PHILIPS

SlimBlend Gen2

Product declaration

Environmental Product Declaration

SlimBlend Gen2

as per ISO 14021, based on ISO 14040/14044

SlimBlend Gen2 is a product with a complete family of slim luminaires designed for Circularity & enhanced Wellbeing and Future proof connectivity. Combined with state-of-the-art efficacy (at CRI>90), upgradability features, a long lifetime, repairability, and design for recyclability making this a true 'Green choice'. Special Micro Optics provides sparkles, creating a homogeneous surface of light with a lively appearance while still offering glare-free comfort.

SlimBlend Gen2: a Sustainable surface of light solution with superior lighting specifications combined with best-in-class Interact connectivity.

- Micro Hexagonal Optics for excellent glare control (UGR<19, L65<3000cd/m2)
- Best-in-class efficacy up to 140 lm/W with CRI>90
- Integrated sensors for daylight harvesting, presence detection, humidity and temperature sensing. Multi Sensor Bundle consists of a comprehensive set of environment and people sensors
- Prepared for circularity (no glue, replaceable electronics, upgradable system, efficient & long lifetime)
- 3000K, 4000K, and Tunable White versions available all with CRI>90
- Long lifetime L90 at 50,000 hours and L80 at 100khrs

*Lighting for Circularity means this luminaire is meeting the 5 criteria set by Signify for a Lighting for Circularity product: Energy efficiency & lifetime, connectable, serviceable, upgradeable, reusable & recyclable. More information can be found on Lighting for circularity | Signify Company Website

Product

Product family range

The SlimBlend Gen2 is a configurator product, the assembly of the products is implemented on the manufacturing site in Tamási Hungary Kft. (HU). The manufacturing site of the product has achieved carbon neutrality as of 2019.

The EPD does not present the assessment of the impacts of the whole range, and focused on representation through the high-runner scenario rather than through average impacts with assessment of deviations.

Representative product

SlimBlend Gen2 product RC330V 36S/940 DEIA W60L60 MXO W5 is chosen as a representative product for the family as the luminaire which is the high-runner of the family.

Product application

The luminaires of the family are designed for a broad range of applications such as standard office applications, education and healthcare.

Technical Data

The system comprises a set of modules that are the key building blocks for a luminaire. A typical application has the following technical features:

- 1x in-track Xitanium driver
- 2x SlimBlend LED boards, each containing 105 LEDs distributed in a single row
- Mechanical parts made of metal or plastic
- Cord with plug
- Cables

Delivery status

Product weight: 4,64 kg (including 0,98 kg packaging), dimensions of the packed product: 776mm*642mm*90mm.

Driver:

i.	Type	Xitanium 36W WH 0.15-1.05A 54V TD/Is
ii.	Failure rate (max % @lifetime)	2,5%
iii.	Dimensions, mm	32 x 75 x 201

LED board

i.	Type	LED Module 6060 2700lm 940 MLO with BridgeluxBXFN-41G-21L-3C4-00-0-0_0.2W_4000K chips
ii.	Dimension board, mm	570 x 8
iii.	Amount of PCBA per luminaire	2
iv.	Number of LEDs per PCBA	105

Constructional data

Name	Value	Unit
Dimensions	595x595x13	Mm*mm*mm
Luminous flux	3700	Lm
Luminous efficacy	132	Lm/W
Radiation angle	80	Deg
Colour temperature	4000	K

Base materials/Ancillary materials

Materials	Mass, kg
PMMA	1,39
Packaging / Paper	0,92
Cold rolled steel plate	0,81
Polystyrene	0,57
Aluminium	0,31
Electric Comp's / Electronic ballasts with connectors	0,20
Electric Comp's / Connectors PA	0,15
Ethyl vinyl acetate	0,081
PET	0,064
Packaging / Labels, ink, adhesives	0,058
Printed circuit board	0,023
Galvanized steel	0,015
Stainless steel	0,015
Cable	0,012
Metals / Steel	0,010
Silicone rubber	0,004
LED chips	0,004
Capacitor	0,00008
Product weight (including packaging): 4,64 kg	

Manufacturing
The complete light module (LED boards, optical cover, light guide, frame, back cover assembled with 2 wires sticking out for driver connection) is assembled by a Chinese supplier. Final assembly is done at the Signify Tamasi site (Hungary), where the driver and mains connector are added. As final assembly step the product is tested and packaged in a box.

Product processing/Installation
Product can be lay-in mounted in the ceiling.

Packaging
0,98 kg, consisting of a cardboard box and label.

Condition of use
Designed for indoor use in average European conditions. No extreme exposure to chemicals or pollution is implied. Applications may apply dimming or lighting controls to lower further energy saving. The product is used in the European market context and assumed to use the average European electricity mix.

Environment and health during use
The product is compliant with the European RoHS Directive 2011/65/EU of 8 June 2011 on Restriction of the use of certain Hazardous Substances in Electrical and Electronic equipment and with the European REACH regulation (EC) No 1907/2006 of 18 December 2006 on the Registration, Evaluation. Authorization and Restriction of Chemicals.

Reference service life
The RSL is established as 50 000 hours operation, the equivalent of 20 years operation in a office application (2500 hours per year).

End of life
In the European Union, luminaires fall within the scope of the WEEE directive. Efforts are made to improve collection, reuse and recycling of the product mainly via collective Collection & Recycling Service Organizations (CRSOs). In the end of life, the luminaire is 85% collected and disassembled. The collected parts are disassembled and steel, aluminium, electronic parts, and cables and are sent to recycling. The quantitative assessments are based on a material split and respective recycling rates. Non-collected and non-recycled after disassembly content is disposed to the municipal waste stream where it undergoes separation, preparation and treatment according to the average European statistics. Waste generated in installation and parts replacement are 100% collected and sent to respective treatment.

Extraordinary effects
• Fire: effects of fire can lead to emissions of PBDD/F (brominated compounds).
• Water: no known impacts on the environment following unforeseeable influence of water, e.g. flooding.
• Mechanical destruction: no known impacts on the environment following unforeseeable mechanical destruction.

Further information
Details of the product are published on:
https://www.lighting.philips.nl/

Calculation rules

Declared unit

Declared product	Value	Declared unit
RC330V 36S/940 DEIA W60L60 MXO W5	Unit	1 piece

The declared unit is a luminaire with an aluminium frame, 1 driver, 2 LED boards, cables, and other plastic, and metal constructive components totalling a weight of 3,65 kg excluding packaging, providing a luminous flux of 3700 lm, including luminaire losses. The luminaire, provides sufficient light for a typical office application, operated in a European context for 50 000 hours.

System boundary

Cradle to gate with options
Modules A1-A3 include: raw material extraction, processing, energy and materials and manufacture of modules and packaging.
The following scenarios are also included:
- Transport to installation (A4);
- Disposal of packaging materials (A5);
- Replacement of driver (2,5% rate) (B3);
- Operational energy use (B6);
- Transport to end of life (C2);
- Waste processing (C3);
- Final disposal for WEEE fraction not recycled (C4).
- Benefits and loads beyond system boundary: Recycling of cardboard packaging, electronics, cables, steel elements of luminaire. (D)

Estimates and assumptions

Background data are used for suppliers' specific processes. Foreground data are used for the assembly of the lighting unit in regards to the components of the luminaire (system). When necessary, generic data was generated based on averaging the data of multiple products of the same category. Data on collection and recycling are based on data of the generic European statistics. The end of life scenario assumes recycling of the separated materials, but does not include energy recovery from incineration of the waste. Representation of the family is assumed on the worst case scenario with largest power consumption over the lifetime, and is not compliant with EN15804+A1.

Cut-off criteria

Where no data was available, items that represent less than 1% of the total product weight were neglected. No excluded flows were of any known particular environmental concern.

Background data

Necessary background data are sourced from the Signify database and the Ecoinvent database v3.8.

Data quality

Specific data used is less than 5 years old. Background data is geographically representative of the production location, and is less than 10 years old.

Period under review

The period under review is the year 2022 for the product composition, RSL, and product performance and characteristics, year 2019 for the energy and material consumption at the assembly factory.

Allocation

Avoided burden approach is applied to allocation of recycled and/or secondary raw materials, as well as loads and benefits beyond the system boundary from material recycling. No loads and benefits beyond the system boundary from energy recovery in the end of life of the product or packaging is included. Energy consumption, material and waste generation at the manufacturing site not attributed to bill of materials of the products, is allocated by partitioning, on the basis of units produced.

Comparability

A comparison or an evaluation of the presented data is only possible if the data to be compared were created according to the Signify/Philips lighting framework and the building context, respectively the product specific characteristics of performance, are taken into account.

LCA: Scenarios and additional technical information

Transport to the site (A4)

Name	Value	Unit
Transport distance	1200	Km
Transport mode	truck, unspecified generic	-
Capacity utilisation incl. empty runs	45	%
Bulk density of transported product	103,4	kg/m3

Installation at the site (A5)

Name	Value	Unit
Packaging waste	0,98	kg

Reference service life

Name	Value	Unit
Reference service life	20	Years
Operating hours per year	2500	Hours
Quality of work	L90B50	-
Environment of operation	Average European conditions. No extreme exposure to chemicals or pollution is implied.	-
Usage conditions	Indoor	-

Repair (B3)

Name	Value 1	Unit
Repair process	Replacement of the driver	-
Repair cycle	0,025	Number/RSL
Resources	0,204	Kg
Transportation distance	4,8	Km
Transportation mode	Van	-

Operational energy use (B6)

Name	Value	Unit
Electricity consumption	1154,25	kWh
Equipment output	27,0	W

End of life (C1-C4)

Name	Value	Unit
Collected separately	2,93	kg
Sent to recycling	1,66	kg
Sent to energy recovery	0,60	kg
Sent to landfilling	1,18	kg
Transportation distance from point of use to collection and sorting point	30	km
Transportation distance from collection point to recycling	100	km
Transportation distance from collection point to incineration and landfilling	30	km
Mode of transportation	Truck, unspecified	-

LCA Results

Description of the system boundary (X = included in lca; MND = module not declared; MNR = module not relevant)

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundarys
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste Processing	Disposal	Reuse- Recovery- Recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	X	MNR	MNR	X	MND	MND	X	X	X	X

Results of the LCA - environmental impact

Parameter	Unit	A1-A3	A4	A5	B3	B6	C2	C3	C4	D
GWP	[kg CO2Eq.]	3,3E+01	1,6E-01	8,1E-02	2,2E+00	5,2E+02	4,3E-02	1,4E-01	2,7E+00	-4,5E+00
ODP	[kg CFC11Eq]	1,6E-05	2,9E-08	7,4E-09	3,0E-07	3,1E-05	7,9E-09	1,2E-08	8,6E-09	-1,2E-06
AP	[kg SO2Eq.]	1,9E-01	6,7E-04	4,1E-04	8,9E-03	2,6E+00	1,8E-04	7,8E-04	7,3E-04	-4,1E-02
EP	[kg (PO4)3Eq]	2,1E-02	1,2E-04	5,2E-05	1,3E-03	3,3E-01	3,4E-05	1,5E-04	2,7E-04	-3,8E-03
POCP	[kg Ethen Eq.]	1,2E-02	2,2E-05	2,4E-05	4,8E-04	1,0E-01	5,7E-06	4,6E-05	4,7E-05	-2,4E-03
ADPE	[kg Sb Eq.]	1,9E-03	4,8E-07	2,8E-06	7,1E-05	5,0E-03	1,4E-07	3,3E-06	6,8E-06	-9,7E-04
ADPF	[MJ]	4,4E+02	2,4E+00	1,0E+00	2,9E+01	6,0E+03	6,5E-01	1,5E+00	8,8E-01	-6,6E+01
Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non fossil resources; ADPF = Abiotic depletion potential for fossil resources									

Results of the LCA - resource use

Parameter	Unit	A1-A3	A4	A5	B3	B6	C2	C3	C4	D
PERE	[MJ]	3,1E+01	3,6E-02	1,2E-01	1,1E+00	2,3E+03	9,4E-03	2,0E-01	1,2E-01	-1,7E+01
PERM	[MJ]	1,6E+01	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
PERT	[MJ]	4,7E+01	3,6E-02	1,2E-01	1,1E+00	2,3E+03	9,4E-03	2,0E-01	1,2E-01	-1,7E+01
PENRE	[MJ]	3,3E+02	2,6E+00	1,2E+00	3,2E+01	1,2E+04	7,0E-01	2,1E+00	8,9E-01	-4,2E+01
PENRM	[MJ]	2,0E+02	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	-3,6E+01
PENRT	[MJ]	5,3E+02	2,6E+00	1,2E+00	3,2E+01	1,2E+04	7,0E-01	2,1E+00	8,9E-01	-7,8E+01
SM	[kg]	IND	IND	IND	IND	IND	IND	IND	IND	IND
RSF	[MJ]	IND	IND	IND	IND	IND	IND	IND	IND	IND
NRSF	[MJ]	IND	IND	IND	IND	IND	IND	IND	IND	IND
FW	[m3]	IND	IND	IND	IND	IND	IND	IND	IND	IND
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 = Use of net fresh water									

Results of the LCA – output flows and waste categories

Parameter	Unit	A1-A3	A4	A5	B3	B6	C2	C3	C4	D
HWD	[kg]	IND	IND	IND	IND	IND	IND	IND	IND	IND
NHWD	[kg]	IND	IND	IND	IND	IND	IND	IND	IND	IND
RWD	[kg]	IND	IND	IND	IND	IND	IND	IND	IND	IND
CRU	[kg]	IND	IND	IND	IND	IND	IND	IND	IND	IND
MFR	[kg]	IND	IND	IND	IND	IND	IND	IND	IND	1,66
MER	[kg]	IND	IND	IND	IND	IND	IND	IND	0,60	IND
EEE	[MJ]	IND	IND	IND	IND	IND	IND	IND	IND	IND
EET	[MJ]	IND	IND	IND	IND	IND	IND	IND	IND	IND
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for reuse; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy									

Not all background datasets support the methodical approach of the water and waste indicators. The value of the indicator is therefore subject to greater uncertainty. These indicators are thus not declared. IND is used in cases where the inventory does not support the methodological approach or the calculation of the specific indicator.

The life cycle impact assessment by stage (contribution analysis) is illustrated on the figure on the right:

The use phase of the product is associated with electricity consumption for lighting (stage B6 on the chart) and has the highest and most significant contribution to the overall environmental impacts of the product over its life cycle, in all impact categories. In particular, impacts in global warming potential (GWP), acidification potential (AP), eutrophication potential (EP), photochemical ozone creation potential (POCP), and abiotic depletion potential (fossil) (APDF) categories are attributed to the electricity consumption at a rate above 90%. Abiotic depletion potential (elements) (ADPE) impacts and ozone layer depletion potential (ODP) impacts also have a considerable impact contribution of the product manufacturing, including sourcing and processing the raw materials (stage A1-A3 on the chart). In that stage, the impact to the ADPE is mostly due to extraction of virgin materials used to make electric components, as well as due to extraction and production of metal mechanical elements. The ODP impacts of stage A1-A3 could be attributed to sourcing temperature-resistant polymers. The end of life (stage D on the chart) of the product has a marginal contribution to the reduction of overall impacts in all categories apart from ADPE. There, recycling in the end of life (stage D on the chart) reduces the cumulative impact of production (A1-A3), distribution and installation (A4-A5), use (B3, B6), and end of life treatment (C2-C4) by 13,89 %, relating to -16,14 % of the total ADPE over the life cycle. This is achieved by high rates of luminaires collection in the end of their service, and high rates of recycling of the metals in the end of life of the luminaire.

LCA results on component level

		GWP	ODP	AP	EP	POCP	ADPE	ADPF
Component name	Material	kg CO2 eq	kg CFC-11	kg SO2 eq	kg PO4--- eq	kg C2H4 eq	kg Sb eq	MJ
Product								
Frame_PL5B-6060_595*595*13_AL6063_whiteRAL9003_Rohs	Aluminium	1,7E+0	1,7E-7	1,1E-2	1,1E-3	7,0E-4	3,6E-5	1,8E+1
Optical cover_564×573×1.5_transparent_PS_single sided prism_Rohs(PS113B MLO)	Polystyrene	1,4E+0	1,3E-9	4,7E-3	3,0E-4	2,9E-4	1,7E-7	3,0E+1
Diffusion film_564×573×0.5_PS_single sided matt transparent_Rohs-PS100	Polystyrene	6,9E-1	6,3E-10	2,3E-3	1,5E-4	1,4E-4	8,4E-8	1,5E+1
LGP_564×573×3_transparent_PMMA_Rohs	Polymethyl metacrylate	1,1E+1	1,6E-7	6,2E-2	5,1E-3	2,9E-3	1,3E-5	1,7E+2
Reflect papar_564×573×0.225_PET_white_Rohs	Poly-ethylene tereph-thalate	2,8E-1	6,6E-7	1,1E-3	1,1E-4	6,5E-5	2,4E-6	5,5E+0
Back plate_ 553×563×3.5_EVA_Rohs	Ethyl vinyl acetate	1,9E-1	6,4E-9	6,5E-4	8,6E-5	5,7E-5	1,5E-6	5,6E+0
Backbord_PL5B-6060_591×591_cold rolled steel plate white_Rohs	Cold rolled steel plate	1,6E+0	7,1E-8	5,9E-3	8,2E-4	6,7E-4	2,2E-5	1,4E+1
Screw_ST3×6_iron galvanized_Rohs	Galvanized steel	3,0E-02	1,3E-9	1,1E-4	1,5E-5	1,2E-5	4,2E-7	2,7E-1
Light bar slot_PL-6060_555×9.6_AL6063_natural_Rohs-1.5T diffuser plate	Aluminium	3,4E-1	3,3E-8	2,1E-3	2,1E-4	1,4E-4	7,1E-6	3,6E+0
sponge mat\50×5×3_EVA_Rohs	Ethyl vinyl acetate	1,1E-03	3,9E-11	4,0E-6	5,2E-7	3,5E-7	8,9E-9	3,4E-2
A.2-sponge mat \50×5×3_white_EVA_Rohs	Ethyl vinyl acetate	1,1E-03	3,9E-11	4,0E-06	5,2E-07	3,5E-07	8,9E-09	3,4E-02
PCB_1.0mm_2835-15S7P+3C-575x8-2.35-V1 _≥1.0_ 无_35um_OSP_Rohs	Printed circuit board	8,9E-1	8,0E-8	6,7E-3	9,6E-4	3,0E-4	1,9E-4	1,0E+1
LED chip_2835_0.5W_4000K_77-82lm_2.8-3.1 V_120°_ANSI_150mA_Ra90, R9>50_2235	LED chips	9,1E-1	3,1E-8	4,7E-3	6,9E-4	2,2E-4	2,3E-5	1,0E+1
chip capacitor_D-2013095_brass tin plated electrode REEL_Rohs	Capacitor	6,2E-3	6,1E-10	2,6E-4	8,2E-6	1,6E-5	2,7E-6	7,7E-2

wire_red_UL3239_22AWG_200°C _610_3+3_Rohs	Cable silicon	2,0E-2	4,5E-9	9,4E-4	4,2E-5	3,6E-5	2,5E-5	2,5E-1
wire_black_ UL3239_22AWG_200°C _610_3+3_UL_Rohs	Cable silicon	2,0E-2	4,5E-9	9,4E-4	4,2E-5	3,6E-5	2,5E-5	2,5E-1
wire_red_UL3239_22AWG_200°C _630_3+8_UL_Rohs	Cable silicon	2,0E-2	4,4E-9	9,1E-4	4,1E-5	3,5E-5	2,4E-5	2,5E-1
wire_black_ UL3239_22AWG_200°C _470_3+8_UL_Rohs	Cable silicon	2,6E-2	5,8E-9	1,2E-3	5,4E-5	4,7E-5	3,2E-5	3,3E-1
protective ring_Φ3×4.7 _silicone rubber_Rohs	Silicone rubber	4,0E-4	2,7E-10	1,7E-6	1,7E-7	9,6E-8	3,5E-9	6,2E-3
heat-shrinkable tube_Φ3.5 _non white_125°C_UL_Rohs (no printing)	Silicone rubber	1,1E-2	7,5E-9	4,7E-5	4,9E-6	2,7E-6	9,8E-8	1,7E-1
L type suspension kit _25*25*0.4_301_stainless steel_ Rohs	Stainless steel	8,6E-3	3,4E-10	4,2E-5	4,1E-6	2,0E-6	2,4E-7	8,6E-2
safty wire_PL5B-6060_1.5 ×1500mm_不stainless steel_ RohsG4	Stainless steel	6,5E-2	2,6E-9	3,2E-4	3,1E-5	1,5E-5	1,9E-6	6,6E-1
Xitanium 36W WH 0.15-1.05A 54V TD/Is	Electronic ballasts with connectors	9,2E+0	6,6E-7	6,4E-2	8,6E-3	5,6E-3	1,5E-3	1,0E+2
SCR STE M3X4 P CB-W PH2 ST CL	Steel	2,0E-2	8,8E-10	7,3E-5	1,0E-5	8,3E-6	2,8E-7	1,8E-1
CBL ASSY 5P PLUG BU H05VV-F ECA L=250	Connectors PA	1,4E+0	1,6E-8	5,2E-3	1,2E-3	2,5E-4	9,0E-7	2,0E+1
TOTAL product		**3,0E+1**	**1,9E-6**	**1,7E-1**	**2,0E-2**	**1,2E-2**	**1,9E-3**	**4,1E+2**
Packaging								
CARDBOARD SHEET	Paper	9,7E-3	9,9E-10	3,5E-5	1,4E-5	2,1E-6	8,1E-8	1,2E-1
EDGE PROTECTOR	Paper	1,4E-2	1,4E-9	5,0E-5	2,0E-5	3,1E-6	1,2E-7	1,7E-1
EN/ INTERNAL TRACE BARCODE LABEL EAN13	Labels, ink, adhesives	6,4E-4	6,1E-11	3,1E-6	6,8E-7	3,4E-7	4,1E-9	1,5E-2
EN/LABEL DO NOT COVER 30X30 SILVER	Labels, ink, adhesives	6,4E-4	6,1E-11	3,1E-6	6,8E-7	3,4E-7	4,1E-9	1,5E-2
EN/ LABEL N L	Labels, ink, adhesives	6,4E-4	6,1E-11	3,1E-6	6,8E-7	3,4E-7	4,1E-9	1,5E-2
EN/LABEL DA DA MUNICH 31x9	Labels, ink, adhesives	6,4E-4	6,1E-11	3,1E-6	6,8E-7	3,4E-7	4,1E-9	1,5E-2
EN/ET METALLIC LABEL MATTE 40X20 1LINE	Labels, ink, adhesives	6,4E-4	6,1E-11	3,1E-6	6,8E-7	3,4E-7	4,1E-9	1,5E-2
EM/INSERT RC400B SQ SPACER	Paper	1,9E-1	2,0E-8	7,0E-4	2,7E-4	4,3E-5	1,6E-6	2,3E+0
Product and Box label 70x158	Labels, ink, adhesives	4,8E-2	4,5E-9	2,3E-4	5,1E-5	2,5E-5	3,1E-7	1,1E+0
EM/BOX RC400B SQ ACCESSORY	Paper	4,8E-1	4,9E-8	1,7E-3	6,9E-4	1,1E-4	4,1E-6	5,8E+0
EM/INSERT RC330 SQ	Paper	1,9E-1	2,0E-8	7,0E-4	2,7E-4	4,3E-5	1,6E-6	2,3E+0
NT/MI RC330V	Labels, ink, adhesives	4,8E-3	4,5E-10	2,3E-5	5,1E-6	2,5E-6	3,1E-8	1,1E-1
85/110 X 74 OUT 0,5" RESIN SP - IPT/M	Labels, ink, adhesives	3,3E-5	3,2E-12	1,6E-7	3,6E-8	1,8E-8	2,2E-0	7,7E-4
TOTAL packaging		**9,5E-1**	**9,7E-8**	**3,5E-3**	**1,3E-3**	**2,3E-4**	**7,9E-6**	**1,2E+1**

On component level, it can be observed that the two major contributors to all impact categories are the Xitanium driver (electronic ballast with connectors) and polymethyl methacrylate. The driver constitutes only 3% of the overall product weight, but due to the high impact of electronics related to the sourcing of rare metals and energy intensive manufacturing process, it contributes between 24% and 78% of the impact of the raw materials (stage A1), depending on the impact category. Similarly, the LED board (PCB, LEDs an capacitor) contributes only to 0,5% of the product weight, while between 5 and 11% of the raw materials can be attributed to this component. Polymethyl methacrylate contributes between 24% and 41% of the impact of raw materials, while it constitutes 17% of the overall product weight. Other components made from plastics such as polyamide, polystyrene and PET contribute between 7-34% of the impact of the product, followed by metal components (steel and aluminium) which contribute 4-14%. Overall,

Requisite evidence

The measurements are based on documentation and bill of materials of the product.

References

EN 15804:2012-04+A1 2013, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

ISO 14021:2016, Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling)

ISO 14040:2006, Environmental management — Life cycle assessment — Principles and framework

ISO 14044:2006, Environmental management — Life cycle assessment — Requirements and guidelines

Disclaimer

All environmental calculations are based on a luminaire used in European context. The calculations are performed on the most commonly used luminaire in the range. The implemented life cycle analysis is compliant with DIN EN ISO 14040:2006: Environmental management - Life Cycle Assessment - Principles and framework. The LCA has been performed to the best of Signify's knowledge. No right or claim might be derived from this. Signify disclaims any and all claims with respect thereto.

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Collection and Recycling (brochure)

Ecoinvent (website)

Glossary

ADP (Abiotic Depletion Potential): Impact related to the depletion of non-renewable resources, i.e. fossil fuels (ADPF), metals and minerals (ADPE).

AP (Acidification Potential): Contributions of SO2, NOx, HCl, NH3 and HF to the potential acid deposition, causing a wide range of impacts on soil, groundwater, surface water, organisms, ecosystems and buildings.

EP (Eutrophication Potential): Potential to cause over-fertilization of water and soil, which can result in increased growth of biomass.

GWP (Global Warming Potential): Relative measure of how much heat a greenhouse gas (CO2, N2O, CH4...) traps in the atmosphere. It is calculated over a specific time interval, commonly 20, 100 or 500 years.

LCA: Life cycle assessment.

PCR: Product Category Rules.

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.

POCP (Photo-chemical Oxidation Potential or photochemical smog): Formation of reactive substances (mainly ozone) which are injurious to human health and ecosystems and which also may damage crops.

RSL: Reference service life.

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