

Statement of Verification

BREG EN EPD No.: 000396

Issue 02

This is to verify that the
Environmental Product Declaration
provided by:
Dialight



is in accordance with the requirements of:
EN 15804:2012+A1:2013
and
BRE Global Scheme Document SD207

This declaration is for:
ProSite Floodlight F1

Company Address

Leaf C, Level 36, Tower 42
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Emma Baker
Operator

05 October 2023
Date of this Issue

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Date of First Issue

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Expiry Date



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Environmental Product Declaration

EPD Number: 000396

General Information

| EPD Programme Operator | Applicable Product Category Rules |
|---|---|
| BRE Global Watford, Herts WD25 9XX United Kingdom | BRE Environmental Profiles 2013 Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013 |
| Commissioner of LCA study | LCA consultant/Tool |
| Dialight plc Leaf C, Level 36, Tower 42 25 Old Broad Street London EC2N 1HQ | Pat Hermon, BRE / BRE LINA v2 |
| Declared Unit | Applicability/Coverage |
| 1 x ProSite Floodlight F1 weighing 13.6kg | Manufacturer specific product |
| EPD Type | Background database |
| Cradle to Gate | ecoinvent v3.2 |
| Demonstration of Verification | |
| CEN standard EN 15804 serves as the core PCR ^a | |
| Independent verification of the declaration and data according to EN ISO 14025:2010 <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External | |
| (Where appropriate ^b)Third party verifier: Nigel Jones | |
| a: Product category rules b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4) | |
| Comparability | |
| Environmental product declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A1:2013. Comparability is further dependent on the specific product category rules, system boundaries and allocations, and background data sources. See Clause 5.3 of EN 15804:2012+A1:2013 for further guidance | |

Information modules covered

| Product | | | Construction | | Use stage | | | | | | | End-of-life | | | | Benefits and loads beyond the system boundary |
|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-----------------------------|--------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|--------------------------|---|
| | | | | | Related to the building fabric | | | | | Related to the building | | | | | | |
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| Raw materials supply | Transport | Manufacturing | Transport to site | Construction – Installation | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstruction demolition | Transport | Waste processing | Disposal | Reuse, Recovery and/or Recycling potential |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

Lirios S/N, Col. Carlos Pacheco,
Ensenada,
Baja California,
22830,
Mexico

Construction Product

Product Description

The ProSite Floodlight F1 is an efficient and rugged product built to last in tough conditions. The ProSite Floodlight F1 features Dialight designed molded optics (patent pending) and chip scale package LEDs. It is currently available in 12,000 – 65,000 lumen models, reaching up to 165 LPW, for mounting heights of up to 100 feet. This product provides visibility to worksites with crisp, near daylight illumination to keep operations safe and secure. Ideal applications include: Oil & Gas, Petrochemical, Chemical, Metals, Mining and Heavy Industrial operations requiring superior lighting for indoor and outdoor safety and security.

Technical Information

| Standard | Value, Unit |
|----------------------------|---|
| IEC 60509:1989 Rating IP66 | Rated as "dust tight" and protected against heavy seas or powerful jets of water. |
| IEC 60509:1989 Rating IP67 | Rated as "dust tight" and protected against immersion for 30 minutes at depths 150mm - 1000mm. |
| IEC 62262:2002 Rating IK08 | Shell body can withstand the drop of a load of 5 kg from a height of 40 cm. This is for models with glass lenses. |
| Certification Mark | CE, UL, RCM (depending on target market) |
| IESNA Rating L70 | 150,000 hours at 25 degrees C ambient. |



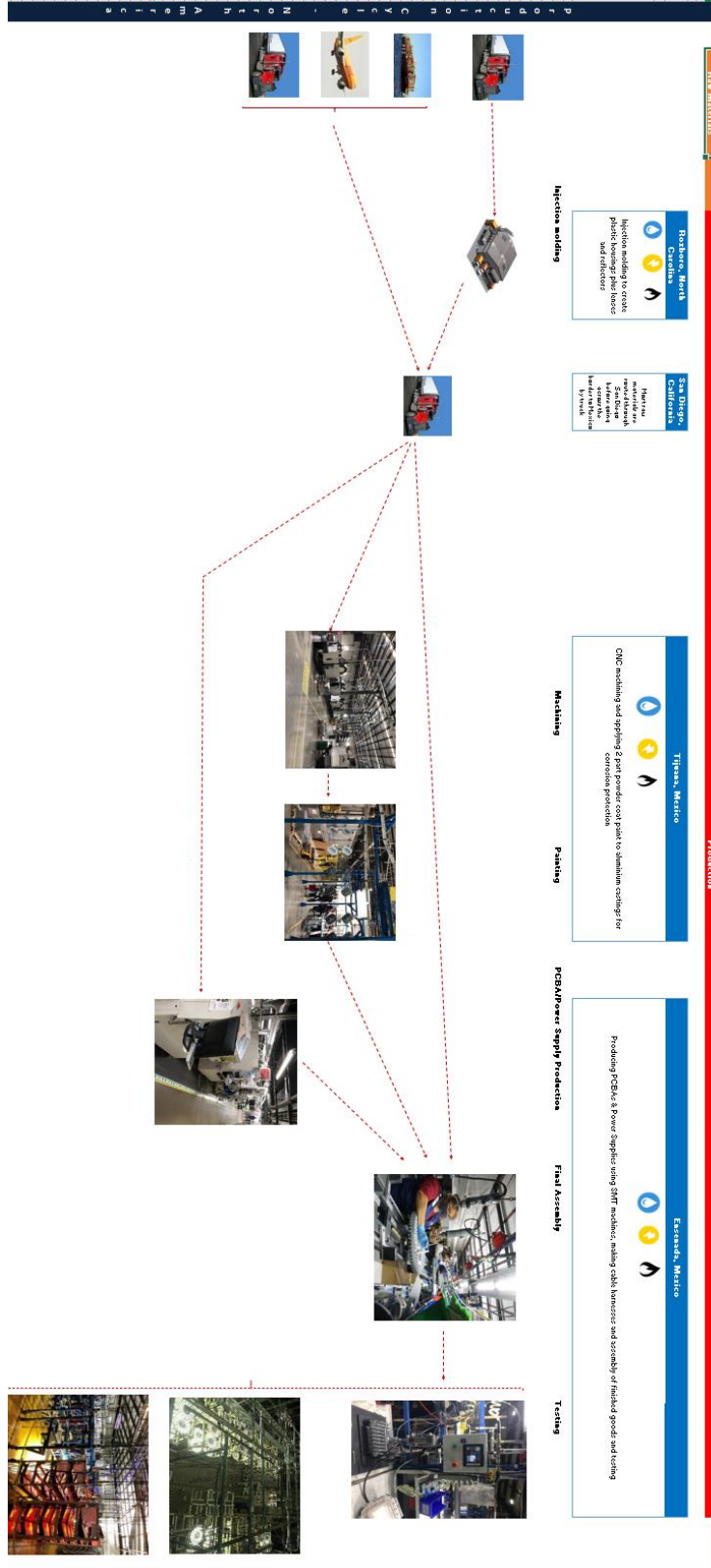
Main Product Contents

| Material/Chemical Input | % |
|-----------------------------|------|
| Aluminium Machined Housing | 58.3 |
| Mounting Bracket | 16.0 |
| Lens | 8.7 |
| Power Supply | 7.7 |
| Reflector | 2.7 |
| Light Engine | 2.7 |
| Potting | 1.7 |
| Other Electrical Components | 1.6 |
| Cables | 0.7 |

Manufacturing Process

This is a combination of internally made subassemblies and machining and painting of purchased metal castings. The products are assembled and tested to ensure compliance with the relevant electrical standard for the applicable target market. The reflectors are made in Dialight's plant in Roxboro, NC. The glass lens is purchased from a 3rd party. The aluminium castings are purchased part-machined and final machining and application of two coat protective powder coating is applied at the Tijuana facility. Wiring looms are made in Ensenada and all final assembly and testing also takes place in Ensenada.

Process flow diagram



Construction Installation

Dialight recommends that all installations should use secondary retention / netting (appropriate to the installation environment) as applicable. Dialight products are intended for ultimate purchase, installation and operation by knowledgeable persons trained in the functional assessment, installation, use and maintenance of such products and all customers (including but not limited to end customers) are responsible for assessing the suitability of Dialight products for any given installation requirement. It is the exclusive responsibility of the contractor, installer and/or end-user to:

- (a) Determine the suitability of the product for its intended application;
- (b) Ensure that the product is safely installed (with secondary retention / netting as appropriate) and in compliance with all applicable laws and regulations.

Use Information

ProSite Floodlight F1 is an industrial LED light for use in Oil & Gas, Petrochemical, Metals, Mining and Heavy Industrial Applications requiring indoor and outdoor lighting for safety and security. It carries no specific maintenance requirements and is expected to last beyond its 10 year life expectancy.

End of Life

ProSite Floodlight F1 products are warranted for 10 years but in reality they will continue to operate for considerably longer. Because of this, there is no recommended disposal route. The main avenue for recycling would be in the smelting and recasting of the aluminium body which is likely to be cost effective. The electrical components, particularly the potted power supply, are unlikely to be economically viable to recycle.

Life Cycle Assessment Calculation Rules

Declared unit description

1 x ProSite Floodlight F1 unit weighing 13.6 kg

System boundary

This is a cradle-to-gate LCA, reporting all production life cycle stages of modules A1 to A3 in accordance with EN 15804:2012+A1:2013.

Data sources, quality and allocation

ProSite Floodlight F1 is an industrial LED light system weighing 13.6 kg model (excl. packaging).

The product is manufactured in Ensenada Mexico from sub-assemblies made onsite and at Dialight feeder plants in Roxboro, North Carolina and Tijuana, Mexico. The product consists of five main sub-assemblies:

- 1) The housing – this is aluminium and purchased from China pre-machined to c.95% of requirements. In the Tijuana plant, the final 5% of machining is done based on the specific SKU being produced. It is also painted in the Tijuana plant using a two-coat powder-coating process and this adds corrosive protection to the aluminium.
- 2) The lens/reflector are normally manufactured at the Dialight facility in Roxboro using injection molding and metalising. For this product variation the lens is glass so purchased but the reflectors are made in Roxboro.
- 3) Light Engine – this is a series of LEDs on a board made by using an SMT machine in Ensenada.
- 4) Power Supply – this is an amalgam of dozens of electrical components that is manufactured using an SMT process in Ensenada.
- 5) Cable harness – the internal wiring looms are assembled in Ensenada for each type of light by cutting wiring to specified lengths and applying requisite connectors.

Once these elements are available, the final stage is assembly and testing which is largely a manual process.

The data supplied relates to the Mexico site and covers a 12 month period – 1st January to 31st December 2020. The material data is based on individual Bill of Materials and components taken from the technical specification documents and drawings. The site manufactures other products in addition to ProSite Floodlight F1 and values for energy, water, waste, and wastewater have been allocated on a mass basis as a percentage of total site production volume according to the provisions of the BRE PCR PN514 and EN 15804.

Secondary data has been drawn from the BRE LINA database v2.0.85 and the background LCI datasets are based on ecoinvent v3.2.

Power supply components utilise the dataset 'Electronic component, passive, unspecified {GLO}| market for | Alloc Def, S' as this is considered the most representative. All other chosen datasets represent direct matches to the materials specified.

Cut-off criteria

All raw materials and energy input to the manufacturing process have been included, except for direct emissions to air, water and soil, which are not measured. The inventory process in this LCA includes all data related to raw material, packaging material and consumable items, and the associated transport to the manufacturing site. Process energy, water use and general waste are included. As the process is an assembly line, there is no direct production waste as faulty components are returned to the supplier.

LCA Results

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts

| | | | GWP | ODP | AP | EP | POCP | ADPE | ADPF |
|---------------|--------------------------|------|---------------------------|------------------|---------------------------|--|---|--------------|--------------------------|
| | | | kg CO ₂ equiv. | kg CFC 11 equiv. | kg SO ₂ equiv. | kg (PO ₄) ³⁻ equiv. | kg C ₂ H ₄ equiv. | kg Sb equiv. | MJ, net calorific value. |
| Product stage | Raw material supply | A1 | 357 | 0.0000402 | 2.65 | 2.08 | 0.353 | 0.056 | 5000 |
| | Transport | A2 | 3.44 | 0.00000062 | 0.0246 | 0.00558 | 0.00249 | 0.0000076 | 51.5 |
| | Manufacturing | A3 | 23.2 | 0.00000189 | 0.129 | 0.00249 | 0.0095 | 0.0000156 | 347 |
| | Total (of product stage) | A1-3 | 383.64 | 0.00004271 | 2.8036 | 2.08807 | 0.36499 | 0.0560232 | 5398.5 |

GWP = Global Warming Potential;
 ODP = Ozone Depletion Potential;
 AP = Acidification Potential for Soil and Water;
 EP = Eutrophication Potential;

POCP = Formation potential of tropospheric Ozone;
 ADPE = Abiotic Depletion Potential – Elements;
 ADPF = Abiotic Depletion Potential – Fossil Fuels;

Parameters describing resource use, primary energy

| | | | PERE | PERM | PERT | PENRE | PENRM | PENRT |
|---------------|--------------------------|------|---------|------------|---------|--------|-------|--------|
| | | | MJ | MJ | MJ | MJ | MJ | MJ |
| Product stage | Raw material supply | A1 | 581 | 0.0125 | 581 | 5450 | 16.3 | 5470 |
| | Transport | A2 | 0.809 | 0.00000235 | 0.809 | 51.5 | 0 | 51.5 |
| | Manufacturing | A3 | 32.7 | 0.0000139 | 32.7 | 326 | 0 | 326 |
| | Total (of product stage) | A1-3 | 614.509 | 0.01251625 | 614.509 | 5827.5 | 16.3 | 5847.5 |

PERE = Use of renewable primary energy excluding renewable primary energy 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 resource

Parameters describing resource use, secondary materials and fuels, use of water

| | | | SM | RSF | NRSF | FW |
|---------------|--------------------------|------|----|------------------------|------------------------|----------------|
| | | | kg | MJ net calorific value | MJ net calorific value | m ³ |
| Product stage | Raw material supply | A1 | 0 | 0 | 0 | 14.4 |
| | Transport | A2 | 0 | 0 | 0 | 0.0116 |
| | Manufacturing | A3 | 0 | 0 | 0 | 0.0734 |
| | Total (of product stage) | A1-3 | 0 | 0 | 0 | 14.485 |

SM = Use of secondary material;
 RSF = Use of renewable secondary fuels;

NRSF = Use of non-renewable secondary fuels;
 FW = Net use of fresh water

LCA Results (continued)

| Other environmental information describing waste categories | | | | | |
|---|--------------------------|------|---------|-------|----------|
| | | | HWD | NHWD | RWD |
| | | | kg | kg | kg |
| Product stage | Raw material supply | A1 | 20.9 | 6.76 | 0.00349 |
| | Transport | A2 | 0.0222 | 1.98 | 0.000354 |
| | Manufacturing | A3 | 0.0652 | 0.786 | 0.00106 |
| | Total (of product stage) | A1-3 | 20.9874 | 9.526 | 0.004904 |

HWD = Hazardous waste disposed;
 NHWD = Non-hazardous waste disposed;
 RWD = Radioactive waste disposed

| Other environmental information describing output flows – at end of life | | | | | | |
|--|--------------------------|------|-----|------|-----|-----------------------|
| | | | CRU | MFR | MER | EE |
| | | | kg | kg | kg | MJ per energy carrier |
| Product stage | Raw material supply | A1 | 0 | 0 | 0 | 0 |
| | Transport | A2 | 0 | 0 | 0 | 0 |
| | Manufacturing | A3 | 0 | 2.21 | 0 | 0 |
| | Total (of product stage) | A1-3 | 0 | 2.21 | 0 | 0 |

CRU = Components for reuse;
 MFR = Materials for recycling

MER = Materials for energy recovery;
 EE = Exported Energy

References

BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A1:2013. London, BSI, 2013.

BSI. Environmental labels and declarations – Type III Environmental declarations – Principles and procedures. BS EN ISO 14025:2010 (exactly identical to ISO 14025:2006). London, BSI, 2010.

BSI. Environmental management – Life cycle assessment – Principles and framework. BS EN ISO 14040:2006. London, BSI, 2006.

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Pre Consultants bv. Simapro 8 LCA Software 2013. <http://www.pre-sustainability.com>

Ecoinvent Centre. Swiss Centre for Life Cycle Inventories. <http://www.ecoinvent.org>