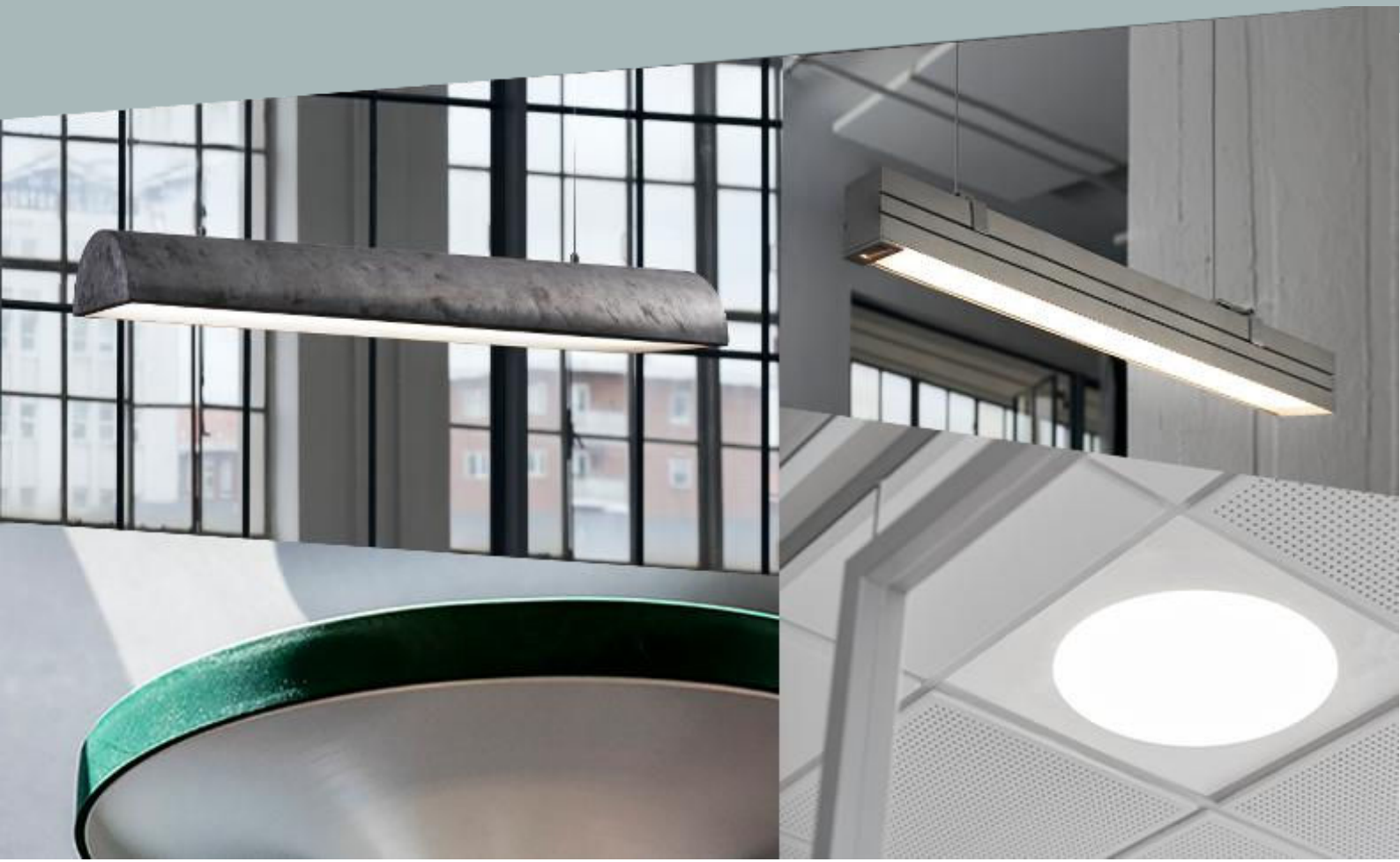


Owner: Fischer Lighting ApS
No.: MD-24096-EN
Issued: 19-09-2025
Valid to: 19-09-2030

3rd PARTY VERIFIED

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



Owner of declaration

 Fischer Lighting ApS
 Skjulhøj Allé 46, DK-2720 Vanløse

Issued:
 19-09-2025

Valid to:
 19-09-2030

CVR: 37815322

<https://fischer-lighting.com/>
Programme

 EPD Danmark
www.epddanmark.dk


- Industry EPD
 Product EPD

Declared product

Lighting Systems

Number of declared datasets/product variations: 6

- Frigg (600mm, 1200mm, 1500mm)
- Sunrise
- August v2
- Venus v2

Production sites

 Fischer Lighting has five assembly locations in Denmark:
 Frederikssund, Holbæk, Nykøbing, Odense and Vanløse

Use of Guarantees of Origin (GO)

- No certificates used
 Electricity covered by GO
 Biogas covered by GO

Declared unit

 One lighting system used in office and institutional settings
 for 60 years in Denmark

Year of production site data (A3)

2023

EPD version

Version 1.0.

Basis of calculation

 This EPD has been developed and verified following the
 European standard: EN 15804+A2.

Comparability

 EPDs are not comparable unless they comply with the
 requirements of EN 15804+A2. Likewise, EPD data is
 not comparable unless the datasets comply with the
 requirements of EN 15804+A2 and are from the same
 database.

Validity

 This EPD has been verified following ISO 14025. From
 the date of issue, it is valid for five years.

Use

 The purpose is to provide scientifically based environ-
 mental information on lighting systems to evaluate the
 environmental performance of buildings.

EPD type

- Cradle-to-gate with modules C1-C4 and D
 Cradle-to-gate with options, modules C1-C4 and D
 Cradle-to-grave and module D
 Cradle-to-gate
 Cradle-to-gate with options

 CEN standard EN 15804 serves as the
 core PCR

 Independent verification of the
 declaration and data, according to EN
 ISO 14025

- internal external

Third party verifier:



 Linda Høiby
 Life Cycle Assessment Consulting



 Martha Katrine Sørensen
 EPD Danmark

Life cycle stages and modules (ND = module not declared)

Product			Construction Process		Use								End-of-Life			Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction Demolition	Transport	Waste processing	Disposal	Reuse, Recovery and 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

Product information

Product description

The product components are listed below.

Frigg 600mm		
Component	Amount [g]	Weight-% of declared product
Housing	1,008	74%
Diffuser	138	10%
LED Board	148	11%
LED Driver	47	4%
Fixing	16	1%
TOTAL	1,357	100%

Frigg 1200mm		
Component	Amount [g]	Weight-% of declared product
Housing	1,976	75%
Diffuser	287	11%
LED Board	307	12%
LED Driver	47	2%
Fixing	16	<1%
TOTAL	2,633	100%

Frigg 1500mm		
Component	Amount [g]	Weight-% of declared product
Housing	2,349	75%
Diffuser	359	11%
LED Board	381	12%
LED Driver	47	1%
Fixing	16	<1%
TOTAL	3,152	100%

Sunrise		
Component	Amount [g]	Weight-% of declared product
Housing	3,250	75%
Diffuser	520	12%
LED Board	290	7%
LED Driver	47	1%
Fixing	31	<1%
Coating	200	5%
TOTAL	4,338	100%

August v2		
Component	Amount [g]	Weight-% of declared product
Fixture	628	40%
Funnel	555	36%
Diffuser	98	6%
LED Board	15	1%
LED Driver	47	3%
Fixing	12	1%
Cooling	170	11%
Optics	29	2%
TOTAL	1,554	100%

Venus v2		
Component	Amount [g]	Weight-% of declared product
Fixture	3,910	75%
Diffuser	766	15%
LED Board	488	9%
LED Driver	47	1%
Fixing	12	<1%
Spacer	1	<1%
TOTAL	5,224	100%

Product packaging

Product packaging is listed below.

Frigg 600mm, Frigg 1200mm, Frigg 1500mm and Sunrise, Venus v2:

Type	Amount [g]	Weight-% of product packaging
Bubble Wrap	9	<1%
Pallets	943	39%
Pallet Frames	1,457	60%
Film	4	<1%
Tape	<1	<1%
Strips	1	<1%
TOTAL	2,414	100%

August v2:

Type	Amount [g]	Weight-% of product packaging
Bubble Wrap	9	<1%
Pallets	439	23%
Pallet Frames	1,457	76%
Film	4	<1%
Tape	<1	<1%
Strips	1	<1%
TOTAL	1,910	100%

Representativity

This EPD covers the declared unit of one lighting system used in office and institutional settings for 60 years in Denmark, produced in six product variations and assembled in Denmark.

Product-specific data is from the period between 1/1-2023 - 31/12-2023.

Background data is from the ecoinvent (v.3.9.1) cut-off by classification database. Generally, the used background datasets are of high quality and are only a couple of years old, except for the datasets regarding waste treatment. These are more than a couple of years old. Additionally, two EPDs are used as background data: one for the driver, which is the same for all product variations, and another for the Frigg housing (all three product variations of Frigg).

Hazardous substances

Fischer Lighting's lighting systems do not contain substances listed on the "Candidate List of substances of very high concern for Authorisation" in quantities exceeding 0,1% by weight.

<http://echa.europa.eu/candidate-list-table>

Products use

The six product variations include both suspended and recessed lighting systems, typically used in office and institutional settings.

Essential characteristics

The six product variations are in conformity with the essential requirements of the following European Directives and Harmonized Standards:

Low Voltage Directive, 2006/95/EC:

- EN 60598-1:2008A11:2009
- EN 60598-2-5:1998

Electromagnetic Compatibility Directive, 2004/108/EC:

- EN55015:2006+A1:2007+A2:2009
- EN 61547:2009

- EN 61000-3-2:2006+A2:2009
- EN 61000-3-3:2008

Restriction of Hazardous Substances in Electrical and Electronic Equipment, 2001/65/EC:

- EN 50581:2012

Declaration of performance, according to the EU Regulation 305/2011, is available for all declared product variations.

In the tables below, technical and lighting specifications are stated for all six product variations.

	Frigg	Sunrise	Unit
Power Range	5-48	14-48	W
Max Lumen (+/- 10%)	7,680	7,680	lm
Colour Temperature	3000/4000	3000/4000	K

	August v2	Venus v2	Unit
Power Range	8-28	14-48	W
Max Lumen (+/- 10%)	3,640	7,680	lm
Colour Temperature	3000/4000	3000/4000	K

The three Frigg product variations have the same technical and lighting specifications.

Further information can be obtained by contacting Fischer Lighting.

<https://fischer-lighting.com/>

Reference Service Life (RSL)

The reference service life is set to 60 years for all six product variations, when installed indoors and provided that they are not exposed to moisture and the temperature is maintained between 18°C and 30°C.

Frigg delivers max. 7,680 lumens
 Sunrise delivers max. 7,680 lumens
 August v2 delivers max. 3,640 lumens
 Venus v2 delivers max. 7,680 lumens

Pictures of the six product variations

Frigg



Since the three variations of Frigg look identical, a single photo is used to illustrate them all.

Sunrise



August v2



Venus v2



LCA background

Declared unit

The LCI and LCIA results in this EPD cover the declared unit of one lighting system used in office and institutional settings for 60 years in Denmark in six product variations.

	Amount	Unit
Declared unit	1	item
Conversion factor to 1 kg	0.74	
- Frigg 600mm	0.38	
- Frigg 1200mm	0.32	
- Frigg 1500mm	0.23	
- Sunrise	0.65	
- August v2	0.19	
- Venus v2		

Functional unit

Not relevant.

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804+A2, as well as the core rules in EN 50693:2019 Product category rules for life cycle assessments of electronic and electrical products and systems.

Energy modelling principles

Foreground System:

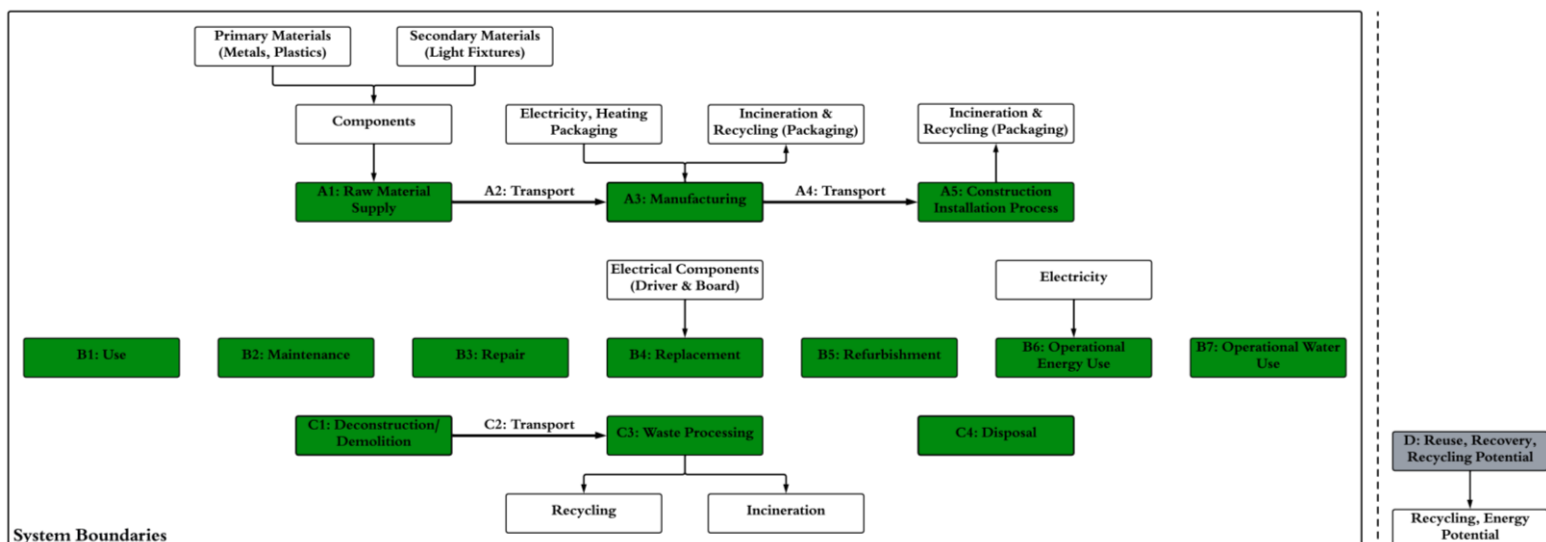
Fischer Lighting does not purchase guarantees of origin (GoO). The six product variations are therefore assembled using the Danish residual mix. The Danish grid mix is used for the electricity consumption in module B6.

Dataset	Emission Factor
Residual mix, Denmark 2022	0.636 kg CO _{2e} /kWh
Grid mix, Denmark 2022	0.220 kg CO _{2e} /kWh

Background System:

The background system is modelled using aggregatedecoinvent processes that use electricity grid mixes.

Flowdiagram



System boundary

This EPD is based on a cradle-to-grave LCA with all modules declared in which 100 weight-% has been accounted for.

The cut-off criterium per module is set at a maximum of 5% of energy usage and mass while the cut-off criterium per unit process is set at a maximum of 1% of energy usage and mass. This is in compliance with the rules stated in EN 15804+A2, 6.3.6.

Product stage (A1-3) includes:

A1 - Extraction and processing of raw materials

A2 - Transport to the production site

A3 - Manufacturing processes

Fischer Lighting purchases different components for their lighting systems including fixtures and electrical components as well as screws and other small fixings. The fixtures are made from either steel or aluminium and are either recycled or reused. The reused fixtures originate from Danish buildings. The other components are made from virgin materials.

The product variations are assembled in Denmark at five locations where they are also packaged, ready for transport to customers.

Construction process stage (A4-5) includes:

It has not been possible to determine an average transport distance from Fischer Lighting's assembly sites to customers. A distance of 250 km by lorry is therefore modelled in module A4. Within this distance, the majority of Denmark can be reached from the five assembly sites.

Fischer Lighting has stated that the installation process is carried out manually and is therefore considered to have no environmental impacts.

Sales packaging is waste treated in module A5.

Use stage (B1-7) includes:

B1 Use:

There are no activities in this module.

B2 Maintenance:

There are no activities in this module.

B3 Repair:

There are no activities in this module.

B4 Replacement:

The electrical components, driver and board, do not fulfill the reference service life of 60 years and thus need to be replaced. The driver requires two replacements while the board requires one replacement during the reference service life. The light fixtures do not require replacement.

B5 Refurbishment:

There are no activities in this module.

B6 Operational Energy Use:

The product variations use electricity during their lifetime. To calculate the electricity consumption, the formula specified in PCR Part B: Requirements on the EPD for Luminaires, light sources and control gears (IBU) is used as basis. The electricity consumption is modelled using the Danish grid mix.

B7 Operational Water Use:

There are no activities in this module.

End-of-Life (C1-4) includes:

The End-of-Life is modelled by assuming that the product variations are collected separately from other construction waste and deconstructed at recycling centers with the purpose of recycling the different materials and components.

All product variations are disassembled manually, meaning no impacts are allocated to module C1.

Transport in module C2 is assumed to be carried out by lorries.

Sorting and shredding is modelled in module C3 to account for the deconstruction.

Reuse, Recovery and Recycling Potential (D) includes:

Module D includes benefits from the avoided production of virgin materials. It is important to note that crediting only considers virgin materials that are recycled whereas recycled or reused materials cannot be credited. In module D, it is therefore only the virgin material inputs modelled in module A1 that are credited for being recycled.

Module D also includes benefits from the avoided production of average Danish electricity and heat as some of the sales packaging is incinerated in module A5.

LCA results

FRIGG 600mm - Additional environmental impacts are not assessed

ENVIRONMENTAL IMPACTS PER LIGHTING SYSTEM, FRIGG 600mm														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	5.82E+00	1.74E-01	3.91E+00	0.00E+00	4.72E+00	0.00E+00	8.74E+02	0.00E+00	0.00E+00	7.02E-02	6.82E-02	0.00E+00	-1.24E+01
GWP-fossil	[kg CO ₂ eq.]	9.59E+00	1.74E-01	1.15E-01	0.00E+00	4.73E+00	0.00E+00	8.72E+02	0.00E+00	0.00E+00	7.02E-02	6.80E-02	0.00E+00	-1.24E+01
GWP-biogenic	[kg CO ₂ eq.]	-3.80E+00	0.00E+00	3.80E+00	0.00E+00	-2.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.43E-02
GWP-luluc	[kg CO ₂ eq.]	2.09E-02	8.60E-05	4.67E-05	0.00E+00	9.57E-03	0.00E+00	2.71E+00	0.00E+00	0.00E+00	3.46E-05	1.39E-04	0.00E+00	-3.22E-02
ODP	[kg CFC 11 eq.]	4.06E-07	3.79E-09	2.14E-09	0.00E+00	2.61E-07	0.00E+00	1.99E-05	0.00E+00	0.00E+00	1.53E-09	4.88E-10	0.00E+00	-1.22E-07
AP	[mol H ⁺ eq.]	7.80E-02	3.81E-04	3.33E-04	0.00E+00	4.41E-02	0.00E+00	4.39E+00	0.00E+00	0.00E+00	1.53E-04	3.76E-04	0.00E+00	-8.09E-02
EP-freshwater	[kg P eq.]	1.95E-03	1.24E-05	1.21E-05	0.00E+00	1.12E-03	0.00E+00	7.49E-01	0.00E+00	0.00E+00	4.99E-06	3.27E-05	0.00E+00	-3.63E-03
EP-marine	[kg N eq.]	1.16E-02	9.60E-05	1.24E-04	0.00E+00	7.01E-03	0.00E+00	8.65E-01	0.00E+00	0.00E+00	3.87E-05	6.93E-05	0.00E+00	-1.32E-02
EP-terrestrial	[mol N eq.]	1.24E-01	9.76E-04	1.21E-03	0.00E+00	7.38E-02	0.00E+00	9.95E+00	0.00E+00	0.00E+00	3.93E-04	7.45E-04	0.00E+00	-1.35E-01
POCP	[kg NMVOC eq.]	4.24E-02	5.91E-04	4.81E-04	0.00E+00	2.43E-02	0.00E+00	2.42E+00	0.00E+00	0.00E+00	2.38E-04	2.10E-04	0.00E+00	-4.37E-02
ADPm ¹	[kg Sb eq.]	7.97E-04	5.69E-07	3.09E-07	0.00E+00	1.30E-03	0.00E+00	1.96E-02	0.00E+00	0.00E+00	2.29E-07	6.27E-07	0.00E+00	-1.07E-05
ADPF ¹	[MJ]	1.22E+02	2.47E+00	1.35E+00	0.00E+00	6.04E+01	0.00E+00	1.43E+04	0.00E+00	0.00E+00	9.96E-01	8.69E-01	0.00E+00	-1.27E+02
WDP ¹	[m ³ world eq. deprived]	2.18E+00	1.02E-02	-4.94E-03	0.00E+00	1.79E+00	0.00E+00	1.63E+02	0.00E+00	0.00E+00	4.11E-03	1.20E-02	0.00E+00	-1.64E+00
Caption	<p>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 = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPF = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential</p> <p>The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10² or 195, while 1.12E-11 is the same as 1.12*10⁻¹¹ or 0.000000000012.</p>													
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.													

ADDITIONAL ENVIRONMENTAL IMPACTS PER LIGHTING SYSTEM, FRIGG 600mm														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	[Disease incidence]	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
IRP ²	[kBq U235 eq.]	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
ETP-fw ¹	[CTUe]	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
HTP-c ¹	[CTUh]	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
HTP-nc ¹	[CTUh]	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
SQP ¹	-	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
Caption	<p>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)</p> <p>The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10² or 195, while 1.12E-11 is the same as 1.12*10⁻¹¹ or 0.000000000012.</p>													
Disclaimers	<p>¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.</p> <p>² This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of</p>													

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 PER LIGHTING SYSTEM, FRIGG 600mm														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	9.26E+01	3.89E-02	2.24E-02	0.00E+00	6.25E+00	0.00E+00	1.46E+04	0.00E+00	0.00E+00	1.57E-02	1.16E-01	0.00E+00	-1.31E+01
PERM	[MJ]	2.98E+01	0.00E+00	-2.98E+01	0.00E+00	1.88E-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
PERT	[MJ]	1.22E+02	3.89E-02	-2.98E+01	0.00E+00	6.44E+00	0.00E+00	1.46E+04	0.00E+00	0.00E+00	1.57E-02	1.16E-01	0.00E+00	-1.31E+01
PENRE	[MJ]	1.21E+02	2.47E+00	1.35E+00	0.00E+00	5.92E+01	0.00E+00	1.43E+04	0.00E+00	0.00E+00	9.96E-01	8.69E-01	0.00E+00	-1.27E+02
PENRM	[MJ]	4.57E+00	0.00E+00	-5.80E-01	0.00E+00	1.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.99E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.26E+02	2.47E+00	7.75E-01	0.00E+00	6.03E+01	0.00E+00	1.43E+04	0.00E+00	0.00E+00	9.96E-01	-3.12E+00	0.00E+00	-1.27E+02
SM	[kg]	8.06E-01	0.00E+00	0.00E+00	0.00E+00	2.28E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	1.17E-03	0.00E+00	0.00E+00	0.00E+00	2.34E-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
NRSF	[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
FW	[m ³]	5.11E-01	3.56E-04	-1.03E-05	0.00E+00	2.08E-02	0.00E+00	2.70E+01	0.00E+00	0.00E+00	1.43E-04	4.79E-04	0.00E+00	-6.94E-02
Caption	<p>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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water</p> <p>The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10² or 195, while 1.12E-11 is the same as 1.12*10⁻¹¹ or 0.0000000000112.</p>													

WASTE CATEGORIES AND OUTPUT FLOWS PER LIGHTING SYSTEM, FRIGG 600mm														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	1.90E-01	1.57E-05	8.48E-06	0.00E+00	3.64E-01	0.00E+00	3.49E-02	0.00E+00	0.00E+00	6.34E-06	1.74E-06	0.00E+00	-1.62E-04
NHWD	[kg]	8.23E+00	1.23E-01	7.19E-02	0.00E+00	9.52E+00	0.00E+00	1.16E+02	0.00E+00	0.00E+00	4.95E-02	8.43E-03	0.00E+00	-2.07E+00
RWD	[kg]	2.62E-04	8.13E-07	4.42E-07	0.00E+00	1.36E-04	0.00E+00	7.42E-02	0.00E+00	0.00E+00	3.28E-07	2.25E-06	0.00E+00	-5.73E-05
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
MFR	[kg]	2.26E+00	0.00E+00	1.54E+00	0.00E+00	1.22E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.36E+00	0.00E+00	0.00E+00
MER	[kg]	2.90E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	1.17E-01	0.00E+00	1.59E+00	0.00E+00	5.68E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	1.34E+00	0.00E+00	3.18E+00	0.00E+00	5.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Caption	<p>HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy</p> <p>The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10² or 195, while 1.12E-11 is the same as 1.12*10⁻¹¹ or 0.0000000000112.</p>													

BIOGENIC CARBON CONTENT PER LIGHTING SYSTEM, FRIGG 600mm		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0.00
Biogenic carbon content in accompanying packaging	[kg C]	1.04
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

FRIGG 1200mm - Additional environmental impacts are not assessed

ENVIRONMENTAL IMPACTS PER LIGHTING SYSTEM, FRIGG 1200mm														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	1.31E+01	2.33E-01	3.91E+00	0.00E+00	7.14E+00	0.00E+00	8.74E+02	0.00E+00	0.00E+00	1.36E-01	1.32E-01	0.00E+00	-2.44E+01
GWP-fossil	[kg CO ₂ eq.]	1.69E+01	2.33E-01	1.15E-01	0.00E+00	7.15E+00	0.00E+00	8.72E+02	0.00E+00	0.00E+00	1.36E-01	1.32E-01	0.00E+00	-2.43E+01
GWP-biogenic	[kg CO ₂ eq.]	-3.80E+00	0.00E+00	3.80E+00	0.00E+00	-2.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.15E-02
GWP-luluc	[kg CO ₂ eq.]	3.50E-02	1.15E-04	4.67E-05	0.00E+00	1.48E-02	0.00E+00	2.71E+00	0.00E+00	0.00E+00	6.72E-05	2.70E-04	0.00E+00	-6.31E-02
ODP	[kg CFC 11 eq.]	6.07E-07	5.08E-09	2.14E-09	0.00E+00	2.89E-07	0.00E+00	1.99E-05	0.00E+00	0.00E+00	2.97E-09	9.47E-10	0.00E+00	-2.30E-07
AP	[mol H ⁺ eq.]	1.28E-01	5.10E-04	3.33E-04	0.00E+00	5.96E-02	0.00E+00	4.39E+00	0.00E+00	0.00E+00	2.98E-04	7.30E-04	0.00E+00	-1.59E-01
EP-freshwater	[kg P eq.]	3.16E-03	1.66E-05	1.21E-05	0.00E+00	2.16E-03	0.00E+00	7.49E-01	0.00E+00	0.00E+00	9.68E-06	6.34E-05	0.00E+00	-7.04E-03
EP-marine	[kg N eq.]	1.94E-02	1.29E-04	1.24E-04	0.00E+00	9.98E-03	0.00E+00	8.65E-01	0.00E+00	0.00E+00	7.51E-05	1.35E-04	0.00E+00	-2.58E-02
EP-terrestrial	[mol N eq.]	2.05E-01	1.31E-03	1.21E-03	0.00E+00	1.04E-01	0.00E+00	9.95E+00	0.00E+00	0.00E+00	7.63E-04	1.45E-03	0.00E+00	-2.64E-01
POCP	[kg NMVOC eq.]	6.86E-02	7.91E-04	4.81E-04	0.00E+00	3.35E-02	0.00E+00	2.42E+00	0.00E+00	0.00E+00	4.62E-04	4.08E-04	0.00E+00	-8.58E-02
ADPm ¹	[kg Sb eq.]	8.47E-04	7.62E-07	3.09E-07	0.00E+00	1.34E-03	0.00E+00	1.96E-02	0.00E+00	0.00E+00	4.45E-07	1.22E-06	0.00E+00	-1.88E-05
ADPf ¹	[MJ]	2.10E+02	3.31E+00	1.35E+00	0.00E+00	8.85E+01	0.00E+00	1.43E+04	0.00E+00	0.00E+00	1.93E+00	1.69E+00	0.00E+00	-2.47E+02
WDP ¹	[m ³ world eq. deprived]	3.23E+00	1.36E-02	-4.94E-03	0.00E+00	2.33E+00	0.00E+00	1.63E+02	0.00E+00	0.00E+00	7.98E-03	2.33E-02	0.00E+00	-3.18E+00
Caption	<p>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 = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential</p> <p>The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10² or 195, while 1.12E-11 is the same as 1.12*10⁻¹¹ or 0.0000000000112.</p>													
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.													

ADDITIONAL ENVIRONMENTAL IMPACTS PER LIGHTING SYSTEM, FRIGG 1200mm														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	[Disease incidence]	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
IRP ²	[kBq U235 eq.]	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
ETP-fw ¹	[CTUe]	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
HTP-c ¹	[CTUh]	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
HTP-nc ¹	[CTUh]	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
SQP ¹	-	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
Caption	<p>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)</p> <p>The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10² or 195, while 1.12E-11 is the same as 1.12*10⁻¹¹ or 0.0000000000112.</p>													
Disclaimers	<p>¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.</p> <p>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.</p>													

RESOURCE USE PER LIGHTING SYSTEM, FRIGG 1200mm

Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	1.11E+02	5.21E-02	2.24E-02	0.00E+00	9.30E+00	0.00E+00	1.46E+04	0.00E+00	0.00E+00	3.05E-02	2.26E-01	0.00E+00	-2.40E+01
PERM	[MJ]	2.98E+01	0.00E+00	-2.98E+01	0.00E+00	1.88E-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
PERT	[MJ]	1.41E+02	5.21E-02	-2.98E+01	0.00E+00	9.49E+00	0.00E+00	1.46E+04	0.00E+00	0.00E+00	3.05E-02	2.26E-01	0.00E+00	-2.40E+01
PENRE	[MJ]	2.10E+02	3.31E+00	1.35E+00	0.00E+00	8.73E+01	0.00E+00	1.43E+04	0.00E+00	0.00E+00	1.93E+00	1.69E+00	0.00E+00	-2.47E+02
PENRM	[MJ]	8.60E+00	0.00E+00	-5.80E-01	0.00E+00	1.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.01E+00	0.00E+00	0.00E+00
PENRT	[MJ]	2.18E+02	3.31E+00	7.75E-01	0.00E+00	8.85E+01	0.00E+00	1.43E+04	0.00E+00	0.00E+00	1.93E+00	-6.33E+00	0.00E+00	-2.47E+02
SM	[kg]	1.60E+00	0.00E+00	0.00E+00	0.00E+00	2.28E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	1.17E-03	0.00E+00	0.00E+00	0.00E+00	2.34E-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
NRSF	[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
FW	[m ³]	1.01E+00	4.77E-04	-1.03E-05	0.00E+00	4.00E-02	0.00E+00	2.70E+01	0.00E+00	0.00E+00	2.79E-04	9.30E-04	0.00E+00	-1.33E-01
Caption	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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10 ² or 195, while 1.12E-11 is the same as 1.12*10 ⁻¹¹ or 0.0000000000112.													

WASTE CATEGORIES AND OUTPUT FLOWS PER LIGHTING SYSTEM, FRIGG 1200mm

Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	1.97E-01	2.11E-05	8.48E-06	0.00E+00	3.65E-01	0.00E+00	3.49E-02	0.00E+00	0.00E+00	1.23E-05	3.38E-06	0.00E+00	-3.07E-04
NHWD	[kg]	1.15E+01	1.64E-01	7.19E-02	0.00E+00	9.80E+00	0.00E+00	1.16E+02	0.00E+00	0.00E+00	9.61E-02	1.64E-02	0.00E+00	-4.05E+00
RWD	[kg]	4.59E-04	1.09E-06	4.42E-07	0.00E+00	1.82E-04	0.00E+00	7.42E-02	0.00E+00	0.00E+00	6.36E-07	4.38E-06	0.00E+00	-1.02E-04
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
MFR	[kg]	3.85E+00	0.00E+00	1.54E+00	0.00E+00	1.22E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.63E+00	0.00E+00	0.00E+00
MER	[kg]	5.81E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	1.18E-01	0.00E+00	1.59E+00	0.00E+00	5.68E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	1.34E+00	0.00E+00	3.18E+00	0.00E+00	5.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10 ² or 195, while 1.12E-11 is the same as 1.12*10 ⁻¹¹ or 0.0000000000112.													

BIOGENIC CARBON CONTENT PER LIGHTING SYSTEM, FRIGG 1200mm

Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0.00
Biogenic carbon content in accompanying packaging	[kg C]	1.04
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

FRIGG 1500mm - Additional environmental impacts are not assessed

ENVIRONMENTAL IMPACTS PER LIGHTING SYSTEM, FRIGG 1500mm														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	1.58E+01	2.57E-01	3.91E+00	0.00E+00	7.86E+00	0.00E+00	8.74E+02	0.00E+00	0.00E+00	1.63E-01	1.58E-01	0.00E+00	-2.96E+01
GWP-fossil	[kg CO ₂ eq.]	1.96E+01	2.57E-01	1.15E-01	0.00E+00	7.86E+00	0.00E+00	8.72E+02	0.00E+00	0.00E+00	1.63E-01	1.58E-01	0.00E+00	-2.95E+01
GWP-biogenic	[kg CO ₂ eq.]	-3.80E+00	0.00E+00	3.80E+00	0.00E+00	-2.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.85E-02
GWP-luluc	[kg CO ₂ eq.]	3.99E-02	1.27E-04	4.67E-05	0.00E+00	1.66E-02	0.00E+00	2.71E+00	0.00E+00	0.00E+00	8.05E-05	3.23E-04	0.00E+00	-7.65E-02
ODP	[kg CFC 11 eq.]	6.81E-07	5.60E-09	2.14E-09	0.00E+00	2.98E-07	0.00E+00	1.99E-05	0.00E+00	0.00E+00	3.55E-09	1.13E-09	0.00E+00	-2.77E-07
AP	[mol H ⁺ eq.]	1.46E-01	5.62E-04	3.33E-04	0.00E+00	6.43E-02	0.00E+00	4.39E+00	0.00E+00	0.00E+00	3.56E-04	8.74E-04	0.00E+00	-1.94E-01
EP-freshwater	[kg P eq.]	3.48E-03	1.83E-05	1.21E-05	0.00E+00	2.42E-03	0.00E+00	7.49E-01	0.00E+00	0.00E+00	1.16E-05	7.60E-05	0.00E+00	-8.53E-03
EP-marine	[kg N eq.]	2.21E-02	1.42E-04	1.24E-04	0.00E+00	1.09E-02	0.00E+00	8.65E-01	0.00E+00	0.00E+00	8.99E-05	1.61E-04	0.00E+00	-3.14E-02
EP-terrestrial	[mol N eq.]	2.34E-01	1.44E-03	1.21E-03	0.00E+00	1.13E-01	0.00E+00	9.95E+00	0.00E+00	0.00E+00	9.14E-04	1.73E-03	0.00E+00	-3.21E-01
POCP	[kg NMVOC eq.]	7.80E-02	8.72E-04	4.81E-04	0.00E+00	3.64E-02	0.00E+00	2.42E+00	0.00E+00	0.00E+00	5.53E-04	4.89E-04	0.00E+00	-1.04E-01
ADPm ¹	[kg Sb eq.]	8.61E-04	8.40E-07	3.09E-07	0.00E+00	1.34E-03	0.00E+00	1.96E-02	0.00E+00	0.00E+00	5.33E-07	1.46E-06	0.00E+00	-2.24E-05
ADP ¹	[MJ]	2.42E+02	3.65E+00	1.35E+00	0.00E+00	9.64E+01	0.00E+00	1.43E+04	0.00E+00	0.00E+00	2.32E+00	2.02E+00	0.00E+00	-3.01E+02
WDP ¹	[m ³ world eq. deprived]	3.58E+00	1.51E-02	-4.94E-03	0.00E+00	2.47E+00	0.00E+00	1.63E+02	0.00E+00	0.00E+00	9.55E-03	2.79E-02	0.00E+00	-3.86E+00
Caption	<p>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 = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADP = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential</p> <p>The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10² or 195, while 1.12E-11 is the same as 1.12*10⁻¹¹ or 0.0000000000112.</p>													
Disclaimer	<p>¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.</p>													

ADDITIONAL ENVIRONMENTAL IMPACTS PER LIGHTING SYSTEM, FRIGG 1500mm														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	[Disease incidence]	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
IRP ²	[kBq U235 eq.]	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
ETP-fw ¹	[CTUe]	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
HTP-c ¹	[CTUh]	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
HTP-nc ¹	[CTUh]	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
SQP ¹	-	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
Caption	<p>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)</p> <p>The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10² or 195, while 1.12E-11 is the same as 1.12*10⁻¹¹ or 0.0000000000112.</p>													
Disclaimers	<p>¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.</p> <p>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.</p>													

RESOURCE USE PER LIGHTING SYSTEM, FRIGG 1500mm

Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	1.12E+02	5.75E-02	2.24E-02	0.00E+00	1.01E+01	0.00E+00	1.46E+04	0.00E+00	0.00E+00	3.65E-02	2.71E-01	0.00E+00	-2.87E+01
PERM	[MJ]	2.98E+01	0.00E+00	-2.98E+01	0.00E+00	1.88E-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
PERT	[MJ]	1.42E+02	5.75E-02	-2.98E+01	0.00E+00	1.03E+01	0.00E+00	1.46E+04	0.00E+00	0.00E+00	3.65E-02	2.71E-01	0.00E+00	-2.87E+01
PENRE	[MJ]	2.41E+02	3.65E+00	1.35E+00	0.00E+00	9.52E+01	0.00E+00	1.43E+04	0.00E+00	0.00E+00	2.32E+00	2.02E+00	0.00E+00	-3.01E+02
PENRM	[MJ]	1.05E+01	0.00E+00	-5.80E-01	0.00E+00	1.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.96E+00	0.00E+00	0.00E+00
PENRT	[MJ]	2.52E+02	3.65E+00	7.75E-01	0.00E+00	9.63E+01	0.00E+00	1.43E+04	0.00E+00	0.00E+00	2.32E+00	-7.94E+00	0.00E+00	-3.01E+02
SM	[kg]	1.91E+00	0.00E+00	0.00E+00	0.00E+00	2.28E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	1.17E-03	0.00E+00	0.00E+00	0.00E+00	2.34E-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
NRSF	[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
FW	[m ³]	1.19E+00	5.26E-04	-1.03E-05	0.00E+00	4.53E-02	0.00E+00	2.70E+01	0.00E+00	0.00E+00	3.33E-04	1.11E-03	0.00E+00	-1.61E-01
Caption	<p>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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water</p> <p>The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10² or 195, while 1.12E-11 is the same as 1.12*10⁻¹¹ or 0.0000000000112.</p>													

WASTE CATEGORIES AND OUTPUT FLOWS PER LIGHTING SYSTEM, FRIGG 1500mm

Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	2.00E-01	2.32E-05	8.48E-06	0.00E+00	3.65E-01	0.00E+00	3.49E-02	0.00E+00	0.00E+00	1.47E-05	4.04E-06	0.00E+00	-3.70E-04
NHWD	[kg]	1.27E+01	1.81E-01	7.19E-02	0.00E+00	9.90E+00	0.00E+00	1.16E+02	0.00E+00	0.00E+00	1.15E-01	1.96E-02	0.00E+00	-4.90E+00
RWD	[kg]	5.25E-04	1.20E-06	4.42E-07	0.00E+00	1.91E-04	0.00E+00	7.42E-02	0.00E+00	0.00E+00	7.61E-07	5.24E-06	0.00E+00	-1.22E-04
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
MFR	[kg]	4.32E+00	0.00E+00	1.54E+00	0.00E+00	1.22E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.15E+00	0.00E+00	0.00E+00
MER	[kg]	6.93E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	[MJ]	1.08E-01	0.00E+00	1.59E+00	0.00E+00	5.68E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	1.05E+00	0.00E+00	3.18E+00	0.00E+00	5.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Caption	<p>HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy</p> <p>The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10² or 195, while 1.12E-11 is the same as 1.12*10⁻¹¹ or 0.0000000000112.</p>													

BIOGENIC CARBON CONTENT PER LIGHTING SYSTEM, FRIGG 1500mm

Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0.00
Biogenic carbon content in accompanying packaging	[kg C]	1.04
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

Sunrise

ENVIRONMENTAL IMPACTS PER LIGHTING SYSTEM, Sunrise														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	8.00E+00	3.12E-01	3.91E+00	0.00E+00	6.06E+00	0.00E+00	8.74E+02	0.00E+00	0.00E+00	2.25E-01	2.18E-01	0.00E+00	-1.57E+01
GWP-fossil	[kg CO ₂ eq.]	1.18E+01	3.12E-01	1.15E-01	0.00E+00	6.07E+00	0.00E+00	8.72E+02	0.00E+00	0.00E+00	2.24E-01	2.18E-01	0.00E+00	-1.56E+01
GWP-biogenic	[kg CO ₂ eq.]	-3.80E+00	0.00E+00	3.80E+00	0.00E+00	-2.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.68E-03
GWP-luluc	[kg CO ₂ eq.]	1.63E-02	1.54E-04	4.67E-05	0.00E+00	1.28E-02	0.00E+00	2.71E+00	0.00E+00	0.00E+00	1.11E-04	4.45E-04	0.00E+00	-3.21E-02
ODP	[kg CFC 11 eq.]	2.91E-07	6.79E-09	2.14E-09	0.00E+00	2.78E-07	0.00E+00	1.99E-05	0.00E+00	0.00E+00	4.89E-09	1.56E-09	0.00E+00	-1.23E-07
AP	[mol H ⁺ eq.]	8.82E-02	6.82E-04	3.33E-04	0.00E+00	5.21E-02	0.00E+00	4.39E+00	0.00E+00	0.00E+00	4.91E-04	1.20E-03	0.00E+00	-9.95E-02
EP-freshwater	[kg P eq.]	2.90E-03	2.22E-05	1.21E-05	0.00E+00	1.57E-03	0.00E+00	7.49E-01	0.00E+00	0.00E+00	1.59E-05	1.05E-04	0.00E+00	-3.74E-03
EP-marine	[kg N eq.]	1.32E-02	1.72E-04	1.24E-04	0.00E+00	8.65E-03	0.00E+00	8.65E-01	0.00E+00	0.00E+00	1.24E-04	2.22E-04	0.00E+00	-1.60E-02
EP-terrestrial	[mol N eq.]	1.31E-01	1.75E-03	1.21E-03	0.00E+00	9.07E-02	0.00E+00	9.95E+00	0.00E+00	0.00E+00	1.26E-03	2.38E-03	0.00E+00	-1.59E-01
POCP	[kg NMVOC eq.]	5.22E-02	1.06E-03	4.81E-04	0.00E+00	2.96E-02	0.00E+00	2.42E+00	0.00E+00	0.00E+00	7.61E-04	6.72E-04	0.00E+00	-5.63E-02
ADPm ¹	[kg Sb eq.]	7.96E-04	1.02E-06	3.09E-07	0.00E+00	1.31E-03	0.00E+00	1.96E-02	0.00E+00	0.00E+00	7.34E-07	2.01E-06	0.00E+00	-1.30E-05
ADPf ¹	[MJ]	1.72E+02	4.43E+00	1.35E+00	0.00E+00	7.50E+01	0.00E+00	1.43E+04	0.00E+00	0.00E+00	3.19E+00	2.78E+00	0.00E+00	-1.78E+02
WDP ¹	[m ³ world eq. deprived]	4.32E+00	1.83E-02	-4.94E-03	0.00E+00	2.06E+00	0.00E+00	1.63E+02	0.00E+00	0.00E+00	1.31E-02	3.84E-02	0.00E+00	-2.18E+00
Caption	<p>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 = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential</p> <p>The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10² or 195, while 1.12E-11 is the same as 1.12*10⁻¹¹ or 0.0000000000112.</p>													
Disclaimer	<p>¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.</p>													

ADDITIONAL ENVIRONMENTAL IMPACTS PER LIGHTING SYSTEM, Sunrise														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	[Disease incidence]	8.83E-07	2.32E-08	8.04E-09	0.00E+00	5.50E-07	0.00E+00	2.91E-05	0.00E+00	0.00E+00	1.67E-08	1.09E-08	0.00E+00	-1.16E-06
IRP ²	[kBq U235 eq.]	7.84E-01	6.00E-03	1.82E-03	0.00E+00	5.15E-01	0.00E+00	3.16E+02	0.00E+00	0.00E+00	4.31E-03	2.95E-02	0.00E+00	-2.34E-01
ETP-fw ¹	[CTUe]	3.20E+02	4.38E+00	1.43E+00	0.00E+00	4.32E+02	0.00E+00	8.83E+03	0.00E+00	0.00E+00	3.15E+00	1.60E+00	0.00E+00	-7.87E+01
HTP-c ¹	[CTUh]	2.93E-08	2.84E-10	1.53E-10	0.00E+00	1.43E-08	0.00E+00	1.27E-06	0.00E+00	0.00E+00	2.05E-10	2.40E-10	0.00E+00	-3.01E-08
HTP-nc ¹	[CTUh]	5.49E-07	6.29E-09	5.22E-09	0.00E+00	3.84E-07	0.00E+00	5.14E-05	0.00E+00	0.00E+00	4.52E-09	1.51E-08	0.00E+00	-4.22E-07
SQP ¹	-	4.07E+02	2.68E+00	7.83E-01	0.00E+00	2.56E+01	0.00E+00	1.96E+04	0.00E+00	0.00E+00	1.93E+00	8.65E-01	0.00E+00	-2.06E+01
Caption	<p>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)</p> <p>The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10² or 195, while 1.12E-11 is the same as 1.12*10⁻¹¹ or 0.0000000000112.</p>													
Disclaimers	<p>¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.</p> <p>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.</p>													

RESOURCE USE PER LIGHTING SYSTEM, Sunrise														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	7.95E+01	6.97E-02	2.24E-02	0.00E+00	7.78E+00	0.00E+00	1.46E+04	0.00E+00	0.00E+00	5.02E-02	3.72E-01	0.00E+00	-1.35E+01
PERM	[MJ]	2.98E+01	0.00E+00	-2.98E+01	0.00E+00	1.88E-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
PERT	[MJ]	1.09E+02	6.97E-02	-2.98E+01	0.00E+00	7.97E+00	0.00E+00	1.46E+04	0.00E+00	0.00E+00	5.02E-02	3.72E-01	0.00E+00	-1.35E+01
PENRE	[MJ]	1.72E+02	4.43E+00	1.35E+00	0.00E+00	7.38E+01	0.00E+00	1.43E+04	0.00E+00	0.00E+00	3.19E+00	2.78E+00	0.00E+00	-1.78E+02
PENRM	[MJ]	1.54E+01	0.00E+00	-5.80E-01	0.00E+00	1.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.48E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.87E+02	4.43E+00	7.75E-01	0.00E+00	7.49E+01	0.00E+00	1.43E+04	0.00E+00	0.00E+00	3.19E+00	-1.20E+01	0.00E+00	-1.78E+02
SM	[kg]	3.26E+00	0.00E+00	0.00E+00	0.00E+00	2.28E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	1.17E-03	0.00E+00	0.00E+00	0.00E+00	2.34E-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
NRSF	[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
FW	[m ³]	1.07E-01	6.38E-04	-1.03E-05	0.00E+00	3.03E-02	0.00E+00	2.70E+01	0.00E+00	0.00E+00	4.59E-04	1.53E-03	0.00E+00	-8.20E-02
Caption	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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10 ² or 195, while 1.12E-11 is the same as 1.12*10 ⁻¹¹ or 0.0000000000112.													

WASTE CATEGORIES AND OUTPUT FLOWS PER LIGHTING SYSTEM, Sunrise														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	1.83E-01	2.82E-05	8.48E-06	0.00E+00	3.65E-01	0.00E+00	3.49E-02	0.00E+00	0.00E+00	2.03E-05	5.56E-06	0.00E+00	-1.62E-04
NHWD	[kg]	5.99E+00	2.20E-01	7.19E-02	0.00E+00	9.71E+00	0.00E+00	1.16E+02	0.00E+00	0.00E+00	1.58E-01	2.70E-02	0.00E+00	-2.10E+00
RWD	[kg]	2.10E-04	1.46E-06	4.42E-07	0.00E+00	1.52E-04	0.00E+00	7.42E-02	0.00E+00	0.00E+00	1.05E-06	7.21E-06	0.00E+00	-5.73E-05
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
MFR	[kg]	5.60E-01	0.00E+00	1.54E+00	0.00E+00	1.22E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.34E+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
EEE	[MJ]	9.54E-02	0.00E+00	1.59E+00	0.00E+00	5.68E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	1.13E+00	0.00E+00	3.18E+00	0.00E+00	5.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10 ² or 195, while 1.12E-11 is the same as 1.12*10 ⁻¹¹ or 0.0000000000112.													

BIOGENIC CARBON CONTENT PER LIGHTING SYSTEM, Sunrise		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0.00
Biogenic carbon content in accompanying packaging	[kg C]	1.04
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

August v2

ENVIRONMENTAL IMPACTS PER LIGHTING SYSTEM, August v2														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	3.55E+00	1.60E-01	3.98E+00	0.00E+00	4.12E+00	0.00E+00	3.27E+02	0.00E+00	0.00E+00	8.04E-02	7.81E-02	0.00E+00	-5.23E+00
GWP-fossil	[kg CO ₂ eq.]	6.58E+00	1.60E-01	9.36E-01	0.00E+00	4.13E+00	0.00E+00	3.26E+02	0.00E+00	0.00E+00	8.04E-02	7.80E-02	0.00E+00	-5.22E+00
GWP-biogenic	[kg CO ₂ eq.]	-3.04E+00	0.00E+00	3.04E+00	0.00E+00	-2.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.89E-03
GWP-luluc	[kg CO ₂ eq.]	1.21E-02	7.90E-05	3.94E-05	0.00E+00	7.68E-03	0.00E+00	1.01E+00	0.00E+00	0.00E+00	3.97E-05	1.59E-04	0.00E+00	-1.15E-02
ODP	[kg CFC 11 eq.]	2.24E-07	3.48E-09	1.91E-09	0.00E+00	2.52E-07	0.00E+00	7.43E-06	0.00E+00	0.00E+00	1.75E-09	5.59E-10	0.00E+00	-6.69E-08
AP	[mol H ⁺ eq.]	4.53E-02	3.50E-04	3.73E-04	0.00E+00	3.83E-02	0.00E+00	1.64E+00	0.00E+00	0.00E+00	1.76E-04	4.31E-04	0.00E+00	-3.14E-02
EP-freshwater	[kg P eq.]	2.14E-03	1.14E-05	1.07E-05	0.00E+00	9.20E-04	0.00E+00	2.80E-01	0.00E+00	0.00E+00	5.71E-06	3.74E-05	0.00E+00	-1.80E-03
EP-marine	[kg N eq.]	1.45E-02	8.82E-05	1.53E-04	0.00E+00	6.19E-03	0.00E+00	3.23E-01	0.00E+00	0.00E+00	4.43E-05	7.94E-05	0.00E+00	-5.42E-03
EP-terrestrial	[mol N eq.]	8.63E-02	8.97E-04	1.53E-03	0.00E+00	6.47E-02	0.00E+00	3.72E+00	0.00E+00	0.00E+00	4.50E-04	8.54E-04	0.00E+00	-5.62E-02
POCP	[kg NMVOC eq.]	3.11E-02	5.43E-04	5.22E-04	0.00E+00	2.12E-02	0.00E+00	9.03E-01	0.00E+00	0.00E+00	2.73E-04	2.41E-04	0.00E+00	-1.96E-02
ADPm ¹	[kg Sb eq.]	6.90E-04	5.23E-07	2.62E-07	0.00E+00	1.28E-03	0.00E+00	7.31E-03	0.00E+00	0.00E+00	2.63E-07	7.19E-07	0.00E+00	-1.40E-05
ADP ¹	[MJ]	8.53E+01	2.27E+00	1.15E+00	0.00E+00	5.50E+01	0.00E+00	5.35E+03	0.00E+00	0.00E+00	1.14E+00	9.96E-01	0.00E+00	-5.40E+01
WDP ¹	[m ³ world eq. deprived]	1.91E+00	9.37E-03	-3.66E-03	0.00E+00	1.67E+00	0.00E+00	6.09E+01	0.00E+00	0.00E+00	4.71E-03	1.37E-02	0.00E+00	-7.63E-01
Caption	<p>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 = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADP = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential</p> <p>The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10² or 195, while 1.12E-11 is the same as 1.12*10⁻¹¹ or 0.0000000000112.</p>													
Disclaimer	<p>¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.</p>													

ADDITIONAL ENVIRONMENTAL IMPACTS PER LIGHTING SYSTEM, August v2														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	[Disease incidence]	5.35E-07	1.19E-08	6.94E-09	0.00E+00	2.47E-07	0.00E+00	1.09E-05	0.00E+00	0.00E+00	5.99E-09	3.89E-09	0.00E+00	-4.11E-07
IRP ²	[kBq U235 eq.]	6.59E-01	3.08E-03	1.53E-03	0.00E+00	4.64E-01	0.00E+00	1.18E+02	0.00E+00	0.00E+00	1.55E-03	1.06E-02	0.00E+00	-1.40E-01
ETP-fw ¹	[CTUe]	3.01E+02	2.25E+00	1.46E+00	0.00E+00	4.08E+02	0.00E+00	3.30E+03	0.00E+00	0.00E+00	1.13E+00	5.72E-01	0.00E+00	-3.17E+01
HTP-c ¹	[CTUh]	3.13E-08	1.46E-10	1.82E-10	0.00E+00	6.29E-09	0.00E+00	4.74E-07	0.00E+00	0.00E+00	7.33E-11	8.61E-11	0.00E+00	-2.38E-08
HTP-nc ¹	[CTUh]	2.89E-07	3.23E-09	6.70E-09	0.00E+00	2.90E-07	0.00E+00	1.92E-05	0.00E+00	0.00E+00	1.62E-09	5.41E-09	0.00E+00	-1.67E-07
SQP ¹	-	2.74E+02	1.37E+00	6.42E-01	0.00E+00	2.10E+01	0.00E+00	7.31E+03	0.00E+00	0.00E+00	6.90E-01	3.10E-01	0.00E+00	-1.22E+01
Caption	<p>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)</p> <p>The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10² or 195, while 1.12E-11 is the same as 1.12*10⁻¹¹ or 0.0000000000112.</p>													
Disclaimers	<p>¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.</p> <p>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.</p>													

RESOURCE USE PER LIGHTING SYSTEM, August v2														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	5.26E+01	3.58E-02	1.96E-02	0.00E+00	5.81E+00	0.00E+00	5.44E+03	0.00E+00	0.00E+00	1.80E-02	1.33E-01	0.00E+00	-6.42E+00
PERM	[MJ]	2.39E+01	0.00E+00	-2.39E+01	0.00E+00	1.88E-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
PERT	[MJ]	7.65E+01	3.58E-02	-2.39E+01	0.00E+00	6.00E+00	0.00E+00	5.44E+03	0.00E+00	0.00E+00	1.80E-02	1.33E-01	0.00E+00	-6.42E+00
PENRE	[MJ]	8.47E+01	2.27E+00	1.15E+00	0.00E+00	5.38E+01	0.00E+00	5.35E+03	0.00E+00	0.00E+00	1.14E+00	9.96E-01	0.00E+00	-5.40E+01
PENRM	[MJ]	5.54E+00	0.00E+00	-5.80E-01	0.00E+00	1.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-4.96E+00	0.00E+00	0.00E+00
PENRT	[MJ]	9.03E+01	2.27E+00	5.72E-01	0.00E+00	5.50E+01	0.00E+00	5.35E+03	0.00E+00	0.00E+00	1.14E+00	-3.97E+00	0.00E+00	-5.40E+01
SM	[kg]	7.37E-01	0.00E+00	0.00E+00	0.00E+00	2.28E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	1.17E-03	0.00E+00	0.00E+00	0.00E+00	2.34E-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
NRSF	[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
FW	[m ³]	4.51E-02	3.27E-04	4.07E-05	0.00E+00	1.69E-02	0.00E+00	1.01E+01	0.00E+00	0.00E+00	1.64E-04	5.49E-04	0.00E+00	-3.10E-02
Caption	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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10 ² or 195, while 1.12E-11 is the same as 1.12*10 ⁻¹¹ or 0.0000000000112.													

WASTE CATEGORIES AND OUTPUT FLOWS PER LIGHTING SYSTEM, August v2														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	1.83E-01	1.45E-05	7.79E-06	0.00E+00	3.64E-01	0.00E+00	1.31E-02	0.00E+00	0.00E+00	7.26E-06	1.99E-06	0.00E+00	-1.57E-04
NHWD	[kg]	5.77E+00	1.13E-01	6.51E-02	0.00E+00	9.37E+00	0.00E+00	4.32E+01	0.00E+00	0.00E+00	5.67E-02	9.66E-03	0.00E+00	-1.18E+00
RWD	[kg]	3.48E-04	7.47E-07	3.73E-07	0.00E+00	1.39E-04	0.00E+00	2.77E-02	0.00E+00	0.00E+00	3.75E-07	2.58E-06	0.00E+00	-3.46E-05
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
MFR	[kg]	1.70E-01	0.00E+00	1.22E+00	0.00E+00	1.22E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.55E+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
EEE	[MJ]	5.54E-02	0.00E+00	1.27E+00	0.00E+00	5.68E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	3.60E-01	0.00E+00	2.55E+00	0.00E+00	5.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10 ² or 195, while 1.12E-11 is the same as 1.12*10 ⁻¹¹ or 0.0000000000112.													

BIOGENIC CARBON CONTENT PER LIGHTING SYSTEM, August v2		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0.00
Biogenic carbon content in accompanying packaging	[kg C]	0.83
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

Venus v2

ENVIRONMENTAL IMPACTS PER LIGHTING SYSTEM, Venus v2														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	1.98E+01	3.53E-01	4.75E+00	0.00E+00	1.69E+01	0.00E+00	7.26E+02	0.00E+00	0.00E+00	2.70E-01	2.63E-01	0.00E+00	-2.32E+01
GWP-fossil	[kg CO ₂ eq.]	2.35E+01	3.53E-01	9.57E-01	0.00E+00	1.69E+01	0.00E+00	7.24E+02	0.00E+00	0.00E+00	2.70E-01	2.62E-01	0.00E+00	-2.32E+01
GWP-biogenic	[kg CO ₂ eq.]	-3.80E+00	0.00E+00	3.80E+00	0.00E+00	-2.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.01E-02
GWP-luluc	[kg CO ₂ eq.]	3.65E-02	1.74E-04	4.91E-05	0.00E+00	3.44E-02	0.00E+00	2.25E+00	0.00E+00	0.00E+00	1.33E-04	5.36E-04	0.00E+00	-4.78E-02
ODP	[kg CFC 11 eq.]	3.24E-07	7.68E-09	2.35E-09	0.00E+00	4.01E-07	0.00E+00	1.65E-05	0.00E+00	0.00E+00	5.88E-09	1.88E-09	0.00E+00	-1.79E-07
AP	[mol H ⁺ eq.]	1.59E-01	7.71E-04	4.42E-04	0.00E+00	1.24E-01	0.00E+00	3.65E+00	0.00E+00	0.00E+00	5.91E-04	1.45E-03	0.00E+00	-1.48E-01
EP-freshwater	[kg P eq.]	7.73E-03	2.51E-05	1.32E-05	0.00E+00	7.20E-03	0.00E+00	6.22E-01	0.00E+00	0.00E+00	1.92E-05	1.26E-04	0.00E+00	-5.54E-03
EP-marine	[kg N eq.]	3.29E-02	1.95E-04	1.79E-04	0.00E+00	2.19E-02	0.00E+00	7.19E-01	0.00E+00	0.00E+00	1.49E-04	2.67E-04	0.00E+00	-2.37E-02
EP-terrestrial	[mol N eq.]	2.80E-01	1.98E-03	1.78E-03	0.00E+00	2.23E-01	0.00E+00	8.27E+00	0.00E+00	0.00E+00	1.51E-03	2.87E-03	0.00E+00	-2.35E-01
POCP	[kg NMVOC eq.]	9.73E-02	1.20E-03	6.22E-04	0.00E+00	6.83E-02	0.00E+00	2.01E+00	0.00E+00	0.00E+00	9.17E-04	8.10E-04	0.00E+00	-8.34E-02
ADPm ¹	[kg Sb eq.]	9.42E-04	1.15E-06	3.26E-07	0.00E+00	1.55E-03	0.00E+00	1.63E-02	0.00E+00	0.00E+00	8.83E-07	2.42E-06	0.00E+00	-1.82E-05
ADP ¹	[MJ]	3.16E+02	5.01E+00	1.43E+00	0.00E+00	2.11E+02	0.00E+00	1.19E+04	0.00E+00	0.00E+00	3.84E+00	3.35E+00	0.00E+00	-2.62E+02
WDP ¹	[m ³ world eq. deprived]	5.48E+00	2.07E-02	-4.70E-03	0.00E+00	4.68E+00	0.00E+00	1.35E+02	0.00E+00	0.00E+00	1.58E-02	4.62E-02	0.00E+00	-3.21E+00
Caption	<p>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 = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADP = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential</p> <p>The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10² or 195, while 1.12E-11 is the same as 1.12*10⁻¹¹ or 0.0000000000112.</p>													
Disclaimer	<p>¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.</p>													

ADDITIONAL ENVIRONMENTAL IMPACTS PER LIGHTING SYSTEM, Venus v2														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	[Disease incidence]	1.65E-06	2.63E-08	8.62E-09	0.00E+00	1.26E-06	0.00E+00	2.42E-05	0.00E+00	0.00E+00	2.01E-08	1.31E-08	0.00E+00	-1.72E-06
IRP ²	[kBq U235 eq.]	1.75E+00	6.78E-03	1.91E-03	0.00E+00	1.72E+00	0.00E+00	2.63E+02	0.00E+00	0.00E+00	5.20E-03	3.55E-02	0.00E+00	-3.26E-01
ETP-fw ¹	[CTUe]	3.99E+02	4.95E+00	1.76E+00	0.00E+00	5.25E+02	0.00E+00	7.33E+03	0.00E+00	0.00E+00	3.79E+00	1.92E+00	0.00E+00	-1.17E+02
HTP-c ¹	[CTUh]	3.92E-08	3.22E-10	2.13E-10	0.00E+00	2.71E-08	0.00E+00	1.05E-06	0.00E+00	0.00E+00	2.46E-10	2.89E-10	0.00E+00	-4.49E-08
HTP-nc ¹	[CTUh]	8.42E-07	7.11E-09	7.78E-09	0.00E+00	8.95E-07	0.00E+00	4.27E-05	0.00E+00	0.00E+00	5.45E-09	1.82E-08	0.00E+00	-6.27E-07
SQP ¹	-	4.46E+02	3.03E+00	8.05E-01	0.00E+00	5.53E+01	0.00E+00	1.63E+04	0.00E+00	0.00E+00	2.32E+00	1.04E+00	0.00E+00	-2.92E+01
Caption	<p>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)</p> <p>The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10² or 195, while 1.12E-11 is the same as 1.12*10⁻¹¹ or 0.0000000000112.</p>													
Disclaimers	<p>¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.</p> <p>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.</p>													

RESOURCE USE PER LIGHTING SYSTEM, Venus v2														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	9.48E+01	7.89E-02	2.43E-02	0.00E+00	2.33E+01	0.00E+00	1.21E+04	0.00E+00	0.00E+00	6.04E-02	4.49E-01	0.00E+00	-1.93E+01
PERM	[MJ]	2.98E+01	0.00E+00	-2.98E+01	0.00E+00	1.88E-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
PERT	[MJ]	1.25E+02	7.89E-02	-2.98E+01	0.00E+00	2.35E+01	0.00E+00	1.21E+04	0.00E+00	0.00E+00	6.04E-02	4.49E-01	0.00E+00	-1.93E+01
PENRE	[MJ]	3.15E+02	5.01E+00	1.43E+00	0.00E+00	2.09E+02	0.00E+00	1.19E+04	0.00E+00	0.00E+00	3.84E+00	3.35E+00	0.00E+00	-2.62E+02
PENRM	[MJ]	2.13E+01	0.00E+00	-5.80E-01	0.00E+00	1.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.07E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.36E+02	5.01E+00	8.55E-01	0.00E+00	2.11E+02	0.00E+00	1.19E+04	0.00E+00	0.00E+00	3.84E+00	-1.74E+01	0.00E+00	-2.62E+02
SM	[kg]	3.92E+00	0.00E+00	0.00E+00	0.00E+00	2.28E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	1.17E-03	0.00E+00	0.00E+00	0.00E+00	2.34E-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
NRSF	[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
FW	[m ³]	1.63E-01	7.21E-04	3.80E-05	0.00E+00	1.26E-01	0.00E+00	2.25E+01	0.00E+00	0.00E+00	5.53E-04	1.85E-03	0.00E+00	-1.20E-01
Caption	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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10 ² or 195, while 1.12E-11 is the same as 1.12*10 ⁻¹¹ or 0.0000000000112.													

WASTE CATEGORIES AND OUTPUT FLOWS PER LIGHTING SYSTEM, Venus v2														
Parameter	Unit	A1-A3	A4	A5	B1-B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	1.84E-01	3.19E-05	9.55E-06	0.00E+00	3.65E-01	0.00E+00	2.90E-02	0.00E+00	0.00E+00	2.44E-05	6.70E-06	0.00E+00	-2.37E-04
NHWD	[kg]	6.43E+00	2.49E-01	8.01E-02	0.00E+00	1.06E+01	0.00E+00	9.61E+01	0.00E+00	0.00E+00	1.91E-01	3.25E-02	0.00E+00	-3.13E+00
RWD	[kg]	5.72E-04	1.65E-06	4.65E-07	0.00E+00	4.47E-04	0.00E+00	6.17E-02	0.00E+00	0.00E+00	1.26E-06	8.68E-06	0.00E+00	-8.02E-05
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
MFR	[kg]	6.50E-01	0.00E+00	1.54E+00	0.00E+00	1.22E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.22E+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
EEE	[MJ]	1.05E-01	0.00E+00	1.59E+00	0.00E+00	5.68E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	1.31E+00	0.00E+00	3.18E+00	0.00E+00	5.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy The numbers are declared in scientific notation, fx 1.95E+02. This number can also be written as: 1.95*10 ² or 195, while 1.12E-11 is the same as 1.12*10 ⁻¹¹ or 0.0000000000112.													

BIOGENIC CARBON CONTENT PER LIGHTING SYSTEM, Venus v2		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0.00
Biogenic carbon content in accompanying packaging	[kg C]	1.04
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

Additional information

Technical information on scenarios

Transport to the building site (A4)

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Lorry, EURO6	-
Transport distance	250	km
Capacity utilisation (including empty runs)*	37	%

* The actual load capacity is unknown. The stated load capacity is calculated based on the used ecoinvent process.

Installation of the product in the building (A5)

Scenario information	Value	Unit
Ancillary materials	0	kg
Water use	0	m ³
Other resource use	0	kg
Energy type and consumption	0	kWh
Waste materials (sales packaging)	2,414 (I) 1,910 (II)	g

(I) Frigg 600mm, Frigg 1200mm, Frigg 1500mm, Sunrise, Venus v2 **(II)** August v2.

Reference service life

	Frigg, Sunrise, August v2, Venus v2
Reference service life	60 years
Declared product properties	Refer to 'Essential Characteristics'
Design application parameters	Not relevant
Assumed quality of work	Refer to 'Essential Characteristics'
Outdoor environment	Not relevant
Indoor environment, Usage conditions	No exposure to moisture and temperature maintained within the range of 18 to 30°C
Maintenance	Driver to be replaced twice and board once

Use (B1-B7)

Scenario information	Value	Unit
B4 - Replacement		
Replacement (all product variations)	Driver (2) Board (1)	-
Energy input during replacement	0	kWh
Exchange of worn parts during products life cycle*	Driver: 94 Board: 148 307 381 290 15 488	g
B6 - Use of energy		
Ancillary materials specified by material	0	kg
Electricity consumption*	4,013 1,500 3,334	kWh

* All six product variations use the same driver. Board: Frigg 600 mm, Frigg 1200 mm, Frigg 1500 mm, Sunrise, August v2 and Venus v2. Electricity consumption: Frigg/Sunrise, August v2 and Venus v2.

End-of-Life (C1-C4)

Scenario information	Value	Unit
Collected separately*	1,357	g
	2,633	
	3,152	
	4,338	
	1,554	
	5,224	
Collected with mixed waste	0	kg
For reuse	0	kg
For recycling	1,357	g
	2,633	
	3,152	
	4,338	
	1,554	
	5,224	
For energy recovery	0	kg
For final disposal	0	kg

* Frigg 600mm, Frigg 1200mm, Frigg 1500mm, Sunrise, August v2, Venus v2.

Reuse, Recovery and Recycling potential (D)

Scenario information	Value	Unit
Displaced material	2,258	g
	2,953	
	3,262	
	2,638	
	1,977	
	3,162	
Energy recovery from waste incineration (electric)	1.59	MJ
	1.59	
	1.59	
	1.59	
	1.27	
	1.59	
Energy recovery from waste incineration (heat)	3.18	MJ
	3.18	
	3.18	
	3.18	
	2.55	
	3.18	

Indoor air

The EPD does not give information on the release of dangerous substances to indoor air. The horizontal standards of the relevant measurements are not available.



Read more in EN15804+A1, Chapter 7.4.1.

Soil and water

The EPD does not give information on the release of dangerous substances to soil and water. The horizontal standards of the relevant measurements are not available.

Read more in EN15804+A1, Chapter 7.4.2.

References

Publisher	 epddanmark www.epddanmark.dk Template version 2024.2
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LCA software/background data	SimaPro v.9.6.0.1 ecoinvent v.3.9.1 (cut-off by classification)
3rd party verifier	Linda Høibye Life Cycle Assessment Consulting Verified according to Verification Checklist 1, v. 2.8

General programme instructions

General Programme Instructions, version 2.0, spring 2020

www.epddanmark.dk

EN 15804

DS/EN 15804+A2:2019 - "Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products"

PCR

Part B: Requirements on the EPD for Luminaires, light sources and control gears, 2024 (IBU)

EN 50693

DS/EN 50693:2019 - "Product category rules for life cycle assessments of electronic and electrical products and systems"

EN 15942

DS/EN 15942:2011 - "Sustainability of construction works - Environmental product declarations - Communication format business-to-business"

ISO 14025

DS/EN ISO 14025:2010 - "Environmental labels and declarations - Type III environmental declarations - Principles and procedures"

ISO 14040

DS/EN ISO 14040:2008 - "Environmental management - Life cycle assessment - Principles and framework"

ISO 14044

DS/EN ISO 14044:2008 - "Environmental management - Life cycle assessment - Requirements and guidelines"