensor  
 Colour temperature: 3000K,4000K,5000K  
 Colour rendering index: CRI80, CRI90  
 Brackets: Basic surface brackets (Or suspension  
 brackets in Origi Suspended versions)  
 Mass of luminaire: 4,0 – 5,4 kg depending of model  
 Variation in GWP A1-A3: 5,4 - 8,4 kgCO<sub>2</sub>e/kg