

Product Environmental Profile

Reference Product: Self-Contained Emergency Lighting - GENNIUS GEAL-250Li


Product Category Rules: PCR-4-ed4-EN-2021-09-06

Product Subcategory Rules: PSR-0007-ed2-EN-2023-06-06

Functional Unit

Facilitate the evacuation of personnel by providing 260 lumens of light for one hour in the event of an electrical power cut. This function is provided for 8 years by its self-contained power supply.

Reference Product

Function	Facilitate the evacuation of personnel by providing 260 lumens of light for one hour in the event of an electrical power cut. This function is provided for 8 years by its self-contained power supply.
Reference Product	
	Ref. GEAL-250Li
	Emergency Lightning rectangular Surface permanent-non permanent 260 lumens Standard 1 hour
Product Name	Self-Contained Emergency Lighting GENNIUS GEAL250-Li

The company reserves the right to change specifications and designs without notice. All illustrations, descriptions, dimensions and weights in the document are for guidance and cannot be held binding on the company

Constituent Materials

Category Product	Elements	Quantity	Total Mass (grams)	Percentage (%)
Plastic	Base	1	187	23,43%
Plastic	Diffuser	1	184	23,05%
Plastic	Reflector	1	122	15,29%
Electronic	Driver circuit	1	83,174	10,42%
Cardboard	Packaging	1	62,86	7,88%
Electronic	Lithium Battery	1	48,53	6,08%
Rubber	Sealing gasket	1	41,4	5,19%
Plastic	Optic Lent	1	20,5	2,57%
Plastic	Battery support	1	14,56	1,82%
Electronic	Connector circuit	1	11,52	1,44%
Plastic	Accesories bag	1	7,58	0,95%
Electronic	Electric terminal cover	1	7	0,88%
Electronic	Electric terminal	1	5,8	0,73%
Metal	Screws 3x20	2	1,4	0,18%
Metal	Screws 2,9x6,5	2	0,8	0,10%
TOTAL			798,124	100%

Manufacture

This Reference Product been manufactured in a site that has received ISO 14001 (Environmental management systems) and ISO 9001 (Quality management systems) certification.

Distribution

Packaging is compliant with European Directive 2004/12/EU concerning packaging and packaging waste. At their end of life, its recyclability rate is 98 % (in % of packaging weight).

Installation

For the installation of the product, only standard tools are needed.

Use

Under normal conditions of use, this product requires one battery change, considered in this analysis. The modelling, based on 6 years battery lifetime, requires 1 battery replacement (from end of life of original battery supplied in the product) to reach 8 years' operating time

End of life

Normalux is compliant with European Directive concerning Electric and electronic waste management. Normalux offers its customers solutions for recycling its products at the end of their life cycle, including hazardous waste such as batteries, fluorescent tubes and electrical and electronic equipment.

The recyclability rate of the product is estimated at 73 %. This value is based on data collected from a technological channel operating on an industrial basis and on the recyclability rate mean of this kind of products.

Environmental Impacts

The calculation of environmental impacts is the result of a Life Cycle Assessment of the product in accordance with ISO 14040 and ISO 14044 standards. The environmental assessment, in accordance with the ISO 14040 series of standards, covers the entire life cycle of the product, i.e. 'from cradle to grave', including the following life cycle phases: production, distribution, installation, use and end of life. It takes into account the inputs and outputs in order to determine the environmental impacts. These are calculated using EIME (Environmental Information & Management Explorer) software.

For each phase the following modelling elements based on PCR-4-ed4-EN-2021-09-06 were taken into consideration:

Unless otherwise specified, the energy models are those integrated in the modules used from the Ecoinvent v.3.10 database.	
Manufacture	The manufacturing stage includes all the elements required for the initial operation of the product (the emergency light source(s), charge indicator light source(s), and the battery pack supplied with the product). Replacement components required to maintain the operative condition of the product over its lifetime are not considered during this stage.
Distribution	Transportation from the last manufacturer's logistics platform to the arrival of the product at the place of use and production of reconditioning packaging
Installation	Installation of the product at the place of use. The end of life of the packaging.
Use	Use of the product and maintenance necessary to ensure the ability for use
End of life	Removal, dismantling and transportation of the end-of-life product to a treatment centre or landfill site, and the end-of-life treatment

Software used	Software Air.e v3.17.3.0
Database used	Database Ecoinvent v3.10. (EN15804)

Selection of Environmental Impacts

The selection of indicators by the program is based on the level of international recognition and takes into consideration the specific nature of the production of electrical, electronic and HVAC-R equipment and the requirements of other industry sectors, such as the European construction industry.

The indicators selected by the program are classified into two categories:

- a common base of mandatory indicators,
- optional indicators that companies are free to choose and declare.

The environmental impact factors in EN 15804:2019+A2 have been applied. The impact results correspond to the sum of the characterized flows. The impact categories and indicators are specified below.

Environmental impacts	Unit	A1-A3. Manufacture	A4. Distribution	A5. Installation	B1-B5. Use	C1-C4. End of life	Total
EF 3.1 EN15804, Climate change (biogenic) [GWP100bio]	kg CO2e	1,36E-01	2,97E-03	0,00E+00	4,09E+00	-6,57E-05	4,23E+00
EF 3.1 EN15804, Climate change (fossil) [GWP100f]	kg CO2e	1,99E+01	1,27E+00	0,00E+00	3,16E+01	9,74E-03	5,28E+01
EF 3.1 EN15804, Climate change (land use) [GWP100lu]	kg CO2e	2,48E-02	4,16E-04	0,00E+00	3,63E-01	1,41E-05	3,88E-01
EF 3.1 EN15804, Climate change [GWP100]	kg CO2e	2,00E+01	1,27E+00	0,00E+00	3,61E+01	9,69E-03	5,74E+01
EF 3.1, Abiotic depletion (fossil fuels) [ADPff]	MJ	3,26E+02	1,88E+01	0,00E+00	8,97E+02	1,30E-01	1,24E+03
EF 3.1, Abiotic depletion (ultimate reserves) [ADPeI,ur]	kg Sbe	4,13E-03	4,05E-06	0,00E+00	8,07E-04	8,44E-08	4,95E-03
EF 3.1, Acidification [AP]	mol H+e	1,31E-01	3,97E-03	0,00E+00	1,28E-01	5,32E-05	2,63E-01
EF 3.1, Ecotoxicity [FETP]	CTUe	6,10E+02	3,67E+00	0,00E+00	2,63E+02	3,44E-02	8,77E+02
EF 3.1, Eutrophication freshwater [FEP]	kg Pe	1,77E-02	8,32E-05	0,00E+00	1,25E-02	4,23E-06	3,03E-02
EF 3.1, Eutrophication marine [MEP]	kg Ne	2,24E-02	1,34E-03	0,00E+00	2,41E-02	1,05E-05	4,79E-02
EF 3.1, Eutrophication terrestrial [TEP]	mol Ne	2,46E-01	1,45E-02	0,00E+00	2,78E-01	1,13E-04	5,39E-01
EF 3.1, Freshwater ecotoxicity (inorganic)	CTUe	4,16E+02	1,52E+00	0,00E+00	1,11E+02	2,56E-02	5,28E+02
EF 3.1, Freshwater ecotoxicity (organic)	CTUe	1,94E+02	2,14E+00	0,00E+00	1,52E+02	8,73E-03	3,49E+02
EF 3.1, Human toxicity (cancer) [HTPc]	CTUh	1,31E-07	8,84E-09	0,00E+00	5,86E-07	2,58E-11	7,26E-07
EF 3.1, Human toxicity (cancer, inorganic) [HTPcio]	CTUh	6,47E-09	6,90E-11	0,00E+00	7,02E-09	2,20E-12	1,36E-08
EF 3.1, Human toxicity (cancer, organic) [HTPco]	CTUh	1,25E-07	8,77E-09	0,00E+00	5,79E-07	2,36E-11	7,13E-07
EF 3.1, Human toxicity (non-cancer) [HTPnc]	CTUh	6,77E-07	1,10E-08	0,00E+00	7,65E-07	2,81E-10	1,45E-06
EF 3.1, Human toxicity (non-cancer, inorganic) [HTPncio]	CTUh	6,42E-07	1,03E-08	0,00E+00	7,23E-07	2,75E-10	1,38E-06
EF 3.1, Human toxicity (non-cancer, organic) [HTPnco]	CTUh	3,51E-08	7,83E-10	0,00E+00	4,14E-08	6,07E-12	7,73E-08
EF 3.1, Ionizing radiation (human) [IRP]	KBq U235e	2,32E+00	2,28E-02	0,00E+00	3,30E+01	1,19E-03	3,53E+01

Selection of Environmental Impacts (continued)

Environmental impacts	Unit	A1-A3. Manufacture	A4. Distribution	A5. Installation	B1-B5. Use	C1-C4. End of life	Total
EF 3.1, Land use [LUP]	pt	8,28E+01	1,06E+01	0,00E+00	2,90E+02	4,25E-02	3,83E+02
EF 3.1, Ozone depletion [ODP100]	kg CFC-11e	9,51E-07	2,52E-08	0,00E+00	1,13E-06	7,05E-11	2,11E-06
EF 3.1, Particulate matter formation [PMFP]	D.l.	9,74E-07	8,08E-08	0,00E+00	8,60E-07	4,82E-10	1,92E-06
EF 3.1, Photochemical ozone formation [HOFP]	kg NMVOCe	8,28E-02	6,21E-03	0,00E+00	7,85E-02	3,25E-05	1,68E-01
EF 3.1, Resource depletion (water) [WDP]	m ³ W.ed	8,54E+00	1,00E-01	0,00E+00	3,11E+01	2,42E-03	3,97E+01
EN15804 for EPD, Biogenic carbon content in packaging	kg C	3,11E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,11E-02
EN15804 for EPD, Biogenic carbon content in product	kg C	0,00E+00	0,00E+00	0,00E+00	2,49E-02	8,59E-05	2,50E-02
EN15804 for EPD, Exported energy, electricity	MJ	2,38E-01	3,03E-03	0,00E+00	8,66E+00	1,08E-04	8,90E+00
EN15804 for EPD, Exported energy, heat	MJ	1,02E-01	4,39E-03	0,00E+00	1,82E-02	1,12E-05	1,24E-01
EN15804 for EPD, Hazardous waste disposed	kg	1,70E+00	2,56E-02	0,00E+00	1,39E+00	8,52E-04	3,11E+00
EN15804 for EPD, Materials for energy recovery	kg	5,05E-05	1,13E-06	0,00E+00	6,60E-06	9,00E-09	5,83E-05
EN15804 for EPD, Materials for recycling	kg	1,31E-02	1,34E-04	0,00E+00	1,15E-01	1,47E-05	1,28E-01
EN15804 for EPD, Non-hazardous waste disposed	kg	5,90E+01	5,41E-01	0,00E+00	2,91E+01	2,06E-02	8,87E+01
EN15804 for EPD, Non-renewable primary energy excluding used as raw materials [PENRE]	MJ	2,77E+02	1,78E+01	0,00E+00	4,14E+02	1,25E-01	7,10E+02
EN15804 for EPD, Non-renewable primary energy used as raw materials [PENRM]	MJ	3,34E+01	0,00E+00	0,00E+00	7,14E-08	0,00E+00	3,34E+01
EN15804 for EPD, Radioactive waste disposed	kg	5,74E-04	5,67E-06	0,00E+00	6,24E-03	2,90E-07	6,82E-03
EN15804 for EPD, Renewable primary energy excluding used as raw materials [PERE]	MJ	2,85E+01	3,02E-01	0,00E+00	2,79E+02	1,56E-02	3,07E+02
EN15804 for EPD, Renewable primary energy used as raw materials [PERM]	MJ	3,02E-01	0,00E+00	0,00E+00	1,02E+00	0,00E+00	1,32E+00
EN15804 for EPD, Total use of non-renewable primary energy resources [PENRT]	MJ	3,11E+02	1,78E+01	0,00E+00	4,14E+02	1,25E-01	7,43E+02
EN15804 for EPD, Total use of renewable primary energy [PERT]	MJ	2,88E+01	3,02E-01	0,00E+00	2,80E+02	1,56E-02	3,09E+02
EN15804 for EPD, Use of net fresh water	m ³	2,12E-01	2,47E-03	0,00E+00	9,22E-01	6,43E-05	1,14E+00
EN15804 for EPD, Use of renewable secondary fuels	MJ	3,22E-03	1,03E-04	0,00E+00	4,54E-04	5,13E-06	3,78E-03
EN15804 for EPD, Use of secondary material	kg	9,38E-02	8,15E-03	0,00E+00	8,35E-02	3,62E-05	1,86E-01
Grand Total		2,42E+03	7,62E+01	0,00E+00	3,28E+03	5,67E-01	5,78E+03