Environmental Product Declaration

EPD of multiple products, based on a representative product in accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/ AC:2021 for:

MINO 60 ceiling / suspended system

from XAL GmbH

Including all variants of MINO 60 ceiling / suspended system
Included Products are specified on page 4

Programme
The International EPD® System
www.environdec.com

Programme operator
EPD International AB

EPD registration number	EPD-IES-0024946:001
Version date	2025-09-03
Validity date	2030-09-02

This EPD follows additional requirements for construction products considered as Electronic or Electric Equipment. An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

EPD®
THE INTERNATIONAL EPD® SYSTEM

ECO PLATFORM EPD VERIFIED

General information

Programme information

Programme System	The International EPD®
Address	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website	www.environdec.com
E-mail	info@environdec.com

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product Category Rules (PCR)
PCR 2019:14 Construction products version 2.0.1, 2025-06-05
UN CPC code(s): 4653 (Ver. 2.1) Lighting Equipment

PCR review was conducted by
The Technical Committee of the International EPD® System
Review Chair: Rob Rouwette (chair), Noa Meron (co-chair)
The review panel may be contacted via support@environdec.com.

Life Cycle Assessment (LCA) accountability
XAL GmbH, Auer-Welsbach-Gasse 36, 8055 Graz, Austria

Individual EPD verification without a pre-verified LCA/EPD tool
Third-party verifier:

☒ EPD verification by individual verifier

Elisabet Amat Guasch
GREENIZE Projects
eamat@greenize.es

Procedure for follow-up of data during EPD validity involves third-party verifier:
☒Yes ☐ No

Approved by
The International EPD® System

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

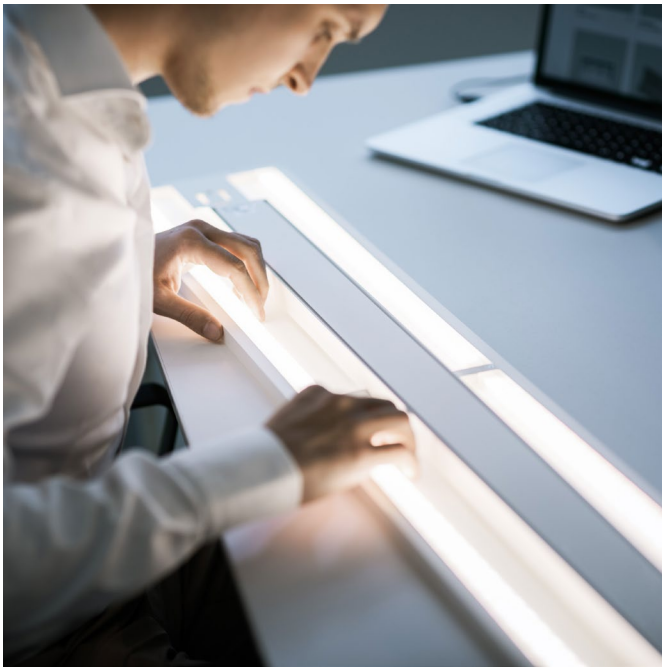
EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.

Company information

Owner of the EPD

XAL GmbH
Auer-Welsbach-Gasse 36
8055 Graz
AUSTRIA

epd@xal.com



Description of the organisation

XAL is an internationally operating manufacturer of high-end luminaires and lighting solutions for shop, office, hotel and residential lighting. For 30 years, XAL has been working with lighting designers, architects and planners to develop custom luminaires of the highest technical standard, with a focus on style and aesthetics. While XAL mainly targets B2B costumers, we also provide our standard portfolio to B2C costumers.

With its headquarters in Graz, Austria, the XAL Group currently employs 1300 people worldwide and has 30 international subsidiaries. We are continuously working on further improving our products – whether in terms of durability, efficiency, the carbon footprint, or also with regard to the replaceability and reusability of components and materials.

Product-related or management system-related certifications

XAL is certified according to several management and CSR standards.

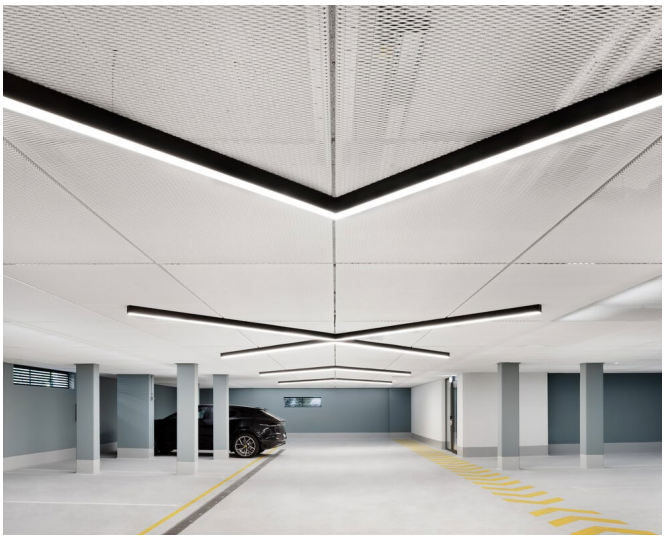
- **ISO 9001** – Quality management systems
- **ISO 14001** – Environmental management systems
- **ISO 45001** – Occupational health and safety management systems
- **Ecovadis** – regular evaluation of our corporate social responsibility based on objective criteria with a focus on the environment, labour and human rights, ethics and responsible procurement.
- **UN Global Compact initiative** – our interactions with each other and our stakeholders, our supply chain management and our resource strategies are guided by the principles of the UN Global compact.

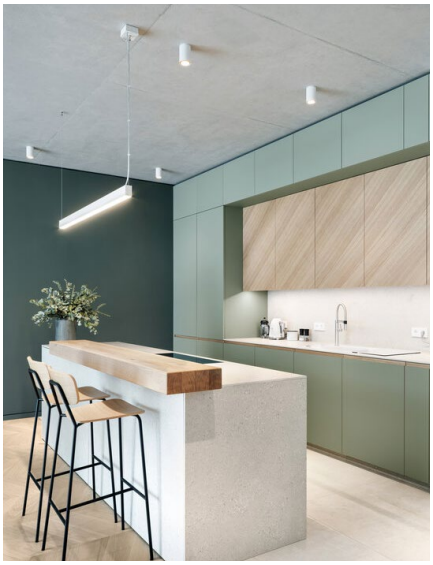
Name and location of production site(s)
The production sites are located in Murska Sobota (XAL Svetila d.o.o., Slovenia) and in Graz (XAL GmbH, Austria).

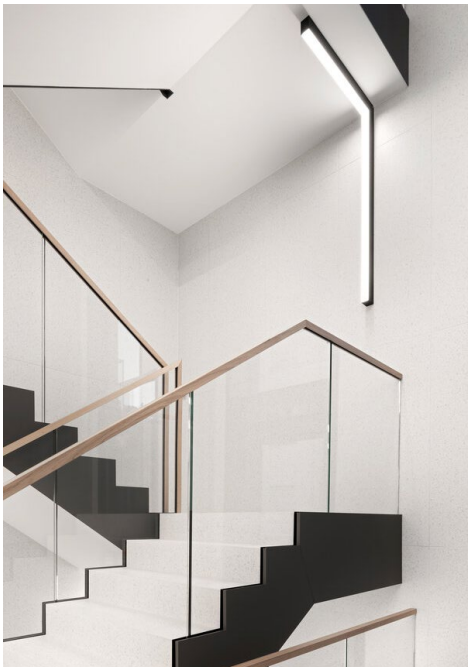
The production facilities operate in a complementary manner, with each product passing through both facilities.

More information
xal.com

Product information







Product name

MINO 60 high lumen ceiling / suspended system (reference product)

Product identification

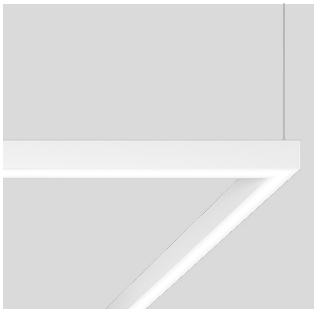
Luminaire housing from extruded aluminium profile, angular design; direct + direct / indirect light distribution. Available in up to six different sizes.

This EPD covers multiple products:

- **MINO 60** high lumen ceiling / suspended system
- **MINO 60** mid lumen ceiling / suspended system
- **MINO 60** direct / indirect high lumen suspended system
- **MINO 60** direct / indirect mid lumen suspended system

All variants are available in CRI ≥ 80 and CRI ≥ 90.
Scaling factors for all variants can be found in the Annex of the EPD.

This EPD covers two different light distribution variations of the MINO 60 system



MINO 60 ceiling / suspended system (reference product)

MINO 60 direct / indirect suspended system

Product information

Product description

Luminaire housing from extruded aluminium profile, angular design; no visible screws; designed for continuous lighting systems; surface powder coated; luminaire profile for mounting available in advance; remaining luminaire components mounted without tools; pendant fitting with cable suspension; with integrated toolless suspension height adjustment; spring clip attachment to the luminaire; freely positionable; incl. feeder cable; light inset consisting of highly reflective coated extruded profile for improved thermal management; option: lighting module is versatile in length; HPO (High Performance Opal) cover for uniform illumination; micro prismatic PMMA diffuser incl. diffuser film for homogeneous illumination and reduced luminance; wallwasher light inset; energy-efficient LEDs with very good colour rendering.

Technical data was tested in house according to following standards:
- EN 13032-1: 2004 +A1: 2012
- EN 13032-4: 2015 +A1: 2019
- CIE S 025/E: 2015
- IES LM-79-19: 2019

UN CPC code(s):
- 4653 (Ver. 2.1) Lighting Equipment

Technical specifications

Specification	**MINO 60** high lumen ceiling / suspended system (reference product)	**MINO 60** mid lumen ceiling / suspended system
Inset power	17.5 W	10.3 W
Luminous efficacy	up to 135 lm/W	up to 136 lm/W
Colour temperature	3000 K, 2700 K - 6000 K, 4000 K	3000 K, 4000 K
Electrical	non DIM, DALI-2, DALI-2 DT8	non DIM
Physical	length 872 mm, width 60 mm, height 80 mm	length 872 mm, width 60 mm, height 80 mm

Specification	**MINO 60** direct / indirect high lumen suspended system	**MINO 60** direct / indirect mid lumen suspended system
Inset power	26.2 W	17.9 W
Luminous efficacy	up to 145 lm/W	up to 150 lm/W
Colour temperature	3000 K, 4000 K	3000 K, 4000 K
Electrical	non DIM, DALI-2	non DIM
Physical	length 872 mm, width 60 mm, height 80 mm	length 872 mm, width 60 mm, height 80 mm

LCA information

Declared unit

The declared unit is one piece of **MINO 60** high lumen ceiling / suspended system (872mm). This product has been chosen as the reference due to the highest share of sales. The luminaires are available in six different sizes. The length versions use the same materials and production technology. The results can be scaled for all different types. The weight of the product per declared unit is 2.95 kg.

For better comparison with other types of luminaires, conversion factors are also available to convert the results to 1000 lumens during a reference lifetime of 35000 hours. This reference value is proposed by the PEP Category rules (PSR-0014-ed2.0-EN-2023 07 13). The conversion factors are available under “Additional environmental information“.

The principles of “Modularity” and “polluter pay” have been followed.

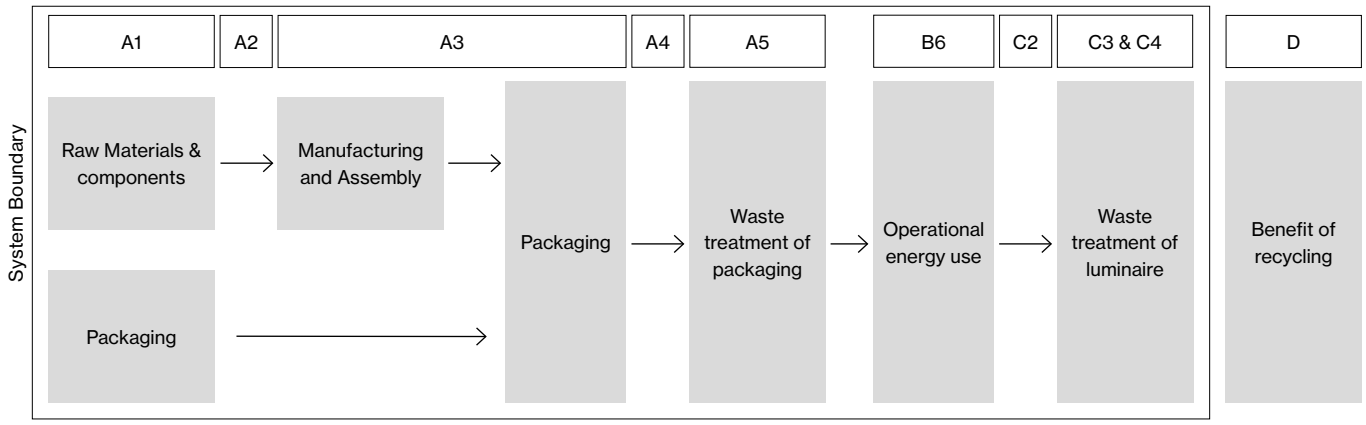
Reference service life
14.65 years

Time representativeness
2024

Database(s) and LCA software used
LCA for Experts 10.9.1.17

Description of system boundaries
Cradle to gate with options, modules C1-C4, module D and with optional modules

System Diagram



Allocation

Allocation was done to identify the associated quantity of flows that are common for the factory: electricity for general factory needs and packaging, use of packaging materials (wooden pallets, polyethylene film, etc.) and packaging waste from delivered components.

Product stage (A1 – A3)

Raw materials are found in the components used for the luminaire production. The raw materials and the necessary process steps have been modelled using LCA for Experts. The assembly of the PCBAs is done in Austria. Milling and powder coating of Channel and PCB Carrier, sawing of the Cover as well as the final assembly of the luminaire is done in Murska Sobota, Slovenia. The corresponding electricity mix has been used for all manufacturing steps. Transportation of all the components is incorporated. For the components which are delivered from China, aggregated data has been used, since transportation involved various routes and transport vehicles. Packaging for the components has been accounted for using a worst-case approach. The ESD-packaging is reused one time within the company, therefore only ½ of the weight is taken into account for the production and the recycling.

Transport to building (A4)

The transport is calculated from Graz, Austria to the capitals of the countries with sales shares >4% (Berlin, Rome, Vienna and Zürich). The product market includes countries all over the world.

Weighted distance	637.3 km
Truck used	Class EURO 6, 26-28 t
Fuel type	Diesel (0.00287 l/100 kkm)

Installation into building (A5)

No emissions occur during the installation. This module includes the waste treatment of the packaging. For the transport-packaging, the euro pallet is reused 28 times. therefore only 1/28 of the weight is taken into account for the production and the end of life of the pallet. This is an assumption derived from the PEP Eco Passport rules (PSR-0014-ed2.0-EN-2023 07 13). Packaging waste incl. transport packaging:

Material	Weight (kg)
Cardboard	0.336
Polyethylene film	0.005
Wooden pallet	0.005
Paper	0.026

Use, maintenance, repair, replacement and refurbishment (B1, B2, B3, B4, B5)

These stages include the use, maintenance, repair, replacement and refurbishment of the product, which do not contribute to the environmental impacts of the products functional unit.

Operational Energy Use (B6)

The reference service life of the luminaire is 14.65 years. This calculation is based on the lifespan segments of the application areas. The application areas were determined based on sales data.

Electricity consumption during the use stage is modelled based on the technical parameters of the luminaires and is representative for a weighted average of the following applications – office (72%), hospital (7%), hotel (7%), restaurant (7%), and retail (7%) with an average lifetime of 14.65 years. Geography of the electricity mix is modelled by sales shares and is representative for European countries (93.9% - EU-28) and rest of world countries (6.1%). For the rest of world countries, an electricity mix for China is used following a worst-case approach.

The energy consumption is calculated using the formula from EN 15193:2007: **Energy consumption [kWh] = {Pa × FCP × FO × (FD × tD + FN × tN) + Pp × ty} × 1/1.000 × a**

The results and additional Use Phase Information is presented in the table below:

Scenario	**MINO 60** high lumen ceiling/ suspended system DALI-2 (reference product)	Unit
Electricity use (14.65 years)	794.78	kWh
Active power	17.5	W
Passive power	0.15	W
Total active time	44316	hours
Total passive time	84018	hours
Dimmable	non DIM, DALI-2, DALI-2 DT8	-
Presence control	No	-

Operational water use (B7)

No water is consumed during the use stage. Therefore this stage does not contribute to the environmental impacts of the products functional unit.

End-of-life stage (C1 – C4)

The product is presumed to be decomposed manually; therefore, no emissions should occur. For the corresponding waste destinations, the following distances are used:

- To recycling facility – 250 km
- To incineration facility – 50 km
- To landfill – 100 km for metal and electronic parts, 20 km for plastic parts and packaging waste

Based on official statistics and literature, waste treatment options are taken into account for Europe and rest of the world countries.

Scenario (luminaire + mounting accessory)	**MINO 60** high lumen ceiling/ suspended system DALI-2 (reference product)	Unit
Collected separately	2.95	kg
Collected with mixed (construction) waste	-	kg
For reuse	-	kg
For recycling	1.78	kg
For energy recovery	0.49	kg
For final disposal	0.68	kg

Module D

According to the guidelines of EN 15804+A2 and the PCR from EPD International, calculations are made for Module D. The loads and benefits result from the export of secondary materials and the energy which comes from incineration and landfilling. In Module D also the benefits from the product packaging waste are included.

Scenario (contributing materials, incl. packaging)	**MINO 60** high lumen ceiling/ suspended system DALI-2 (reference product)	Unit
Materials for recycling	2.08	kg
Materials for export of secondary fuels	-	kg
Materials for incineration	0.53	kg

Cut-off rules

Consistent with the PCR, a minimum of 95% of total inflows (mass and energy) are included. In addition, materials and processes with insignificant contributions of less than 1% are also included. For the use and end-of-life stage, scenarios are used, factoring in geographical conditions (such as electricity mix) and applications (waste treatment practices).

The following processes have been excluded:
- Manufacture of equipment used in production, buildings or any other capital goods
- The transportation of personnel to the plant
- Transportation of personnel within the plant
- Research and development activities
- Long-term emissions

Data quality

Based on site specific information, this LCA study reflects the production for 2024. Components are supplied by external vendors, therefore manufacturing processes are modelled using LCA for Experts, with the best fitting representative geographical conditions and applications.

Electricity grid

For the manufacturing in Graz, Austria, the corresponding electricity grid mix as stated on the invoice is used: Biomass (65.64%), Solar (25.28%) other RE (9.08%).

For Murska Sobota, Slovenia, the corresponding electricity grid mix is: Hydro Power (58%), Solar (42%).

Environmental impact of the electricity used in	AUT	SLO
CO_2 eq. [kg/kWh]	0.031	0.015

Data Quality

Information on data quality and completeness

Process	Quality level	Geographical representativeness	Technical representativeness	Time representativeness	Type of data
Procurement of raw materials pre-products	Very good/ good	AT, SLO, GLO	Same or similar state of technology applied as defined in goal and scope	<3 years difference from reference year, Sphera MLC 2024	Primary Data, Secondary Data, Proxy Data
Electricity usage	Very good	AT, SLO	Same state of technology applied as defined in goal and scope	<3 years difference between the reference year	Primary Data
Production process	Very good	AT, SLO	Same state of technology applied as defined in goal and scope	<3 years difference between the reference year	Primary Data, Secondary Data
Transport of materials	Very good/ Good	Data from specific area or average data from larger area, GLO	Same or similar state of technology applied as defined in goal and scope	<3 years difference from reference year, Sphera MLC 2024	Secondary Data
Use stage	Very good	GLO	Same state of technology applied as defined in goal and scope	<3 years difference from reference year, Sphera MLC 2024	Primary Data, Secondary Data
End-of-Life stage	Fair	Data from area with similar production conditions, AT	Same or similar technology	<3 years difference from reference year, Sphera MLC 2024	Secondary Data, Proxy Data

Primary data used

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

Calculation of primary data used for module A1-A3:

Process	Source Type	Source	Reference Year	Data Category	Share of primary data of GWP-GHG results for A1-A3
Production of Aluminium	EPD	Content Declaration Alcomet	2023	Primary data, Secondary data	43.04 %
Transport of materials to manufacturing site	Collected dara	EPD Owner, Suppliers	2024	Primary data	15.87 %
Others	Collected data	EPD Owner	2024	Primary data	2.40 %
Total share of primary data of GWP-GHG results for A1-A3					**61.31%**

Content information

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Geography	GLO	GLO	AUT, SLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO
Primary data used	61.31%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	+34%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acronyms	GLO = Global, AUT = Austria, SLO = Slovenia																

Content information

Product components	Weight. kg	Weight-% (versus total weight)	Post-consumer material. weight-%	Biogenic material. weight-% / declared unit	Biogenic material. kg C / declared unit
Aluminum	1.65	55.80	9.39	0.00	0.00
Polymethylmethacrylate (PMMA)	0.30	10.02	0.00	0.00	0.00
Zinc	0.21	7.05	0.00	0.00	0.00
Steel	0.16	5.54	0.00	0.00	0.00
Copper	0.13	4.26	0.00	0.00	0.00
Polycarbonate	0.09	3.17	0.00	0.00	0.00
Thermoplastics	0.09	3.04	0.00	0.00	0.00
Epoxy-Resin	0.08	2.58	0.00	0.00	0.00
Polyvinyl chloride (PVC)	0.06	2.13	0.00	0.00	0.00
Others (<1%)	0.18	6.41	0.00	0.00	0.00
TOTAL	**2.95**	**100.00**	**5.25**	**0.00**	**0.00**

Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C / declared unit
Paper	0.03	0.87	0.01
Cardboard	0.17	5.91	0.09
ESD-PET	0.01	6.78	0.00
TOTAL	**0.21**	**13.56**	**0.10**

The products do not contain any REACH and RoHS SVHC substances in amounts greater than 0.1 % (1000 ppm).

* Disclaimer: The packaging material table includes only product packaging. Transport packaging also included in the LCA.

Results of the environmental performance indicators

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

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Mandatory impact category indicators according to EN 15804

Results per piece of **MINO 60** high lumen ceiling / suspended system DALI-2 872 mm

Indicator	Unit	A1 – A3	A4	A5	B1 – B5	B6	B7	C1	C2	C3	C4	D
GWP – fossil	kg CO_2 eq.	3.52E+01	2.28E-01	2.25E-02	0.00E+00	2.72E+02	0.00E+00	0.00E+00	5.99E-02	1.74E+00	2.05E-02	-1.63E+01
GWP – biogenic	kg CO_2 eq.	-6.81E-01	0.00E+00	6.81E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-03
GWP – luluc	kg CO_2 eq.	7.54E-02	2.43E-03	9.32E-05	0.00E+00	8.91E-01	0.00E+00	0.00E+00	6.39E-04	2.18E-04	4.97E-05	-3.51E-02
GWP – total	**kg CO_2 eq.**	**3.46E+01**	**2.30E-01**	**7.03E-01**	**0.00E+00**	**2.73E+02**	**0.00E+00**	**0.00E+00**	**6.05E-02**	**1.74E+00**	**2.06E-02**	**-1.64E+01**
ODP	kg CFC 11 eq.	5.37E-09	2.78E-14	3.24E-14	0.00E+00	5.58E-09	0.00E+00	0.00E+00	7.31E-15	1.52E-12	5.65E-14	-2.71E-10
AP	mol H+ eq.	1.83E-01	3.69E-04	4.65E-05	0.00E+00	6.45E-01	0.00E+00	0.00E+00	9.70E-05	5.12E-04	1.39E-04	-6.59E-02
EP – freshwater	kg P eq.	2.05E-04	6.37E-07	3.67E-07	0.00E+00	5.24E-04	0.00E+00	0.00E+00	1.67E-07	2.39E-07	3.26E-08	-1.21E-05
EP – marine	kg N eq.	3.70E-02	1.51E-04	2.05E-05	0.00E+00	1.52E-01	0.00E+00	0.00E+00	3.96E-05	1.55E-04	3.50E-05	-1.31E-02
EP – terrestrial	mol N eq.	4.01E-01	1.60E-03	1.97E-04	0.00E+00	1.69E+00	0.00E+00	0.00E+00	4.21E-04	2.32E-03	3.83E-04	-1.43E-01
POCP	kg NMVOC eq.	1.08E-01	3.19E-04	5.85E-05	0.00E+00	3.90E-01	0.00E+00	0.00E+00	8.39E-05	4.09E-04	1.07E-04	-3.86E-02
ADP – minerals & metals*	kg Sb eq.	1.84E-03	1.57E-08	1.06E-09	0.00E+00	5.15E-05	0.00E+00	0.00E+00	4.11E-09	2.07E-08	1.82E-09	-4.67E-04
ADP – fossil*	MJ	4.98E+02	3.01E+00	1.82E-01	0.00E+00	5.20E+03	0.00E+00	0.00E+00	7.90E-01	1.71E+00	3.00E-01	-2.16E+02
WDP*	m^3	7.01E+00	9.45E-04	8.16E-03	0.00E+00	7.02E+01	0.00E+00	0.00E+00	2.48E-04	1.96E-01	2.34E-03	-1.70E+00

Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential. Accumulated Exceedance; EP-freshwater = Eutrophication potential. fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential. fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential. Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential. deprivation-weighted water consumption

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per piece of **MINO 60** high lumen ceiling / suspended system DALI-2 872 mm

Indicator	Unit	A1 – A3	A4	A5	B1 – B5	B6	B7	C1	C2	C3	C4	D
GWP – GHG[1]	kg CO_2 eq.	3.53E+01	2.30E-01	2.26E-02	0.00E+00	2.73E+02	0.00E+00	0.00E+00	6.05E-02	1.74E+00	2.06E-02	-1.64E+01
PM	disease inc.	2.24E-06	3.52E-09	3.67E-10	0.00E+00	6.02E-06	0.00E+00	0.00E+00	9.25E-10	5.62E-09	1.67E-09	-9.49E-07
IRP – HE**	kg U235-eq	2.55E+00	5.49E-04	6.25E-04	0.00E+00	1.26E+02	0.00E+00	0.00E+00	1.44E-04	2.56E-02	4.62E-04	-1.01E+00
ETP – fw*	CTUe	2.17E+02	3.90E+00	1.82E-01	0.00E+00	8.68E+02	0.00E+00	0.00E+00	1.03E+00	4.97E-01	1.97E-01	-7.37E+01
HTP – c*	CTUh	1.41E-08	5.25E-11	3.27E-12	0.00E+00	8.43E-08	0.00E+00	0.00E+00	1.38E-11	4.85E-11	1.52E-11	-1.08E-08
HTP – nc*	CTUh	2.75E-07	2.96E-09	1.92E-10	0.00E+00	1.74E-06	0.00E+00	0.00E+00	7.78E-10	2.84E-09	1.47E-09	-1.27E-07
SQP	dimension-less	1.09E+02	1.34E+00	6.20E-02	0.00E+00	1.99E+03	0.00E+00	0.00E+00	3.51E-01	6.14E-01	5.65E-02	8.36E+01

Acronyms	PM = particulate matter emissions. IRP-HE = ionizing radiation potential-human exposure. ETP-fw = ecotoxicity (freshwater). HTP-c = human toxicity potential. cancer effects. HTP-nc = human toxicity potential. non-cancer effects. SQP = land use related impacts.

[1] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Results of the environmental performance indicators

Resource use indicators

Results per piece of **MINO 60** high lumen ceiling / suspended system DALI-2 872 mm

Indicator	Unit	A1 – A3	A4	A5	B1 – B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1.85E+02	2.21E-01	2.74E-02	0.00E+00	3.42E+03	0.00E+00	0.00E+00	5.81E-02	8.84E-01	4.69E-02	-1.03E+02
PERM	MJ	3.85E+00	0.00E+00	-3.84E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.94E-03	0.00E+00	0.00E+00
PERT	MJ	1.85E+02	2.21E-01	-3.81E+00	0.00E+00	3.42E+03	0.00E+00	0.00E+00	5.81E-02	8.75E-01	4.69E-02	-1.03E+02
PENRE	MJ	4.98E+02	3.01E+00	1.82E-01	0.00E+00	5.20E+03	0.00E+00	0.00E+00	7.90E-01	1.71E+00	3.00E-01	-2.16E+02
PENRM	MJ	1.55E+01	0.00E+00	-2.09E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.53E+01	0.00E+00	0.00E+00
PENRT	MJ	4.98E+02	3.01E+00	-2.74E-02	0.00E+00	5.20E+03	0.00E+00	0.00E+00	7.90E-01	-1.36E+01	3.00E-01	-2.16E+02
SM	kg	1.53E-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	1.76E+00
RSF	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
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
FW	m^3	3.15E-01	1.07E-04	2.00E-04	0.00E+00	2.82E+00	0.00E+00	0.00E+00	2.80E-05	4.89E-03	7.00E-05	-7.94E-02

Acronyms: 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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

Waste indicators

Results per piece of **MINO 60** high lumen ceiling / suspended system DALI-2 872 mm

Indicator	Unit	A1 – A3	A4	A5	B1 – B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3.04E-07	1.09E-10	5.36E-10	0.00E+00	6.60E-06	0.00E+00	0.00E+00	2.86E-11	1.35E-09	3.92E-11	-1.13E-07
Non-hazardous waste disposed	kg	5.50E+00	3.96E-04	3.20E-02	0.00E+00	3.92E+00	0.00E+00	0.00E+00	1.04E-04	1.96E-01	1.21E+00	-4.42E+00
Radioactive waste disposed	kg	1.72E-02	3.96E-06	3.93E-06	0.00E+00	7.69E-01	0.00E+00	0.00E+00	1.04E-06	1.67E-04	3.74E-06	-1.00E-02

Output flow indicators

Results per piece of **MINO 60** high lumen ceiling / suspended system DALI-2 872 mm

Indicator	Unit	A1 – A3	A4	A5	B1 – 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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	6.97E-01	0.00E+00	3.87E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.71E+00	0.00E+00	5.50E-02
Materials for energy recovery	kg	0.00E+00	0.00E+00	3.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.85E-01	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	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

Additional LCA results

Results for additional scenarios for End-of-Life modules

Mandatory impact category indicators according to EN 15804 + A2 (based on EF 3.1)

Results per piece of MINO 60 ceiling / suspended system DALI-2 872mm

		100% Recycling				100% Incineration				100% Landfill			
Indicator	**Unit**	**C2**	**C3**	**C4**	**D**	**C2**	**C3**	**C4**	**D**	**C2**	**C3**	**C4**	**D**
GWP – fossil	kg CO_2 eq.	7,65E-02	5,53E-01	8,99E-03	-1,90E+01	1,53E-02	2,23E+00	0,00E+00	-3,25E+00	3,06E-02	0,00E+00	6,59E-02	-2,24E+00
GWP – biogenic	kg CO_2 eq.	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
GWP – luluc	kg CO_2 eq.	8,16E-04	4,91E-04	1,69E-05	-4,11E-02	1,63E-04	1,74E-04	0,00E+00	-4,44E-03	3,27E-04	0,00E+00	1,94E-04	-2,94E-03
GWP – total	kg CO_2 eq.	7,78E-02	5,55E-01	8,74E-03	-2,02E+01	1,56E-02	2,22E+00	0,00E+00	-3,72E+00	3,11E-02	0,00E+00	6,59E-02	-2,70E+00
GWP-GHG	kg CO_2 eq.	7,74E-02	5,54E-01	9,01E-03	-1,91E+01	1,55E-02	2,23E+00	0,00E+00	-3,26E+00	1.38E-02	2.53E-03	2.98E-02	-1.21E+00
ODP	kg CFC 11 eq.	9,35E-15	3,15E-12	2,15E-14	-3,77E-10	1,87E-15	-4,62E-12	0,00E+00	-3,27E-11	3,74E-15	0,00E+00	2,12E-13	-2,24E-11
AP	mol H+ eq.	1,24E-04	4,90E-04	6,47E-05	-8,62E-02	2,48E-05	6,40E-04	0,00E+00	-7,14E-03	4,96E-05	0,00E+00	4,11E-04	-5,89E-03
EP – freshwater	kg P eq.	2,14E-07	1,55E-06	1,55E-08	-3,96E-05	4,28E-08	-1,25E-07	0,00E+00	-4,01E-06	8,56E-08	0,00E+00	1,00E-05	-3,01E-06
EP – marine	kg N eq.	5,06E-05	1,49E-04	1,66E-05	-1,56E-02	1,01E-05	2,51E-04	0,00E+00	-1,76E-03	2,02E-05	0,00E+00	9,77E-05	-1,40E-03
EP – terrestrial	mol N eq.	5,39E-04	1,77E-03	1,82E-04	-1,70E-01	1,08E-04	3,43E-03	0,00E+00	-1,91E-02	2,15E-04	0,00E+00	1,07E-03	-1,51E-02
POCP	kg NMVOC eq.	1,07E-04	3,82E-04	5,03E-05	-4,73E-02	2,14E-05	6,69E-04	0,00E+00	-5,87E-03	4,29E-05	0,00E+00	3,04E-04	-4,91E-03
ADP – minerals & metals*	kg Sb eq.	5,26E-09	4,92E-08	9,38E-10	-9,97E-04	1,05E-09	-3,67E-08	0,00E+00	-4,47E-07	2,10E-09	0,00E+00	4,66E-09	-3,40E-07
ADP – fossil*	MJ	1,01E+00	3,23E+00	1,20E-01	-2,72E+02	2,02E-01	3,65E+00	0,00E+00	-5,89E+01	4,04E-01	0,00E+00	1,07E+00	-4,08E+01
WDP*	m^3	3,17E-04	9,32E-02	1,00E-03	-2,98E+00	6,35E-05	4,65E-01	0,00E+00	-2,60E-01	3,09E-02	0,00E+00	6,61E-02	-2,24E+00

Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Additional environmental information

Scaling Factors for

- **MINO 60** high lumen ceiling / suspended system (DALI-2, DALI-2 DT8, non DIM)
- **MINO 60** mid lumen ceiling / suspended system (non DIM)
- **MINO 60** high lumen direct / indirect suspended system (DALI-2, non DIM)
- **MINO 60** mid lumen direct / indirect suspended system (non DIM)

All versions + different lighting control dirtributions of **MINO 60** high/mid lumen ceiling/suspended system (non DIM, DALI-2, DALI-2 DT8) and **MINO 60** direct / indirect high / mid lumen suspended system (non DIM, DALI-2) have been incorporated into the model and can be scaled by real factors.

The variants and their length versions belong to an environmental homogenous family and fulfil the requirements established by the PEP-PCR-ed4-EN-2021 09 06 by PEP-ECO Passport. The variants use the same material and production technology, but there are differences in the dimension and weight of the components. These differences can be scaled based on the reference product (**MINO 60** high/mid lumen ceiling/suspended system 872 mm DALI-2).

Variant	Control	Length	A1–A3	A4	A5	B6	C1–C4	D
MINO 60 high lumen ceiling/ suspended system	DALI-2	572	0.67	0.70	0.61	0.69	0.72	0.67
	DALI-2	**872**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
	DALI-2	1172	1.23	1.36	1.21	1.33	1.38	1.23
	DALI-2	1472	1.57	1.68	1.71	1.66	1.66	1.57
	DALI-2	2344	2.43	2.68	2.33	2.57	2.75	2.43
	DALI-2	3000	3.68	3.34	3.21	3.31	3.39	3.68
	DALI-2 DT8	872	1.07	1.03	1.00	1.08	1.13	1.00
	DALI-2 DT8	1172	1.30	1.36	1.21	1.57	1.51	1.22
	DALI-2 DT8	1472	1.67	2.71	1.71	1.92	1.83	1.56
	DALI-2 DT8	2344	2.58	3.59	2.33	3.03	3.04	2.41
	non DIM	572	0.74	0.68	0.61	0.69	0.74	0.65
	non DIM	872	1.12	1.01	1.00	1.00	1.08	0.99
	non DIM	1172	1.36	1.32	1.21	1.33	1.43	1.20
	non DIM	1472	1.76	1.68	1.71	1.66	1.78	1.55
	non DIM	2344	2.71	2.69	2.33	2.57	2.95	2.39
	non DIM	3000	4.11	3.34	3.21	3.31	3.62	3.62
MINO 60 mid lumen ceiling/ suspended system	non DIM	572	0.70	0.69	0.61	0.24	0.69	0.66
	non DIM	872	1.05	0.98	1.00	0.60	0.96	0.99
	non DIM	1172	1.29	1.32	1.21	0.76	1.31	1.22
	non DIM	1472	1.65	1.64	1.71	0.95	1.58	1.56
	non DIM	2344	2.55	2.63	2.33	1.52	2.62	2.40
	non DIM	3000	3.86	3.28	3.21	1.89	3.25	3.64
MINO 60 high lumen direct/ indirect suspended system	DALI-2	872	1.26	1.02	0.72	1.49	1.15	1.13
	DALI-2	1172	1.58	1.05	0.72	2.22	1.21	1.41
	DALI-2	1464	2.07	1.40	0.87	2.89	1.65	1.84
	DALI-2	1756	2.64	1.73	1.24	3.65	1.97	2.36
	DALI-2	2344	3.11	2.06	1.38	4.50	2.39	2.78
	non DIM	872	1.34	1.02	0.72	1.49	1.18	1.11
	non DIM	1172	2.19	1.39	0.88	2.89	1.66	1.82
	non DIM	1464	2.80	1.71	1.24	3.65	1.99	2.32
	non DIM	1756	3.31	2.06	1.38	4.50	2.44	2.74
	non DIM	2344	4.26	2.61	1.68	5.95	3.11	3.53
MINO 60 mid lumen direct/ indirect suspended system	non DIM	872	1.34	1.02	0.72	1.02	1.18	1.11
	non DIM	1172	2.19	1.39	0.88	1.39	1.67	1.82
	non DIM	1464	2.80	1.72	1.24	1.70	2.00	2.32
	non DIM	1756	3.31	2.06	1.38	1.99	2.44	2.74
	non DIM	2344	4.26	2.62	1.68	2.69	3.12	3.54

Results for 1000 lumens during a reference life of 35000 hours produced by 1 MINO 60 system luminaire (as per reference of PEP-ECO Passport PSR-0014-ed2.0-EN-2023 07 13).

A conversion factor can be used for converting the results to 1000 lumens during a reference life of 35000 hours.

					Conversion factors					
Variant	**Cover**	**CRI**	**Lightcolour**	**Length**	**A1–A3**	**A4**	**A5**	**B6**	**C1–C4**	**D**
MINO 60 high lumen ceiling/ suspended system	MP[1]	90	3000 K	572	0.96	0.96	0.96	0.73	0.96	0.96
	HPO[2]	90	3000K	572	0.84	0.84	0.84	0.64	0.84	0.84
	MP	90	4000 K	572	0.89	0.89	0.89	0.68	0.89	0.89
	HPO	90	4000 K	572	0.77	0.77	0.77	0.59	0.77	0.77
	MP	80	3000K	572	0.83	0.83	0.83	0.64	0.83	0.83
	HPO	80	3000K	572	0.72	0.72	0.72	0.55	0.72	0.72
	MP	80	4000 K	572	0.73	0.73	0.73	0.56	0.73	0.73
	HPO	80	4000 K	572	0.64	0.64	0.64	0.49	0.64	0.64
*Tunable White	MP	80	2700 K – 6000 K	872	0.51	0.51	0.51	0.39	0.51	0.51
*Tunable White	HPO	80	2700 K – 6000 K	872	0.44	0.44	0.44	0.34	0.44	0.44
	MP	90	3000 K	872	0.64	0.64	0.64	0.49	0.64	0.64
	HPO	90	3000 K	872	0.56	0.56	0.56	0.43	0.56	0.56
	MP	90	4000 K	872	0.60	0.60	0.60	0.46	0.60	0.60
	HPO	90	4000 K	872	0.52	0.52	0.52	0.40	0.52	0.52
	MP	80	3000K	872	0.55	0.55	0.55	0.42	0.55	0.55
	HPO	80	3000K	872	0.48	0.48	0.48	0.37	0.48	0.48
	MP	80	4000 K	872	0.49	0.49	0.49	0.37	0.49	0.49
	HPO	80	4000 K	872	0.42	0.42	0.42	0.32	0.42	0.42
*Tunable White	MP	80	2700 K – 6000 K	1172	0.38	0.38	0.38	0.29	0.38	0.38
*Tunable White	HPO	80	2700 K – 6000 K	1172	0.33	0.33	0.33	0.25	0.33	0.33
	MP	90	3000 K	1172	0.48	0.48	0.48	0.37	0.48	0.48
	HPO	90	3000 K	1172	0.42	0.42	0.42	0.32	0.42	0.42
	MP	90	4000 K	1172	0.45	0.45	0.45	0.34	0.45	0.45
	HPO	90	4000 K	1172	0.39	0.39	0.39	0.30	0.39	0.39
	MP	80	3000K	1172	0.42	0.42	0.42	0.32	0.42	0.42
	HPO	80	3000K	1172	0.36	0.36	0.36	0.28	0.36	0.36
	MP	80	4000 K	1172	0.36	0.36	0.36	0.28	0.36	0.36
	HPO	80	4000 K	1172	0.32	0.32	0.32	0.24	0.32	0.32
*Tunable White	MP	80	2700 K – 6000 K	1472	0.31	0.31	0.31	0.23	0.31	0.31
*Tunable White	HPO	80	2700 K – 6000 K	1472	0.27	0.27	0.27	0.20	0.27	0.27
	MP	90	3000 K	1472	0.39	0.39	0.39	0.30	0.39	0.39
	HPO	90	3000 K	1472	0.34	0.34	0.34	0.26	0.34	0.34
	MP	90	4000 K	1472	0.36	0.36	0.36	0.27	0.36	0.36
	HPO	90	4000 K	1472	0.31	0.31	0.31	0.24	0.31	0.31
	MP	80	3000K	1472	0.33	0.33	0.33	0.26	0.33	0.33
	HPO	80	3000K	1472	0.29	0.29	0.29	0.22	0.29	0.29
	MP	80	4000 K	1472	0.29	0.29	0.29	0.22	0.29	0.29
	HPO	80	4000 K	1472	0.25	0.25	0.25	0.19	0.25	0.25

[1] MP – Microprismatic

[2] HPO – High Performance Opal

*Tunable White	MP	80	2700 K – 6000 K	2344	0.19	0.19	0.19	0.15	0.19	0.19
*Tunable White	HPO	80	2700 K – 6000 K	2344	0.17	0.17	0.17	0.13	0.17	0.17
	MP	90	3000 K	2344	0.24	0.24	0.24	0.18	0.24	0.24
	HPO	90	3000 K	2344	0.21	0.21	0.21	0.16	0.21	0.21
	MP	90	4000K	2344	0.22	0.22	0.22	0.17	0.22	0.22
	HPO	90	4000 K	2344	0.19	0.19	0.19	0.15	0.19	0.19
	MP	80	3000K	2344	0.21	0.21	0.21	0.16	0.21	0.21
	HPO	80	3000K	2344	0.18	0.18	0.18	0.14	0.18	0.18
	MP	80	4000 K	2344	0.18	0.18	0.18	0.14	0.18	0.18
	HPO	80	4000 K	2344	0.16	0.16	0.16	0.12	0.16	0.16
	MP	80	3000 K	3000	0.19	0.19	0.19	0.14	0.19	0.19
	HPO	80	3000 K	3000	0.16	0.16	0.16	0.12	0.16	0.16
	MP	80	3000 K	3000	0.17	0.17	0.17	0.13	0.17	0.17
	HPO	80	3000 K	3000	0.15	0.15	0.15	0.12	0.15	0.15
	MP	90	4000 K	3000	0.16	0.16	0.16	0.12	0.16	0.16
	HPO	90	4000 K	3000	0.14	0.14	0.14	0.11	0.14	0.14
	MP	90	4000 K	3000	0.14	0.14	0.14	0.11	0.14	0.14
	HPO	90	4000 K	3000	0.12	0.12	0.12	0.09	0.12	0.12

Variant	Cover	CRI	Lightcolour	Length	A1–A3	A4	A5	B6	C1–C4	D
MINO 60 mid lumen ceiling/suspended system	MP	90	3000 K	572	1.63	1.63	1.63	1.24	1.63	1.63
	MP	90	3000K	572	1.41	1.41	1.41	1.08	1.41	1.41
	MP	90	4000 K	572	1.49	1.49	1.49	1.14	1.49	1.49
	HPO	90	4000 K	572	1.31	1.31	1.31	1.00	1.31	1.31
	MP	80	3000K	572	1.39	1.39	1.39	1.07	1.39	1.39
	HPO	80	3000K	572	1.22	1.22	1.22	0.93	1.22	1.22
	MP	80	4000 K	572	1.23	1.23	1.23	0.94	1.23	1.23
	HPO	80	4000 K	572	1.07	1.07	1.07	0.81	1.07	1.07
	MP	90	3000 K	872	1.08	1.08	1.08	0.82	1.08	1.08
	HPO	90	3000 K	872	0.94	0.94	0.94	0.72	0.94	0.94
	MP	90	4000 K	872	1.00	1.00	1.00	0.77	1.00	1.00
	HPO	90	4000 K	872	0.87	0.87	0.87	0.66	0.87	0.87
	MP	80	3000K	872	0.93	0.93	0.93	0.71	0.93	0.93
	HPO	80	3000K	872	0.82	0.82	0.82	0.62	0.82	0.82
	MP	80	4000 K	872	0.82	0.82	0.82	0.63	0.82	0.82
	HPO	80	4000 K	872	0.71	0.71	0.71	0.55	0.71	0.71
	MP	90	3000 K	1172	0.82	0.82	0.82	0.62	0.82	0.82
	HPO	90	3000 K	1172	0.70	0.70	0.70	0.54	0.70	0.70
	MP	90	4000 K	1172	0.75	0.75	0.75	0.57	0.75	0.75
	HPO	90	4000 K	1172	0.65	0.65	0.65	0.50	0.65	0.65
	MP	80	3000K	1172	0.70	0.70	0.70	0.53	0.70	0.70
	HPO	80	3000K	1172	0.61	0.61	0.61	0.47	0.61	0.61
	MP	80	4000 K	1172	0.61	0.61	0.61	0.47	0.61	0.61
	HPO	80	4000 K	1172	0.53	0.53	0.53	0.41	0.53	0.53
	MP	90	3000 K	1472	0.65	0.65	0.65	0.50	0.65	0.65
	HPO	90	3000 K	1472	0.56	0.56	0.56	0.43	0.56	0.56
	MP	90	4000 K	1472	0.60	0.60	0.60	0.46	0.60	0.60
	HPO	90	4000 K	1472	0.52	0.52	0.52	0.40	0.52	0.52
	MP	80	3000K	1472	0.56	0.56	0.56	0.43	0.56	0.56
	HPO	80	3000K	1472	0.49	0.49	0.49	0.37	0.49	0.49
	MP	80	4000 K	1472	0.49	0.49	0.49	0.37	0.49	0.49
	HPO	80	4000 K	1472	0.43	0.43	0.43	0.33	0.43	0.43

MP	90	3000 K	2344	0.40	0.40	0.40	0.31	0.40	0.40
HPO	90	3000 K	2344	0.35	0.35	0.35	0.27	0.35	0.35
MP	90	4000 K	2344	0.38	0.38	0.38	0.29	0.38	0.38
HPO	90	4000 K	2344	0.33	0.33	0.33	0.25	0.33	0.33
MP	80	3000K	2344	0.35	0.35	0.35	0.27	0.35	0.35
HPO	80	3000K	2344	0.30	0.30	0.30	0.23	0.30	0.30
MP	80	4000 K	2344	0.31	0.31	0.31	0.23	0.31	0.31
HPO	80	4000 K	2344	0.37	0.37	0.37	0.28	0.37	0.37
MP	90	3000 K	3000	0.32	0.32	0.32	0.24	0.32	0.32
HPO	90	3000 K	3000	0.27	0.27	0.27	0.21	0.27	0.27
MP	90	4000 K	3000	0.29	0.29	0.29	0.22	0.29	0.29
HPO	90	4000 K	3000	0.25	0.25	0.25	0.19	0.25	0.25
MP	80	3000K	3000	0.27	0.27	0.27	0.21	0.27	0.27
HPO	80	3000K	3000	0.24	0.24	0.24	0.18	0.24	0.24
MP	80	4000 K	3000	0.24	0.24	0.24	0.18	0.24	0.24
HPO	80	4000 K	3000	0.21	0.21	0.21	0.16	0.21	0.21

Variant	Cover	CRI	Lightcolour	Length	A1–A3	A4	A5	B6	C1–C4	D
MINO 60 high lumen ceiling/ suspended system	MP	90	3000 K	872	0.30	0.30	0.30	0.23	0.30	0.30
	HPO	90	3000 K	872	0.33	0.33	0.33	0.25	0.33	0.33
	MP	80	4000 K	872	0.26	0.26	0.26	0.20	0.26	0.26
	HPO	80	4000 K	872	0.29	0.29	0.29	0.22	0.29	0.29
	MP	90	3000 K	1172	0.22	0.22	0.22	0.17	0.22	0.22
	HPO	90	3000 K	1172	0.25	0.25	0.25	0.19	0.25	0.25
	MP	80	4000 K	1172	0.20	0.20	0.20	0.15	0.20	0.20
	HPO	80	4000 K	1172	0.21	0.21	0.21	0.16	0.21	0.21
	MP	90	3000 K	1464	0.18	0.18	0.18	0.14	0.18	0.18
	HPO	90	3000 K	1464	0.20	0.20	0.20	0.15	0.20	0.20
	MP	80	4000 K	1464	0.16	0.16	0.16	0.12	0.16	0.16
	HPO	80	4000 K	1464	0.17	0.17	0.17	0.13	0.17	0.17
	MP	90	3000 K	1756	0.14	0.14	0.14	0.11	0.14	0.14
	HPO	90	3000 K	1756	0.15	0.15	0.15	0.11	0.15	0.15
	MP	80	4000 K	1756	0.12	0.12	0.12	0.09	0.12	0.12
	HPO	80	4000 K	1756	0.13	0.13	0.13	0.10	0.13	0.13
	MP	90	3000 K	2344	0.10	0.10	0.10	0.08	0.10	0.10
	HPO	90	3000 K	2344	0.11	0.11	0.11	0.08	0.11	0.11
	MP	80	4000 K	2344	0.09	0.09	0.09	0.07	0.09	0.09
	HPO	80	4000 K	2344	0.10	0.10	0.10	0.07	0.10	0.10

Variant	Cover	CRI	Lightcolour	Length	A1–A3	A4	A5	B6	C1–C4	D
MINO 60 mid lumen direct/indirect suspended system	MP	90	3000 K	872	0.43	0.43	0.43	0.33	0.43	0.43
	HPO	90	3000 K	872	0.46	0.46	0.46	0.35	0.46	0.46
	MP	80	4000 K	872	0.37	0.37	0.37	0.28	0.37	0.37
	HPO	80	4000 K	872	0.41	0.41	0.41	0.31	0.41	0.41
	MP	90	3000 K	1172	0.32	0.32	0.32	0.24	0.32	0.32
	HPO	90	3000 K	1172	0.35	0.35	0.35	0.27	0.35	0.35
	MP	80	4000 K	1172	0.28	0.28	0.28	0.21	0.28	0.28
	HPO	80	4000 K	1172	0.31	0.31	0.31	0.23	0.31	0.31
	MP	90	3000 K	1464	0.25	0.25	0.25	0.19	0.25	0.25
	HPO	90	3000 K	1464	0.28	0.28	0.28	0.21	0.28	0.28
	MP	80	4000 K	1464	0.22	0.22	0.22	0.17	0.22	0.22
	HPO	80	4000 K	1464	0.25	0.25	0.25	0.19	0.25	0.25

MP	90	3000 K	1756	0.21	0.21	0.21	0.16	0.21	0.21
HPO	90	3000 K	1756	0.22	0.22	0.22	0.17	0.22	0.22
MP	80	4000 K	1756	0.18	0.18	0.18	0.14	0.18	0.18
HPO	80	4000 K	1756	0.20	0.20	0.20	0.15	0.20	0.20
MP	90	3000 K	2344	0.16	0.16	0.16	0.12	0.16	0.16
HPO	90	3000 K	2344	0.17	0.17	0.17	0.13	0.17	0.17
MP	80	4000 K	2344	0.14	0.14	0.14	0.11	0.14	0.14
HPO	80	4000 K	2344	0.15	0.15	0.15	0.11	0.15	0.15

Information related to the sectorial EPD
This EPD is not sectoral.

Version History
This is the first version of the EPD.

Abbreviations

ADPE – Abiotic depletion potential non-fossil resources
ADPF – Abiotic depletion potential fossil resources
AP – Acidification potential, accumulated exceedance
AUT – Austria
CB – Certification Body
CRU – Components for re-use
d/i – direct / indirect
DALI – Digital Adressable Lighting Interface
EEE – Exported electrical energy
EET – Exported thermal energy
EPD – Environmental Product Declaration
EP-freshwater – Eutrophication potential freshwater
EP-marine – Eutrophication potential marine
EP-terrestrial – Eutrophication potential terrestrial
ETP-fw – Eco toxicity freshwater
FW – Net use of fresh water
GLO – Global
GWP-biogenic – Global warming potential biogenic
GWP-fossil – Global warming potential fossil fuels
GWP-GHG – Global warming potential
GWP-luluc – Global warming potential land use and land use change
GWP-total – Global warming potential total
HPO – High Performance Opal
HTTP-c – Human toxicity, cancer effect
HTTP-nc – Human toxicity, non-cancer effects
HWD – Hazardous waste disposed
IRP – Ionizing radiation, human health
LCA – Life Cycle Assessment
MER – Materials for energy recovery
MFR – Materials for recycling
MP – Microprismatic
NHWD – Non–harzardous waste disposed
non DIM – non dimmable
NRSF – Use of non–renewable secondary fuels
ODP – Depletion potential of the stratospheric ozone layer
PCR – Product Category Rules
PENRE – Use of non renewable primary energy as energy carrier
PENRM – Use of non renewable primary energy resources used as raw materials
PENRT – Total use of non renewable primary energy resource
PERE – Use of renewable primary energy as energy carrier
PERM – Use of renewable primary energy resources used as raw materials
PERT – Total use of renewable primary energy
PM – Particulate matter emissions
MMA – Polymethylmetacrylate
POCP – Photochemical ozone creation potential
PSR – Product Specific Rules
RE – Renewable Energy
RSF – Use of renewable secondary fuels
RWD – Radioactive waste disposed
SLO – Slovenia
SM – Use of secondary material
SQP – Land use related impacts/Soil quality
UN CPC – United Nations Central Product Classification
WDP – Water (user) deprivation potential

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