

Product Environmental Profile of luminaires for indoor lighting Cylli family

Reference product: Cylli 500 41W



General information

Company information

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Environmental commitments

Luminans develops and manufactures, luminaires that meets the markets standards and environmental requirements. based on the latest LED technology enclosed in the most sustainable materials. Research and development take place continuously in order to meet the requirements of the future.

In times of global warming, efforts are needed to make a difference. Luminans commitment to reducing carbon dioxide emissions is based on being at the development forefront of environmentally friendly and energy-saving products.

Reference product

Cylli 500 41W (Ø520x75mm)

The assessed products range covers indoor lighting luminaires from the Cylli family. The luminaires are used for professional lighting of indoor commercial applications, mainly for commercial buildings, hotels and shopping malls.

Functional unit

The functional unit for this PEP is compliant with PSR rules, and is defined as follow:
"Provide lighting that delivers an outgoing artificial luminous flux of 1,000 lumens during a reference lifetime of 35,000 hours"

Accordingly, all impacts measured through the life cycle assessment were normalized based on the reference product's nominal lifetime and luminous flux values, leading to the following normalization factor for all life cycle stages:
 $(1000/4850) \times (35000/100000) = 0.0722$

Homogeneous environmental family:

The reference product represents the Cylli luminaires family, which differs in terms of power and useful output flux (lumens) of the integrated LED installed in the luminaires.

The range of variations for the products in the same family are the following:

Cylli family	Unit	Cylli 500 41W	Cylli 500 75W	Cylli 300 30W	Cylli 300 20W	Cylli 200 20W	Cylli 200 11W
System power	W	41	75	30	20	20	11
Luminous flux	Lumen	4850	8870	3550	2500	2500	1410
Weight	Kg	2.74	2.74	1.3	1.3	1.05	1.05



Description of reference product

Specification	Unit	Value
Product category	-	Indoor lighting products and control gear
Product name	-	Cylli 500 41W
Light Source / Lifetime @ L80	Hours	100 000
Color temperature	K	3000 / 4000 / 5000
Color rendering	Ra	80 @3000K, 90 @5000K
Luminous flux	Lm	4850
Luminous efficiency	Lm/W	118
Ingress protection	IP	44
Flicker	%(IEEE1789) / SVM / PstLM	<3% / <0.4 SVM / <1.0
Operating voltage	VAC	220-240
Unified Glare Rating	UGR	<22
Dimensions	mm	Ø520x75

The geographical scope for this PEP was based on the following considerations:

- Technological representativeness takes place in Sweden and China.
- Supply of the raw materials take place in Europe, China and US while assembly of the products take place in China.
- Distribution centers in which storage takes place in Sweden.
- Installation, use and end-of-life of the products take place in Sweden.



Constituent material

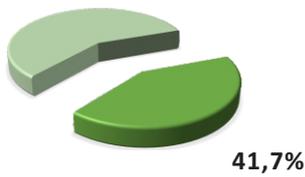
The list below includes materials with a certain amount of recycled content, in order to reduce the impacts linked to production of original material.

In particular:

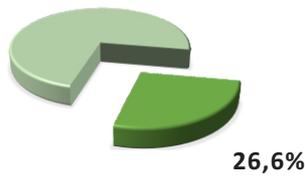
The main body of the luminaire is made of 100% of recycled PC and die-casting aluminum;
The cardboard box of packaging is made of 85% of recycled content.

Total weight of reference product 3531g(packaging included)

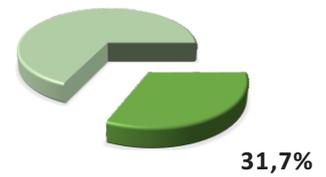
Metals



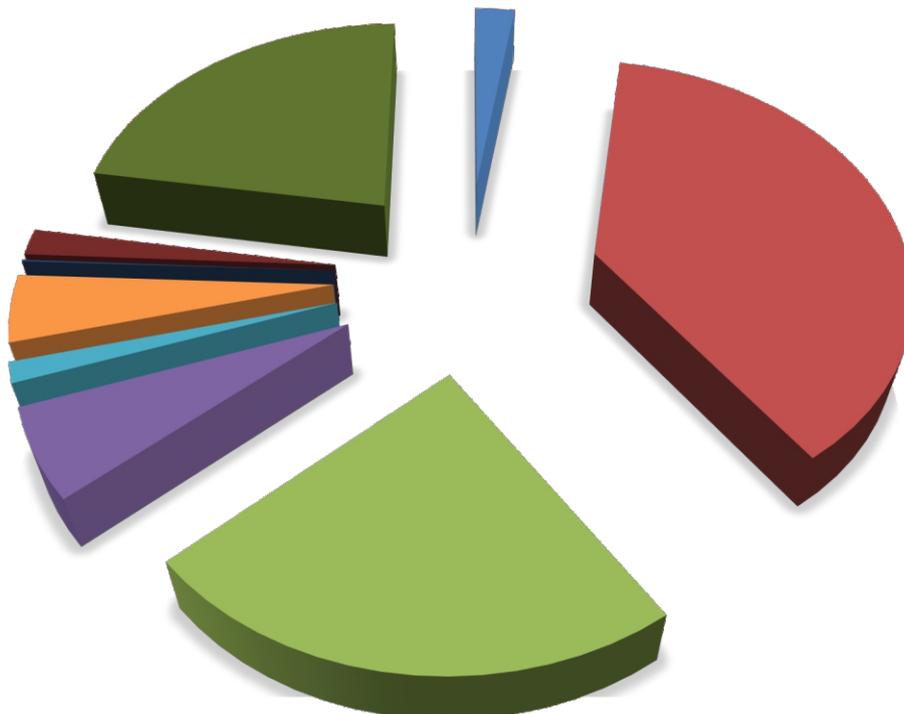
Plastics



Cables, packaging and electronics



- Cardboard - 22,4%
- Polycarbonate (PC) - 1,8%
- Silicone rubber - 0,1%
- Electronics - 4,6%
- LED, high power SMD - 1,4%
- Cable - 6,1%
- PMMA - 23,2%
- Aluminium - 37,9%
- Steel - 2,4%





Manufacturing

Luminaires and control gears are manufactured and assembled in Luminans Dongguan China. The environmental management system is Certified according to ISO14001 and ISO 9001.

All lighting products manufactured by Luminans comply to the European directive "2011/65/EU RoHS 2.0 - Restriction of dangerous substances in electrical and electronical equipment".

Electricity Mix: China.



Distribution

Products leaving the manufacturing in Dongguan, China. Are delivered directly to the client's logistics centers.

The logistics centers are strategically located to optimize transport efficiency, both in terms of transport distance and means of transport.

The warehouse buildings have been appointed the status of Environmental Building Silver according to Sweden Green Building Council. *All transports are affiliated with Fair Transport and the CO₂ reporting from the transports are in accordance with the Global Logistics Emissions Councils (GLEC) framework.

During 2022, 70% of the goods were transported with vehicles running on HVO100 (Hydrotreated Vegetable Oil) made from 100% renewable resources and is free from any fossil fuels. During 2023 electrical trucks will be introduced to further lower the climate impact.

*This specific fuel wasn't modeled due to lack of data.



Installation

The luminaires are provided to the client with control gear for installation, if wiring/connectors are available at point of installation, no further accessories are necessary. Only standard tools might be necessary for connection.

Electricity Mix: Sweden.



Use

Energy efficient LED light source with an energy efficiency class of "C" according to the energy labeling regulation (EU) 2019/2015. The light source is integrated in the luminaire.



The use phase consists of electricity use during the whole lifetime of the product.

The assigned lifetime of the luminaire according to L80 = 100 000 hours.

The Cylli family luminaires are equipped with a light management system (named "DIP Switch Power Setting") capable of reducing electricity consumption by switching the power (3 steps, P_{max} 100% / 70% / 50%) during use.

Electricity Mix: Sweden.



End of life

The product end of life factors is taken into consideration during the design phase. Dismantling and sorting of components or material is made as easy as possible with the perspective, ease of recycling.

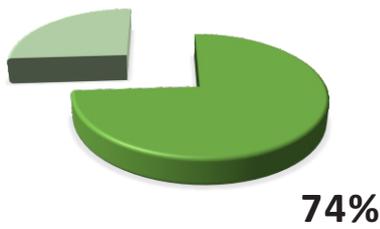
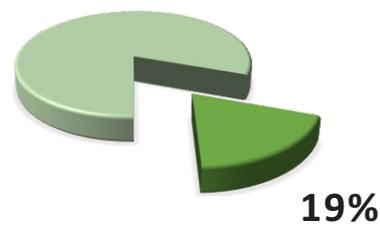
Elements to process specifically:

In accordance with the requirements of this Directive, the electronic components can contain traces of heavy metals which must be removed and sent to specific channels for processing in compliance with the WEEE Directive 2012/19/EU:

- All brominated flame retardants have been replaced with non-toxic alternatives.

Electricity Mix: Sweden.

According to the data available at the issuing of this report, waste treatment scenarios are as follows:
(Reference info by link: <https://kunskapsrummet.com/en/sustainability-report-2022/>)

Proportion of luminaire	WEEE waste (Sweden)	Assumption
 <p>74%</p>	<p>Recycling</p>	<p>Transport (100km) and handling of waste based on included materials.</p>
 <p>19%</p>	<p>Incineration with waste energy recovery</p>	<p>Transport (100km) and handling of waste based on included materials.</p>
 <p>7%</p>	<p>Landfill</p>	<p>Transport (100km) and handling of waste based on included materials.</p>



Environmental impacts

The evaluation of environmental impacts examines the stages of the reference product life cycle: manufacturing, distribution, installation, use and end of life.

For each phase, the following modelling elements were taken into consideration:

Unless otherwise specified, the energy models are those integrated in the modules used from the EIME database	
Manufacture	Material and components of the product, energy consumption, transports, packaging and the waste generated by the manufacturing.
Distribution	Transport between the factory and the final clients.
Installation	The end of life of the packaging.
Use	<ul style="list-style-type: none"> - Product category: Indoor lighting products and control gear - Use scenario: 5000 hours per year for commercial application. - Swedish energy Mix.
End of life	The default end of life scenario maximizing the environmental impacts.
Software and database used	EIME & database CODDE-2023-02



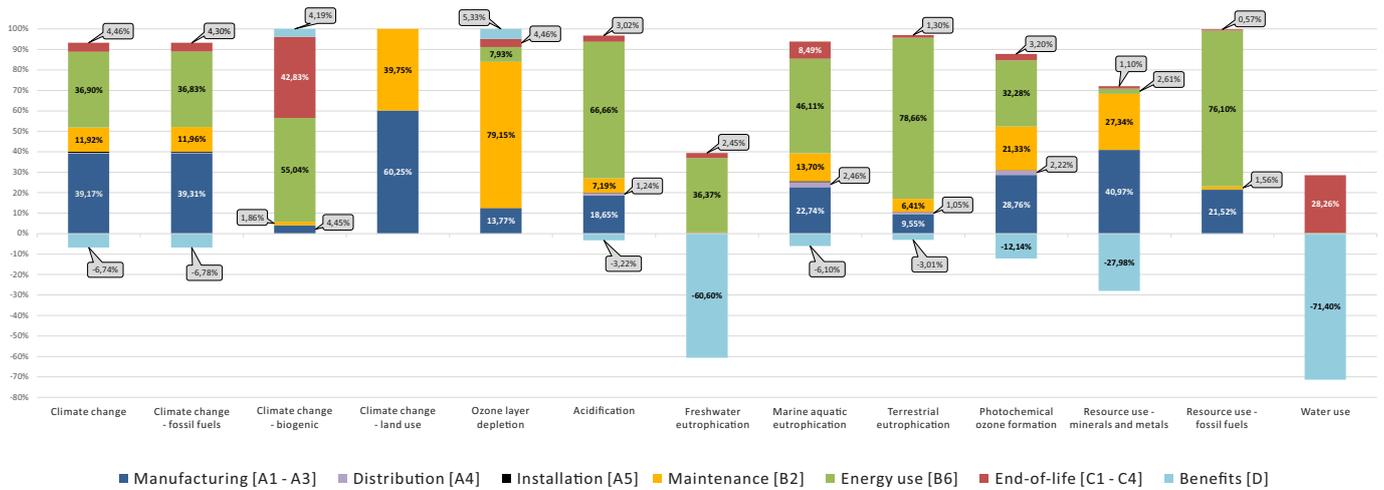
Environmental impacts

The evaluation of environmental impacts examines the manufacturing, distribution, installation, use and end of life stages of the reference product life cycle.

The impacts indicators and impact models used are the ones indicated by the PCR-ed4-EN-2021 09 14.

		Total	Manufacturing [A1 - A3]	Distribution [A4]	Installation [A5]	Use [B1]	Maintenance [B2]	Repair [B3]	Replacement [B4]	Refurbishment [B5]	Operational energy use [B6]	Operational energy use [B7]	Extrapolation rules applied to end-of-life stage [C1 - C4]	Extrapolation rules applied to benefits [D]
PEF-GWP	kg CO2 eq	1,54E+01	6,45E+00	5,51E-02	7,88E-02	0,00E+00	1,96E+00	0,00E+00	0,00E+00	0,00E+00	6,08E+00	0,00E+00	7,34E-01	-1,11E+00
PEF-GWPf	kg CO2 eq	1,53E+01	6,45E+00	5,51E-02	7,88E-02	0,00E+00	1,96E+00	0,00E+00	0,00E+00	0,00E+00	6,04E+00	0,00E+00	7,05E-01	-1,11E+00
PEF-GWPlu	kg CO2 eq	6,95E-02	2,96E-03	0,00E+00	-7,53E-11	0,00E+00	1,24E-03	0,00E+00	0,00E+00	0,00E+00	3,67E-02	0,00E+00	2,86E-02	2,79E-03
PEF-GWPp	kg CO2 eq	6,27E-09	3,78E-09	0,00E+00	0,00E+00	0,00E+00	2,48E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PEF-ODP	kg CFC-11 eq	1,57E-06	2,05E-07	7,18E-11	1,70E-10	0,00E+00	1,18E-06	0,00E+00	0,00E+00	0,00E+00	1,18E-07	0,00E+00	6,65E-08	7,95E-08
PEF-AP	mol H+ eq	1,43E-01	2,76E-02	1,84E-03	1,07E-05	0,00E+00	1,06E-02	0,00E+00	0,00E+00	0,00E+00	9,85E-02	0,00E+00	4,46E-03	-4,75E-03
PEF-Epf	kg [PO4] ³⁻ eq	4,06E-04	3,83E-06	1,89E-08	2,08E-10	0,00E+00	2,13E-06	0,00E+00	0,00E+00	0,00E+00	3,74E-04	0,00E+00	2,53E-05	-6,24E-04
PEF-Epm	kg N eq	1,67E-02	4,04E-03	4,37E-04	7,45E-05	0,00E+00	2,44E-03	0,00E+00	0,00E+00	0,00E+00	8,20E-03	0,00E+00	1,51E-03	-1,08E-03
PEF-Ept	mol N eq	4,41E-01	4,34E-02	4,78E-03	2,91E-05	0,00E+00	2,92E-02	0,00E+00	0,00E+00	0,00E+00	3,58E-01	0,00E+00	5,93E-03	-1,37E-02
PEF-POCP	kg COVNM eq	4,87E-02	1,59E-02	1,23E-03	2,95E-05	0,00E+00	1,18E-02	0,00E+00	0,00E+00	0,00E+00	1,79E-02	0,00E+00	1,77E-03	-6,73E-03
PEF-ADPe	kg Sb eq	1,73E-04	9,82E-05	1,97E-09	1,75E-11	0,00E+00	6,55E-05	0,00E+00	0,00E+00	0,00E+00	6,26E-06	0,00E+00	2,64E-06	-6,70E-05
PEF-ADPf	MJ	1,91E+03	4,13E+02	6,96E-01	1,53E-02	0,00E+00	2,99E+01	0,00E+00	0,00E+00	0,00E+00	1,46E+03	0,00E+00	1,09E+01	-4,18E+00
PEF-WU	m3 eq	2,65E+02	2,32E+00	1,81E-04	5,61E-05	0,00E+00	2,49E-01	0,00E+00	0,00E+00	0,00E+00	5,85E-01	0,00E+00	2,62E+02	-6,62E+02
ERP	MJ	6,18E+02	8,57E-01	8,92E-04	8,05E-06	0,00E+00	1,58E-01	0,00E+00	0,00E+00	0,00E+00	6,16E+02	0,00E+00	1,12E+00	-3,81E+00
ERM	MJ	2,83E-01	2,83E-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	0,00E+00	0,00E+00	5,60E-01
ER	MJ	6,18E+02	1,14E+00	8,92E-04	8,05E-06	0,00E+00	1,58E-01	0,00E+00	0,00E+00	0,00E+00	6,16E+02	0,00E+00	1,12E+00	-3,25E+00
ENRP	MJ	1,91E+03	4,13E+02	6,96E-01	1,53E-02	0,00E+00	2,97E+01	0,00E+00	0,00E+00	0,00E+00	1,46E+03	0,00E+00	1,09E+01	-5,53E+00
ENRM	MJ	2,76E-01	1,44E-01	0,00E+00	0,00E+00	0,00E+00	1,31E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,35E+00
ENR	MJ	1,91E+03	4,13E+02	6,96E-01	1,53E-02	0,00E+00	2,99E+01	0,00E+00	0,00E+00	0,00E+00	1,46E+03	0,00E+00	1,09E+01	-4,18E+00
USM	kg	1,60E-01	1,57E-01	0,00E+00	0,00E+00	0,00E+00	3,12E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
URSF	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
UNRSF	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
NHFW-A2	m ³	7,41E+00	5,39E-02	4,23E-06	1,31E-06	0,00E+00	5,79E-03	0,00E+00	0,00E+00	0,00E+00	1,36E-02	0,00E+00	7,34E+00	-1,59E+01
HWD	kg	4,26E-01	1,48E-01	0,00E+00	4,07E-05	0,00E+00	8,17E-02	0,00E+00	0,00E+00	0,00E+00	1,97E-01	0,00E+00	1,17E-06	7,86E-02
NHWD	kg	3,73E+00	2,12E+00	1,68E-03	3,90E-02	0,00E+00	6,55E-02	0,00E+00	0,00E+00	0,00E+00	1,50E+00	0,00E+00	3,14E-03	2,54E+00
RWD	kg	1,70E-03	1,25E-03	1,17E-06	7,27E-08	0,00E+00	2,88E-04	0,00E+00	0,00E+00	0,00E+00	1,56E-04	0,00E+00	8,14E-08	1,44E-03
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	0,00E+00	0,00E+00	0,00E+00
MRE	kg	4,75E-03	4,75E-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	0,00E+00	0,00E+00
MER	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
EE	MJ	1,40E-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	0,00E+00	1,40E-03	0,00E+00
Biogenic carbon of product	kg de 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
Biogenic carbon of packaging	kg de C	0,00E+00	2,21E-01	0,00E+00	-2,21E-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	0,00E+00
TPE	MJ	2,53E+03	4,14E+02	6,97E-01	1,53E-02	0,00E+00	3,00E+01	0,00E+00	0,00E+00	0,00E+00	2,08E+03	0,00E+00	1,20E+01	-7,43E+00
PEF-PM	Décès/Kg eq	2,34E-06	1,53E-07	9,72E-09	6,37E-11	0,00E+00	4,71E-08	0,00E+00	0,00E+00	0,00E+00	2,09E-06	0,00E+00	3,18E-08	-1,11E-07
PEF-IR	kg U235 eq	6,01E+02	1,98E+02	1,14E-04	3,82E-05	0,00E+00	1,98E+02	0,00E+00	0,00E+00	0,00E+00	2,04E+02	0,00E+00	6,24E-02	1,96E-02
PEF-CTUe	CTUe	1,56E+02	2,40E+01	3,37E-02	3,93E-01	0,00E+00	1,77E+01	0,00E+00	0,00E+00	0,00E+00	5,52E+01	0,00E+00	5,92E+01	7,06E+00
PEF-CTUhc	CTUh	3,68E-09	1,14E-09	8,21E-13	8,63E-12	0,00E+00	6,46E-10	0,00E+00	0,00E+00	0,00E+00	1,10E-09	0,00E+00	7,76E-10	-1,45E-08
PEF-CTUhc	CTUh	2,72E-07	1,29E-07	1,63E-10	1,42E-10	0,00E+00	5,79E-08	0,00E+00	0,00E+00	0,00E+00	5,18E-08	0,00E+00	3,33E-08	-5,33E-08
PEF-LU	pas de dimension	2,32E+00	3,67E-03	0,00E+00	0,00E+00	0,00E+00	2,59E-03	0,00E+00	0,00E+00	0,00E+00	6,95E-01	0,00E+00	1,62E+00	-7,10E+00

Relative contribution of life cycle stages to impact categories





Environmental impacts

The evaluation of environmental impacts examines the manufacturing, distribution, installation, use and end of life stages of the reference product life cycle.

The impacts indicators and impact models used are the ones indicated by the PCR-ed4-EN-2021 09 14.

		Total	Manufacturing [A1 - A3]	Distribution [A4]	Installation [A5]	Maintenance [B2]	Operational energy use [B6]	Extrapolation rules applied to end-of-life stage [C1 - C4]	Extrapolation rules applied to benefits [D]
Climate change	kg CO ₂ eq	1,54E+01	6,45E+00	5,51E-02	7,88E-02	1,96E+00	6,08E+00	7,34E-01	-1,11E+00
Climate change - fossil fuels	kg CO ₂ eq	1,53E+01	6,45E+00	5,51E-02	7,88E-02	1,96E+00	6,04E+00	7,05E-01	-1,11E+00
Climate change - biogenic	kg CO ₂ eq	6,95E-02	2,96E-03	0,00E+00	-7,53E-11	1,24E-03	3,67E-02	2,86E-02	2,79E-03
Climate change - land use	kg CO ₂ eq	6,27E-09	3,78E-09	0,00E+00	0,00E+00	2,49E-09	0,00E+00	0,00E+00	0,00E+00
Ozone layer depletion	kg CFC-11 eq	1,57E-06	2,05E-07	7,18E-11	1,70E-10	1,18E-06	1,18E-07	6,65E-08	7,95E-08
Acidification	mol H ⁺ eq	1,43E-01	2,76E-02	1,84E-03	1,07E-05	1,06E-02	9,85E-02	4,46E-03	-4,75E-03
Freshwater eutrophication	kg (PO ₄) ³⁻ eq	4,06E-04	3,83E-06	1,89E-08	2,08E-10	2,13E-06	3,74E-04	2,53E-05	-6,24E-04
Marine aquatic eutrophication	kg N eq	1,67E-02	4,04E-03	4,37E-04	7,45E-05	2,44E-03	8,20E-03	1,51E-03	-1,08E-03
Terrestrial eutrophication	mol N eq	4,41E-01	4,34E-02	4,78E-03	2,91E-05	2,92E-02	3,58E-01	5,93E-03	-1,37E-02
Photochemical ozone formation	kg COVNM eq	4,87E-02	1,59E-02	1,23E-03	2,95E-05	1,18E-02	1,79E-02	1,77E-03	-6,73E-03
Resource use - minerals and metals	kg Sb eq	1,73E-04	9,82E-05	1,97E-09	1,75E-11	6,55E-05	6,26E-06	2,64E-06	-6,70E-05
Resource use - fossil fuels	MJ	1,91E+03	4,13E+02	6,96E-01	1,53E-02	2,99E+01	1,46E+03	1,09E+01	-4,18E+00
Water use	m ³ eq	2,65E+02	2,32E+00	1,81E-04	5,61E-05	2,49E-01	5,85E-01	2,62E+02	-6,62E+02

The Global Warming Potential of the reference product is 15,4kg CO₂ distributed among the life cycle steps:



Contact Luminans if you have any questions regarding the calculation of coefficients for impacts others than those presented in this PEP

Registration number: LUM-00001-V01.01-EN	Drafting rules: "PCR-ed4-EN-2021 09 06" Supplemented by "PSR-0014-ed1-EN-2018 07 18"
Verifier accreditation No.: VH32	Information and reference documents: www.pep-ecopassport.org
Date of issue: 07-2023	Validity period: 5 years
Independent verification of the declaration and data, in compliance with ISO 14025 : 2006	
Internal: <input type="checkbox"/>	External: <input checked="" type="checkbox"/>
The PCR review was conducted by a panel of experts chaired by Julie Orgelet (Ddemail)	
PEPs are compliant with XP C08-100-1:2016 or EN 50693:2019 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 declarations. Type III environmental declarations" and EN 15804+A2:2019	

