Environmental Product Report

KRATEX

KRATEx HE 1200 48-840 ET PC

from the *KRATEX* product family

A self-declared environmental declaration (Type II environmental labelling) according to ISO 14021:2016. Includes an Environmental Life Cycle Assessment based on ISO 14040 and ISO 14044.

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The environmental Life Cycle Assessment was conducted by the University of Zaragoza (i+ research group)

GENERAL INFORMATION

Company information

ZALUX S.A.

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Reference product

Reference product: **KRATEx HE 1200 48-840 ET PC**

ZALUX order code (TK): ***10169107***

This product is an *Explosionproof Luminaire* for professional *indoor and outdoor* lighting applications, mainly used for *Industry applications*.

It is supplied with the following components and accessories, all being included in the environmental Life Cycle Assessment:

- *Extruded Luminaire Housing and diffuser*
- *Integrated LED module*
- *Electronic Control Gear*
- *Rapid-mounting tighteners*
- *cardboard packaging*

Technical data:

Luminous flux	*4.750 lm*	Colour temperature	*4.000 K*
Luminous efficiency	*120 lm/W*	Ingress Protection	*IP66*
Electrical power	*40 W*	Impact Resistance	*IK10*
Operating voltage	*220 – 240 V*	Nominal service life	*L80 50.000 h @25ºC*

Methodology

This report presents the environmental impacts caused by producing, using and disposing of a ***KRATEx*** luminaire. The environmental impacts are determined using the methodology of an environmental Life Cycle Assessment (LCA). ISO 14040 and 14044 provide the principles, framework, requirements and guidelines to properly carry out an LCA.

Software and database

The LCA is carried by the i+ research group of Universidad Zaragoza. For the Life Cycle Inventory, the *Ecoinvent v3.5* database and primary information of ZALUX is used.

Environmental impact methodologies

Two environmental impact indicators are reported. The first one is the global warming potential (GWP100 according to IPCC 2013), measured in kg CO2-equivalents, which describes the impact on climate change. The second one is the ReCiPe 2016 endpoint indicator, measured in milipoints, which is an aggregated measure for a wide range of environmental impacts.

Declared unit, for which the environmental impacts are reported

One luminaire providing a *managed* outgoing luminous flux of *up to 4.750 lm* during its nominal service life of *50.000* hours. Results are then normalized and shown for an output of 1000 lm and 35000 h.

System boundaries

The Life Cycle Assessment is conducted from cradle to grave. It includes the stages of raw material acquisition, production processes, distribution to the customer, use phase, and end of life.

Manufacturing

The final manufacturing stage, i.e. the product assembly, is conducted in *Spain*.

Distribution scenario

The product is mainly sold within Europe. Therefore, an *intracontinental* transport scenario is assumed with a transportation over *3.500 km by truck*.

Use phase scenario

For the electricity consumption during the use phase, a *European (EU-28, year 2018)* grid mix is assumed.

The total energy consumption is *1 × 40 W × 50.000 h = 2.000 kWh*.

All luminaire components are designed to survive the entire nominal service life of the luminaire without the need for replacement.

End of life scenario

The transportation of an end-of-life luminaire to a recycling facility is modeled by truck over a distance of *1.000 km*. The luminaire is assumed to be treated according to the flow chart in Figure 1. The material-specific recycling rates are taken from IEC / TR 62635:2012.

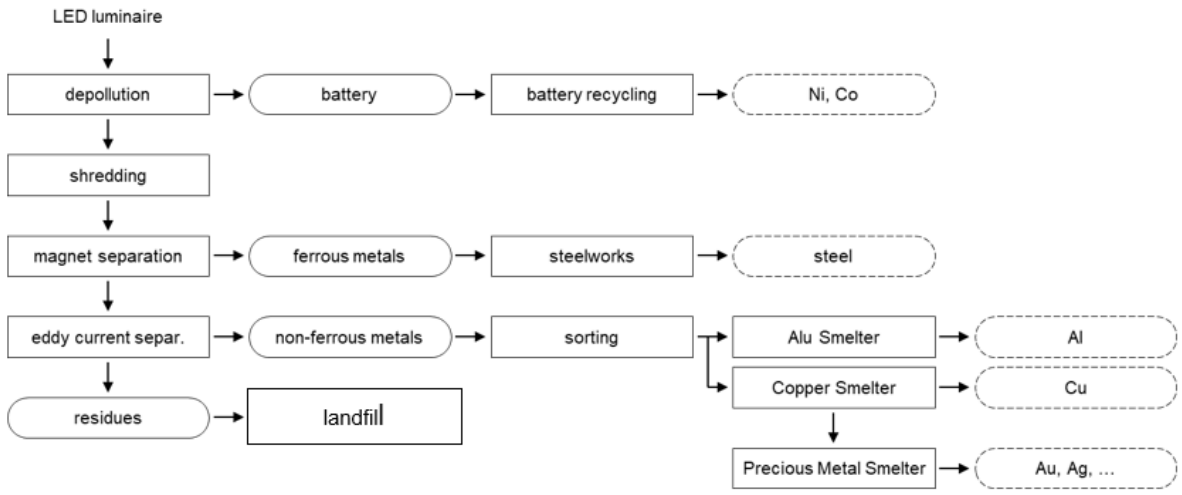

Figure 1: End-of-life treatment scenario of a LED luminaire.

CONSTITUENT MATERIALS

Table 1: Material composition of the assessed luminaire. The diagram represents the weight of the material classes, see colour legend in the table.

Table 1: Material composition of the assessed luminaire

		weight [kg]	share	
Metals	Aluminium	1,565	18,1%	
	Steel	2,746	31,8 %	
Plastics	PMMA	2,680	31,1 %	
	Other plastics	0,542	6,3 %	
Other	Electronic Control Gear	0,178	2,1 %	
	Cables and Connectors	0,039	0,5 %	
	LED Module	0,090	1,0 %	
	Paper and Cardboard Packaging	0,790	9,2 %	
Total		**8,630**	**100,0 %**	

ENVIRONMENTAL IMPACTS

- 4750 lm, 50000h

	ReCiPe [mPt]	ReCiPe share	GWP [kg CO2-eq.]	GWP share
Raw material acquisition & Manufacturing & End of life	4247,75	10,54%	77,22	8,28%
Distribution	95,88	0,24%	3,47	0,37%
Use phase	35945,49	89,22%	852,03	91,35%
Total	**40289,12**		**932,73**	

- 1000 lm, 35000h

	ReCiPe [mPt]	GWP [kg CO2-eq.]
Raw material acquisition & Manufacturing & End of life	625,98	11,38
Distribution	14,13	0,51
Use phase	5297,23	125,56
Total	**5937,34**	**137,45**