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:

MITA circle / square recessed

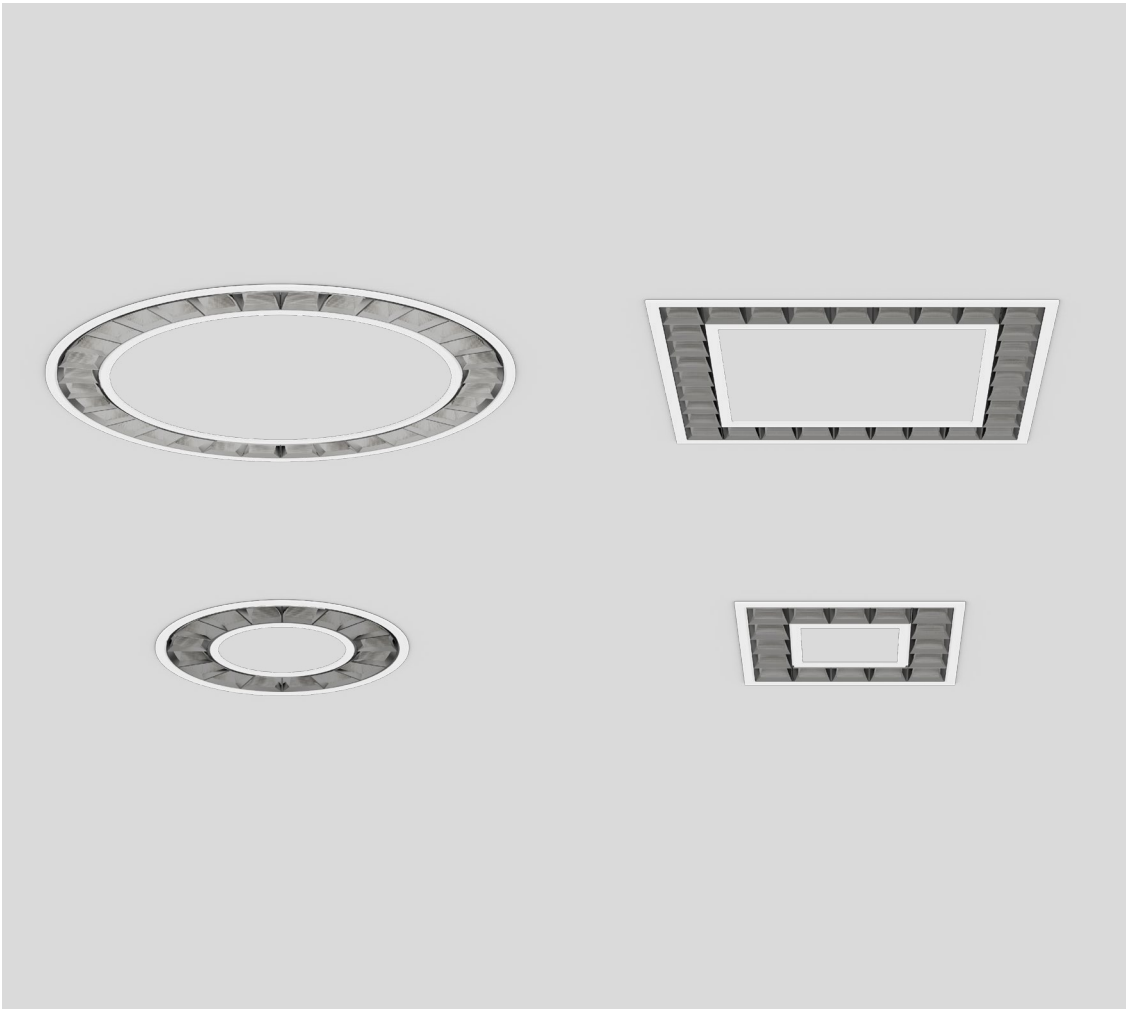
from XAL GmbH

Including multiple variants of MITA circle / square recessed
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-0031676:001
Version date	2026-06-17
Validity date	2031-06-16



This EPD follows additional requirements for construction products considered as Electronic or Electric Equipment. An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com.

EPD INTERNATIONAL EPD SYSTEM

ECO PLATFORM EPD VERIFIED

General information

Programme information

Programme	The International EPD System
Address	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website	www.environdec.com
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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:

Elisabet Amat Guasch
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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. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD

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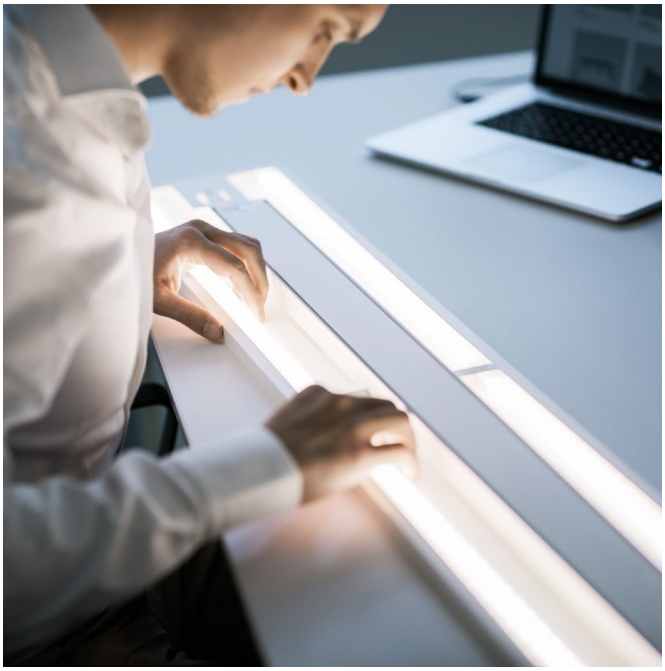


Description of the organisation

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.

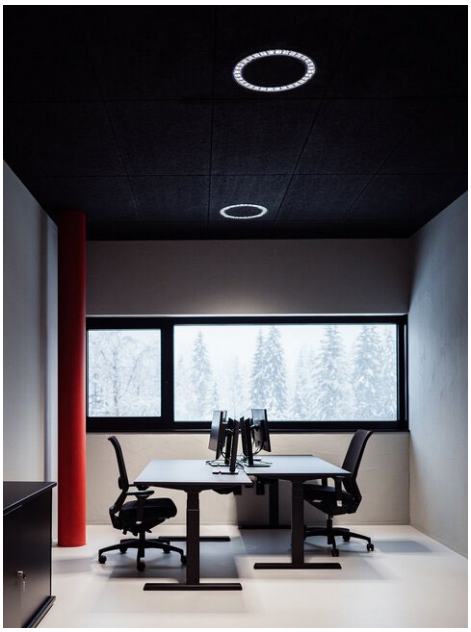
- **ISO 9001** – Quality management systems
- **ISO 14001** – Environmental management systems
- **ISO 45001** – Occupational health and safety management systems
- **Ecovadis** – regular evaluation of our corporate social responsibility based on objective criteria with a focus on the environment. labour 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

MITA circle/square recessed

Product identification

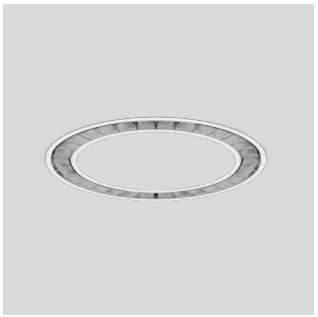
Ring/Cylindrical/Square shaped luminaire housing in die-cast aluminium. This EPD covers multiple products:

- MITA circle 450 recessed trim (reference product)
- MITA circle 240 recessed trim
- MITA circle 200 recessed trim
- MITA circle 160 recessed trim/trimless
- MITA square 360 trim
- MITA square 200 trim

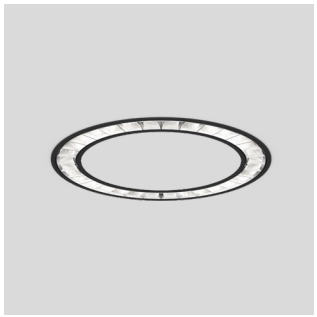
All variants are available with CRI ≥ 80 and CRI ≥ 90. Optic reflector chrome or dark chrome; MITA 200 circle recessed also available with opal cover; Circle/Square trim variants; MITA 160 circle recessed also available with trimless; Powder coated surface in traffic white and jet black; DALI-2 and DALI-2-DT8 (tunable white).
Scaling factors for all variants can be found in the Annex of the EPD.

This EPD covers multiple colour variants of the MITA circle/square, e.g.:

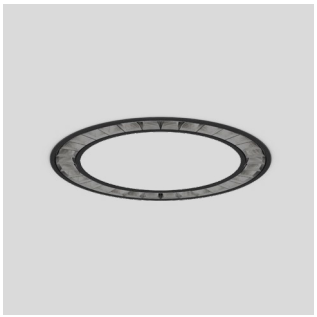
circle recessed, traffic white, reflector chrome



circle recessed, traffic white, reflector dark chrome



circle recessed, jet black, reflector chrome



circle recessed, jet black, reflector dark chrome

Product information

Product description

Recessed
Ring/square shaped luminaire housing in die-cast aluminium; extremely slim design; recessed luminaire with trim; optional: blind cover to cover the cut-out available as an accessory; suitable for ceiling thickness of 2-25 mm; surface powder coated; high gloss reflector with faceted design; energy-efficient LEDs with very good colour rendering.

Technical specifications

Specification	**MITA circle 450** trim (reference product)	**MITA circle 240** trim	**MITA circle 200** trim	**MITA circle 160** trim/trimless
System power	28.5 W, 29.4 W, 40 W	13.8 W, 14.2 W	13.5 W, 15.6 W, 17.5 W, 21.6 W	6.1 W, 6.4 W
Luminous efficacy	up to 163 lm/W	up to 161 lm/W	up to 161 lm/W	up to 153 lm/W
Colour temperature	3000 K, 4000 K	3000 K, 4000 K	3000 K, 4000 K	3000 K, 4000 K
Electrical	DALI-2, DALI-2 DT8	DALI-2, DALI-2 DT8	DALI-2, DALI-2 DT8	nonDIM, DALI-2, DALI-2 DT8
Physical	Diameter 444 mm Height 47 mm	Diameter 240 mm Height 47 mm	Diameter 210 mm Height 36 mm	Diameter 165 mm Height 47 mm

Specification	**MITA square 360** trim	**MITA square 200** trim
System power	28.5 W, 29.4 W, 40 W	13.8 W, 14.2 W
Luminous efficacy	up to 163 lm/W	up to 161 lm/W
Colour temperature	3000 K, 4000 K	3000 K, 4000 K
Electrical	DALI-2, DALI-2 DT8	DALI-2, DALI-2 DT8
Physical	Length 356 mm Width 356 mm Height 43 mm	Length 206 mm Width 206 mm Height 43 mm

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

Content declaration

Content declaration per declared unit

Product components	Weight, kg	Weight-% (versus total weight)	Post-consumer material. weight-%	Biogenic material. weight-% / declared unit	Biogenic material. kg C / declared unit
Aluminum	1.16	60.86	61.00	0.00	0.00
Polycarbonate	0.33	17.18	0.00	0.00	0.00
Glass fibers	0.11	5.94	0.00	0.00	0.00
Epoxy resin	0.10	5.31	0.00	0.00	0.00
Steel	0.09	4.76	0.00	0.00	0.00
Copper	0.06	3.10	0.00	0.00	0.00
Polyamide 6	0.02	1.09	0.00	0.00	0.00
Others (<1%)	0.03	1.76	0.00	0.00	0.00
TOTAL	**1.90**	**100.00**	**37.24**	**0.00**	**0.00**

Packaging materials*	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C / declared unit
Cardboard	0.382	20.09	0.193
Paper	0.034	1.78	0.017
TOTAL	**0.415**	**21.87**	**0.211**

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

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

LCA information

Declared unit

The declared unit is one piece of MITA circle 450 recessed trim including the LED-Driver. The weight of the product per declared unit is 1.90 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. The conversion factors are available under “Additional environmental information“.

The principles of “modularity” and “polluter pays” have been followed.

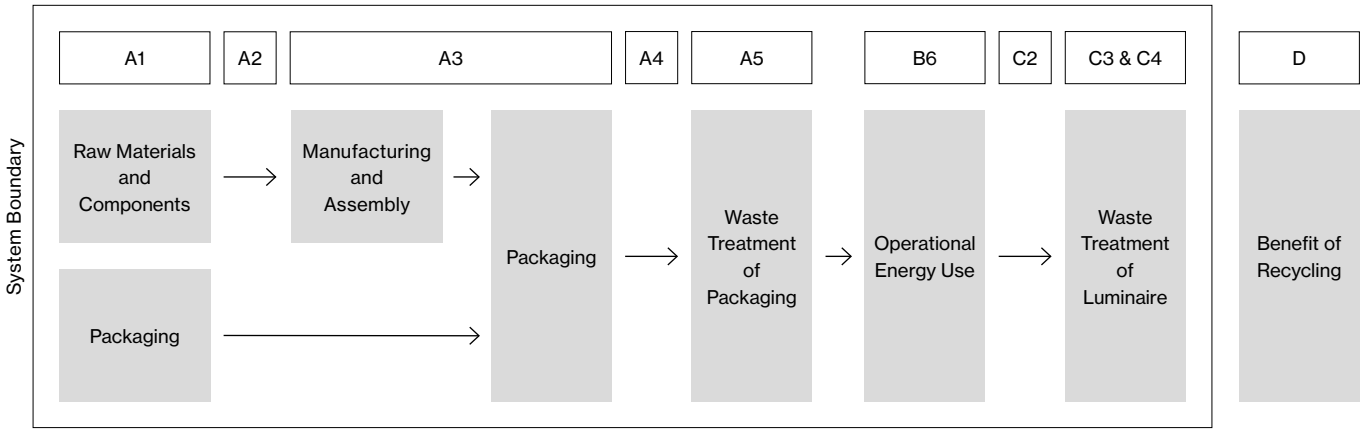
Reference service life
13.25 years

Time representativeness
2025

Database(s) and LCA software used
LCA for Experts 10.9.3.14

Description of system boundaries
Cradle to gate with options, modules C1-C4, module D and with optional modules A4, A5, B6

System Diagram



Allocation

Allocation was performed to determine the quantities of flows commonly associated with the factory, including electricity for general operations and packaging, the use of packaging materials (such as wooden pallets and polyethylene film), and packaging waste from purchased 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. Population of the PCB is done in Graz, Austria. 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.

Transport to building (A4)

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

Weighted distance	673 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	0.735
Wooden Pallet	0.018
Paper	0.034

Operational Energy Use (B6)

Electricity consumption during the use stage is modelled based on the technical parameters and an average lifetime of 13.25 years. The operating hours are based on the average application areas in accordance with EN 15193-1:2017+A1:2021. The products are mainly installed in shops, offices and other commercial premises. Geography of the electricity mix is modelled by sales shares and is representative for European countries (99% - EU-28) and rest of world countries (1%). For the rest of world countries, an electricity mix for China is used following a worst-case approach.

The electricity consumption per product unit is calculated using the formula: **Energy consumption [kWh] = {Pa × 1 kW / 1000W x operating hours p/a [h] x reference service lifetime [y]}**

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

Scenario	MITA circle 450 recessed trim	Unit
Electricity use (13.25 yrs)	1241.2	kWh
Active power	29.4	W
Operating hours (h/y)	3190	hours
Dimmable	DALI-2	-
Presence control	No	-

End-of-life stage (C1 – C4)

The product is presumed to be decomposed manually; therefore. no emissions should occur in C1. In accordance with PCR 2.0.1, the following transport distances are used for end-of-life waste treatment:

- Waste not destined for incineration: 80 km
- Waste destined for incineration: 130 km

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

Scenario	MITA circle 450 recessed trim	Unit
Collected separately	1.90	kg
Collected with mixed (construction) waste	-	kg
For reuse	-	kg
For recycling	1.155	kg
For energy recovery	0.288	kg
For final disposal	0.456	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. In Module D also the benefits from the product packaging waste are included.

Scenario (contributing materials, incl. packaging)	MITA circle 450 recessed trim	Unit
Materials for recycling	1.78	kg
Materials for export of secondary fuels	-	kg
Materials for incineration	0.39	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.

The following modules have been excluded:
- B1: For the use stage (B1), no energy and material inputs, or emissions are involved.
- B2-B5: During the reference service life no maintenance (B2), repair (B3), replacement (B4) or refurbishment (B5) is expected.
- B7: The use of the product does not require water consumption (B7).

Data quality

This LCA study reflects the production for 2025. Components are sourced from external suppliers, and their manufacturing processes are modeled using LCA for Experts, applying the most suitable representative geographical conditions and applications. Geographical representativeness is global, mainly Europe. Data quality is very good / good.

Electricity grid

Electricity mix in manufacturing sites is modelled based on market-based approach. For the manufacturing in Graz, Austria, the corresponding supplier's residual electricity grid mix as stated on the invoice is used: Photovoltaic (84.08%), Hydro Power (10.07%) other RE (5.85%).

For Murska Sobota, Slovenia, the corresponding electricity grid mix-backed with GoO is: Hydro Power (47.31%), Photovoltaic (51.51%) other RE (1.18%).

Environmental impact of the electricity used in	AUT	SLO
CO_2 eq. [kg/kWh]	0.022	0.019

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	ND	ND	ND	ND	ND	x	ND	x	x	x	x	x
Geography	GLO	GLO	AUT, SLO	GLO	GLO	-	-	-	-	-	GLO	-	GLO	GLO	GLO	GLO	GLO
Primary data used	9.99%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	-68%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acronyms	GLO = Global, AUT = Austria, SLO = Slovenia																

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
Transport of materials to manufacturing site	Collected data	EPD Owner, Suppliers	2025	Primary data	9.83 %
Electricity of in-house manufacturing	Collected data	EPD Owner	2025	Primary data	0.16 %
Total share of primary data of GWP-GHG results for A1-A3					**9.99 %**

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 + A2 (based on EF 3.1)

		Results per declared unit								
Indicator	**Unit**	**A1 – A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
GWP – fossil	kg CO_2 eq.	3.90E+01	2.21E-01	3.59E-02	4.21E+02	0.00E+00	1.13E-02	8.34E-01	8.07E-03	-3.79E+00
GWP – biogenic	kg CO_2 eq.	-1.46E+00	0.00E+00	1.46E+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.	2.64E-02	9.64E-04	4.22E-05	1.21E+00	0.00E+00	4.96E-05	7.14E-05	1.33E-05	-4.95E-03
GWP – total	**kg CO_2 eq.**	**3.75E+01**	**2.21E-01**	**1.49E+00**	**4.22E+02**	**0.00E+00**	**1.14E-02**	**8.35E-01**	**8.08E-03**	**-3.79E+00**
ODP	kg CFC 11 eq.	7.37E-09	4.63E-14	1.22E-13	2.02E-08	0.00E+00	2.38E-15	1.03E-12	3.65E-14	-6.20E-11
AP	mol H+ eq.	1.73E-01	3.50E-04	8.91E-05	1.02E+00	0.00E+00	1.80E-05	2.34E-04	5.43E-05	-1.83E-02
EP – freshwater	kg P eq.	3.94E-04	5.75E-07	7.24E-07	4.44E-04	0.00E+00	2.96E-08	8.38E-08	1.12E-08	1.06E-06
EP – marine	kg N eq.	3.83E-02	1.41E-04	4.01E-05	2.48E-01	0.00E+00	7.27E-06	6.96E-05	1.35E-05	-3.34E-03
EP – terrestrial	mol N eq.	4.17E-01	1.53E-03	3.85E-04	2.91E+00	0.00E+00	7.86E-05	1.07E-03	1.48E-04	-3.63E-02
POCP	kg NMVOC eq.	1.08E-01	3.09E-04	1.18E-04	5.85E-01	0.00E+00	1.59E-05	1.82E-04	4.14E-05	-9.00E-03
ADP – minerals & metals*	kg Sb eq.	3.30E-03	1.64E-08	1.76E-09	1.02E-04	0.00E+00	8.46E-10	1.01E-08	7.24E-10	-7.60E-04
ADP – fossil*	MJ	4.89E+02	2.94E+00	2.51E-01	7.77E+03	0.00E+00	1.51E-01	7.08E-01	1.21E-01	-5.25E+01
WDP*	m^3	8.70E+00	7.82E-04	1.86E-02	8.29E+01	0.00E+00	4.02E-05	9.10E-02	9.32E-04	-4.15E-01

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 declared unit								
Indicator	**Unit**	**A1 – A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
GWP – GHG[1]	kg CO_2 eq.	3.90E+01	2.21E-01	3.59E-02	4.22E+02	0.00E+00	1.14E-02	8.35E-01	8.08E-03	-3.79E+00
PM	disease inc.	2.11E-06	3.45E-09	6.51E-10	8.57E-06	0.00E+00	1.78E-10	2.57E-09	6.47E-10	-1.87E-07
IRP – HE**	kg U235-eq	1.31E+00	3.89E-04	9.02E-04	1.61E+02	0.00E+00	2.00E-05	7.81E-03	1.58E-04	-1.49E-01
ETP – fw*	CTUe	2.83E+02	2.51E+00	1.74E-01	1.81E+03	0.00E+00	1.29E-01	2.39E-01	7.69E-02	-1.55E+01
HTP – c*	CTUh	1.64E-08	4.99E-11	4.56E-12	1.23E-07	0.00E+00	2.56E-12	2.11E-11	4.76E-12	-1.67E-09
HTP – nc*	CTUh	4.29E-07	2.61E-09	2.75E-10	3.84E-06	0.00E+00	1.34E-10	1.36E-09	4.31E-10	-2.89E-08
SQP	dimensionless	1.50E+02	7.91E-01	5.87E-02	3.20E+03	0.00E+00	4.07E-02	2.46E-01	2.68E-02	1.72E+02

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 declared unit								
Indicator	**Unit**	**A1 – A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2.03E+02	2.03E-01	4.79E-02	5.88E+03	0.00E+00	1.04E-02	3.78E-01	2.02E-02	6.09E+00
PERM	MJ	7.11E+00	0.00E+00	-7.11E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	2.11E+02	2.03E-01	-7.06E+00	5.88E+03	0.00E+00	1.04E-02	3.78E-01	2.02E-02	6.09E+00
PENRE	MJ	4.89E+02	2.94E+00	2.51E-01	7.77E+03	0.00E+00	1.51E-01	7.08E-01	1.21E-01	-5.25E+01
PENRM	MJ	1.50E+01	0.00E+00	-7.68E-01	0.00E+00	0.00E+00	0.00E+00	-1.43E+01	0.00E+00	0.00E+00
PENRT	MJ	5.04E+02	2.94E+00	-5.17E-01	7.77E+03	0.00E+00	1.51E-01	-1.35E+01	1.21E-01	-5.25E+01
SM	kg	7.02E-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
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
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
FW	m^3	2.81E-01	5.93E-05	4.48E-04	3.77E+00	0.00E+00	3.05E-06	2.24E-03	2.75E-05	-1.94E-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 declared unit								
Indicator	**Unit**	**A1 – A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	3.10E-07	1.24E-10	9.32E-10	1.16E-05	0.00E+00	6.37E-12	5.68E-10	2.12E-11	2.23E-08
Non-hazardous waste disposed	kg	3.39E+00	5.40E-04	6.68E-02	6.70E+00	0.00E+00	2.77E-05	9.29E-02	4.57E-01	-6.27E-01
Radioactive waste disposed	kg	1.20E-02	3.09E-06	6.08E-06	1.06E+00	0.00E+00	1.59E-07	5.59E-05	1.29E-06	-1.46E-03

Output flow indicators

		Results per declared unit								
Indicator	**Unit**	**A1 – A3**	**A4**	**A5**	**B6**	**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
Material for recycling	kg	4.40E-01	0.00E+00	6.23E-01	0.00E+00	0.00E+00	0.00E+00	4.54E-01	0.00E+00	0.00E+00
Materials for energy recovery	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
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.27E+00	0.00E+00	1.92E-01
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.94E+00	0.00E+00	3.47E-01

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 declared unit:

		100% Recycling			100% Incineration			100% Landfill		
Indicator	**Unit**	**C2**	**C3**	**C4**	**C2**	**C3**	**C4**	**C2**	**C3**	**C4**
GWP – fossil	kg CO_2 eq.	9.86E-03	3.54E-01	0.00E+00	1.60E-02	1.21E+00	0.00E+00	9.86E-03	0.00E+00	2.50E-02
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
GWP – luluc	kg CO_2 eq.	4.31E-05	3.03E-04	0.00E+00	7.00E-05	1.68E-05	0.00E+00	4.31E-05	0.00E+00	3.78E-05
GWP – total	**kg CO_2 eq.**	**1.00E-02**	**3.56E-01**	**0.00E+00**	**1.63E-02**	**1.21E+00**	**0.00E+00**	**1.00E-02**	**0.00E+00**	**2.48E-02**
GWP-GHG	kg CO_2 eq.	9.90E-03	3.54E-01	0.00E+00	1.61E-02	1.21E+00	0.00E+00	9.90E-03	0.00E+00	2.50E-02
ODP	kg CFC 11 eq.	2.07E-15	4.27E-12	0.00E+00	3.36E-15	-1.26E-12	0.00E+00	2.07E-15	0.00E+00	1.33E-13
AP	mol H+ eq.	1.57E-05	4.21E-04	0.00E+00	2.55E-05	3.89E-04	0.00E+00	1.57E-05	0.00E+00	1.62E-04
EP – freshwater	kg P eq.	2.57E-08	7.25E-07	0.00E+00	4.18E-08	-6.80E-09	0.00E+00	2.57E-08	0.00E+00	4.87E-06
EP – marine	kg N eq.	6.32E-06	1.43E-04	0.00E+00	1.03E-05	1.46E-04	0.00E+00	6.32E-06	0.00E+00	3.85E-05
EP – terrestrial	mol N eq.	6.83E-05	1.68E-03	0.00E+00	1.11E-04	1.99E-03	0.00E+00	6.83E-05	0.00E+00	4.22E-04
POCP	kg NMVOC eq.	1.38E-05	3.55E-04	0.00E+00	2.25E-05	3.81E-04	0.00E+00	1.38E-05	0.00E+00	1.19E-04
ADP – minerals & metals*	kg Sb eq.	7.35E-10	3.42E-08	0.00E+00	1.20E-09	-4.06E-09	0.00E+00	7.35E-10	0.00E+00	2.12E-09
ADP – fossil*	MJ	1.31E-01	2.08E+00	0.00E+00	2.13E-01	1.28E+00	0.00E+00	1.31E-01	0.00E+00	3.90E-01
WDP*	m^3	3.49E-05	7.09E-02	0.00E+00	5.68E-05	2.02E-01	0.00E+00	3.49E-05	0.00E+00	2.97E-03

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 other variants

The different versions of MITA circle/square recessed are very similar but show some differences in their construction size and system power. These differences are accounted for in the LCA model. The scaling factors were determined using the GWP-GHG indicator and are only valid for this indicator.

Variant	Cover	Control	Power [W]	A1-A3	A4	A5	B6	C1-C4	D
MITA circle 450 recessed trim (reference product)	Reflector	DALI-2	29.4	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
	Reflector	DALI-2 DT8	28.5	1.00	1.00	1.00	0.97	1.00	1.00
	Reflector	DALI-2	40	1.00	1.00	1.00	1.36	1.00	1.00
MITA circle 240 recessed trim	Reflector	DALI-2	13.8	0.36	0.39	0.22	0.47	0.57	0.48
	Reflector	DALI-2 DT8	14.2	0.36	0.39	0.22	0.48	0.57	0.48
MITA circle 200 recessed trim	Reflector	DALI-2	13.5	0.38	0.39	0.35	0.47	0.52	0.46
	Reflector	DALI-2 DT8	15.6	0.38	0.39	0.35	0.53	0.52	0.46
	Opal	DALI-2	17.5	0.38	0.39	0.35	0.60	0.52	0.46
	Opal	DALI-2 DT8	21.6	0.38	0.39	0.35	0.73	0.52	0.46
MITA circle 160 recessed trim/trimless	Reflector	nonDIM, DALI-2	6.4	0.32	0.32	0.14	0.22	0.39	0.33
	Reflector	DALI-2 DT8	6.1	0.32	0.32	0.14	0.21	0.39	0.33
MITA square 360 recessed trim	Reflector	DALI-2	29.4	0.71	0.82	0.72	1.00	1.08	0.94
	Reflector	DALI-2 DT8	28.5	0.71	0.82	0.72	0.97	1.08	0.94
	Reflector	DALI-2	40	0.71	0.82	0.72	1.36	1.08	0.94
MITA square 200 recessed trim	Reflector	DALI-2	13.8	0.38	0.39	0.35	0.47	0.52	0.46
	Reflector	DALI-2 DT8	14.2	0.38	0.39	0.35	0.48	0.52	0.46

Additional environmental information

Results for 1000 lumens during a reference life of 35000 hours
(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.

Variant	Reflector	Cover	CCT	DIM	CRI	W	lm/W	A1-A3	A4	A5	B6	C1-C4	D
MITA circle 450 recessed trim	chrome	Reflector	4000 K	DALI-2	80	29.4	163	0.21	0.21	0.21	0.18	0.21	0.21
	chrome	Reflector	4000 K	DALI-2	90	29.4	133	0.26	0.26	0.26	0.22	0.26	0.26
	chrome	Reflector	3000 K	DALI-2	80	29.4	153	0.22	0.22	0.22	0.19	0.22	0.22
	chrome	Reflector	3000 K	DALI-2	90	29.4	133	0.26	0.26	0.26	0.22	0.26	0.26
	dark chrome	Reflector	4000 K	DALI-2	80	29.4	117	0.29	0.29	0.29	0.25	0.29	0.29
	dark chrome	Reflector	4000 K	DALI-2	90	29.4	95	0.36	0.36	0.36	0.30	0.36	0.36
	dark chrome	Reflector	3000 K	DALI-2	80	29.4	110	0.31	0.31	0.31	0.26	0.31	0.31
	dark chrome	Reflector	3000 K	DALI-2	90	29.4	95	0.36	0.36	0.36	0.30	0.36	0.36
	dark chrome	Reflector	TW	DALI-2-DT8	90	28.5	84	0.42	0.42	0.42	0.35	0.42	0.42
	chrome	Reflector	TW	DALI-2-DT8	90	28.5	117	0.30	0.30	0.30	0.25	0.30	0.30
	chrome	Reflector	4000 K	DALI-2	90	40	129	0.19	0.19	0.19	0.16	0.19	0.19
	chrome	Reflector	4000 K	DALI-2	80	40	158	0.16	0.16	0.16	0.13	0.16	0.16
	chrome	Reflector	3000 K	DALI-2	90	40	129	0.19	0.19	0.19	0.16	0.19	0.19
	chrome	Reflector	3000 K	DALI-2	80	40	148	0.17	0.17	0.17	0.14	0.17	0.17
	dark chrome	Reflector	4000 K	DALI-2	90	40	92	0.27	0.27	0.27	0.23	0.27	0.27
	dark chrome	Reflector	4000 K	DALI-2	80	40	113	0.22	0.22	0.22	0.19	0.22	0.22
	dark chrome	Reflector	3000 K	DALI-2	90	40	92	0.27	0.27	0.27	0.23	0.27	0.27
	dark chrome	Reflector	3000 K	DALI-2	80	40	106	0.24	0.24	0.24	0.20	0.24	0.24
MITA circle 240 recessed trim	chrome	Reflector	4000 K	DALI-2	90	13.8	132	0.55	0.55	0.55	0.47	0.55	0.55
	chrome	Reflector	4000 K	DALI-2	80	13.8	161	0.45	0.45	0.45	0.38	0.45	0.45
	chrome	Reflector	3000 K	DALI-2	90	13.8	132	0.55	0.55	0.55	0.47	0.55	0.55
	chrome	Reflector	3000 K	DALI-2	80	13.8	151	0.48	0.48	0.48	0.41	0.48	0.48
	dark chrome	Reflector	4000 K	DALI-2	90	13.8	95	0.77	0.77	0.77	0.65	0.77	0.77
	dark chrome	Reflector	4000 K	DALI-2	80	13.8	116	0.63	0.63	0.63	0.53	0.63	0.63
	dark chrome	Reflector	3000 K	DALI-2	90	13.8	95	0.77	0.77	0.77	0.65	0.77	0.77
	dark chrome	Reflector	3000 K	DALI-2	80	13.8	108	0.67	0.67	0.67	0.57	0.67	0.67
	dark chrome	Reflector	TW	DALI-2-DT8	90	14.2	84	0.83	0.83	0.83	0.70	0.83	0.83
	chrome	Reflector	TW	DALI-2-DT8	90	14.2	117	0.60	0.60	0.60	0.51	0.60	0.60
MITA circle 200 recessed trim	-	Opal	4000 K	DALI-2	90	17.2	97	0.60	0.60	0.60	0.51	0.60	0.60
	-	Opal	4000 K	DALI-2	80	17.5	105	0.55	0.55	0.55	0.46	0.55	0.55
	-	Opal	3000 K	DALI-2	90	17.2	97	0.60	0.60	0.60	0.51	0.60	0.60
	-	Opal	3000 K	DALI-2	80	17.5	101	0.57	0.57	0.57	0.48	0.57	0.57
	-	Opal	TW	DALI-2-DT8	90	21.6	84	0.55	0.55	0.55	0.46	0.55	0.55

Additional environmental information

Variant	Reflector	Cover	CCT	DIM	CRI	W	lm/W	A1-A3	A4	A5	B6	C1-C4	D
	chrome	Reflector	4000 K	DALI-2	90	13.5	126	0.59	0.59	0.59	0.50	0.59	0.59
	chrome	Reflector	4000 K	DALI-2	80	13.5	139	0.53	0.53	0.53	0.45	0.53	0.53
	chrome	Reflector	3000 K	DALI-2	90	13.5	126	0.59	0.59	0.59	0.50	0.59	0.59
	chrome	Reflector	3000 K	DALI-2	80	13.5	134	0.56	0.56	0.56	0.47	0.56	0.56
	dark chrome	Reflector	4000 K	DALI-2	90	13.2	92	0.82	0.82	0.82	0.69	0.82	0.82
	dark chrome	Reflector	4000 K	DALI-2	80	13.5	100	0.75	0.75	0.75	0.63	0.75	0.75
	dark chrome	Reflector	3000 K	DALI-2	90	13.2	92	0.82	0.82	0.82	0.69	0.82	0.82
	dark chrome	Reflector	3000 K	DALI-2	80	13.5	96	0.78	0.78	0.78	0.66	0.78	0.78
	dark chrome	Reflector	TW	DALI-2-DT8	90	15.6	80	0.80	0.80	0.80	0.68	0.80	0.80
	chrome	Reflector	TW	DALI-2-DT8	90	15.6	112	0.57	0.57	0.57	0.48	0.57	0.57
MITA circle 160 recessed trim/trimless	dark chrome	Reflector	3000 K	DALI-2	90	7.8	90	1.44	1.44	1.44	1.21	1.44	1.44
	dark chrome	Reflector	3000 K	non DIM	90	7.8	90	1.44	1.44	1.44	1.21	1.44	1.44
	chrome	Reflector	3000 K	DALI-2	90	7.8	125	1.03	1.03	1.03	0.87	1.03	1.03
	chrome	Reflector	3000 K	non DIM	90	7.8	125	1.03	1.03	1.03	0.87	1.03	1.03
	dark chrome	Reflector	4000 K	DALI-2	90	7.8	90	1.44	1.44	1.44	1.21	1.44	1.44
	dark chrome	Reflector	4000 K	non DIM	90	7.8	90	1.44	1.44	1.44	1.21	1.44	1.44
	chrome	Reflector	4000 K	DALI-2	90	7.8	125	1.03	1.03	1.03	0.87	1.03	1.03
	chrome	Reflector	4000 K	non DIM	90	7.8	125	1.03	1.03	1.03	0.87	1.03	1.03
	dark chrome	Reflector	3000 K	DALI-2	80	7.8	103	1.25	1.25	1.25	1.06	1.25	1.25
	dark chrome	Reflector	3000 K	non DIM	80	7.8	103	1.25	1.25	1.25	1.06	1.25	1.25
	chrome	Reflector	3000 K	DALI-2	80	7.8	144	0.89	0.89	0.89	0.75	0.89	0.89
	chrome	Reflector	3000 K	non DIM	80	7.8	144	0.89	0.89	0.89	0.75	0.89	0.89
	dark chrome	Reflector	4000 K	DALI-2	80	7.8	110	1.17	1.17	1.17	0.99	1.17	1.17
	dark chrome	Reflector	4000 K	non DIM	80	7.8	110	1.17	1.17	1.17	0.99	1.17	1.17
	chrome	Reflector	4000 K	DALI-2	80	7.8	153	0.84	0.84	0.84	0.71	0.84	0.84
	chrome	Reflector	4000 K	non DIM	80	7.8	153	0.84	0.84	0.84	0.71	0.84	0.84
	dark chrome	Reflector	TW	DALI-2-DT8	90	7.4	81	1.67	1.67	1.67	1.41	1.67	1.67
	chrome	Reflector	TW	DALI-2-DT8	90	7.4	113	1.20	1.20	1.20	1.01	1.20	1.20
MITA square 360 recessed trim	chrome	Reflector	4000 K	DALI-2	90	29.4	133	0.26	0.26	0.26	0.22	0.26	0.26
	chrome	Reflector	4000 K	DALI-2	80	29.4	163	0.21	0.21	0.21	0.18	0.21	0.21
	chrome	Reflector	3000 K	DALI-2	90	29.4	133	0.26	0.26	0.26	0.22	0.26	0.26
	chrome	Reflector	3000 K	DALI-2	80	29.4	153	0.22	0.22	0.22	0.19	0.22	0.22
	dark chrome	Reflector	4000 K	DALI-2	90	29.4	95	0.36	0.36	0.36	0.30	0.36	0.36
	dark chrome	Reflector	4000 K	DALI-2	80	29.4	117	0.29	0.29	0.29	0.25	0.29	0.29
	dark chrome	Reflector	3000 K	DALI-2	90	29.4	95	0.36	0.36	0.36	0.30	0.36	0.36
	dark chrome	Reflector	3000 K	DALI-2	80	29.4	110	0.31	0.31	0.31	0.26	0.31	0.31
	dark chrome	Reflector	TW	DALI-2-DT8	90	28.5	84	0.42	0.42	0.42	0.35	0.42	0.42
	chrome	Reflector	TW	DALI-2-DT8	90	28.5	117	0.30	0.30	0.30	0.25	0.30	0.30

Additional environmental information

Variant	Reflector	Cover	CCT	DIM	CRI	W	lm/W	A1-A3	A4	A5	B6	C1-C4	D
	chrome	Reflector	4000 K	DALI-2	90	40	129	0.19	0.19	0.19	0.16	0.19	0.19
	chrome	Reflector	4000 K	DALI-2	80	40	158	0.16	0.16	0.16	0.13	0.16	0.16
	chrome	Reflector	3000 K	DALI-2	90	40	129	0.19	0.19	0.19	0.16	0.19	0.19
	chrome	Reflector	3000 K	DALI-2	80	40	148	0.17	0.17	0.17	0.14	0.17	0.17
	dark chrome	Reflector	4000 K	DALI-2	90	40	92	0.27	0.27	0.27	0.23	0.27	0.27
	dark chrome	Reflector	4000 K	DALI-2	80	40	113	0.22	0.22	0.22	0.19	0.22	0.22
	dark chrome	Reflector	3000 K	DALI-2	90	40	92	0.27	0.27	0.27	0.23	0.27	0.27
	dark chrome	Reflector	3000 K	DALI-2	80	40	106	0.24	0.24	0.24	0.20	0.24	0.24
MITA square 200 recessed trim	chrome	Reflector	4000 K	DALI-2	90	13.8	132	0.55	0.55	0.55	0.47	0.55	0.55
	chrome	Reflector	4000 K	DALI-2	80	13.8	161	0.45	0.45	0.45	0.38	0.45	0.45
	chrome	Reflector	3000 K	DALI-2	90	13.8	132	0.55	0.55	0.55	0.47	0.55	0.55
	chrome	Reflector	3000 K	DALI-2	80	13.8	151	0.48	0.48	0.48	0.41	0.48	0.48
	dark chrome	Reflector	4000 K	DALI-2	90	13.8	95	0.77	0.77	0.77	0.65	0.77	0.77
	dark chrome	Reflector	4000 K	DALI-2	80	13.8	116	0.63	0.63	0.63	0.53	0.63	0.63
	dark chrome	Reflector	3000 K	DALI-2	90	13.8	95	0.77	0.77	0.77	0.65	0.77	0.77
	dark chrome	Reflector	3000 K	DALI-2	80	13.8	108	0.67	0.67	0.67	0.57	0.67	0.67
	dark chrome	Reflector	TW	DALI-2-DT8	90	14.2	84	0.83	0.83	0.83	0.70	0.83	0.83
	chrome	Reflector	TW	DALI-2-DT8	90	14.2	117	0.60	0.60	0.60	0.51	0.60	0.60

Additional environmental information

Information related to the sectorial EPD

This EPD is not sectoral.

Version History

Original version of the EPD (2026-06-17).

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
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
NHWD – Non–harzardous waste disposed
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
PMMA – 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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