

Statement of Verification

BREG EN EPD No.: 000400

Issue 01

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:
GRP Linear 4ft

Company Address

Leaf C, Level 36, Tower 42
25 Old Broad Street
London
EC2N 1HQ



A handwritten signature in black ink, appearing to read 'E Baker'.

Signed for BRE Global Ltd

Emma Baker
Operator

17 December 2021
Date of this Issue

17 December 2021
Date of First Issue

16 December 2026
Expiry Date



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Environmental Product Declaration

EPD Number: 000400

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/Functional Unit	Applicability/Coverage
1 x Dialight GRP Linear 4ft weighing 10.9kg	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)

1666 Lorong Perusahaan Maju 8,
13600 Perai,
Pulau Pinang,
Malaysia

Construction Product

Product Description

Dialight's Glass Reinforced Polyester (GRP) linear includes IECEx / ATEX Zone 1, 2, 21 & 22 certification for lighting solutions within heavy industrial and hazardous applications including upstream and downstream oil and gas, petrochemical, mining and heavy manufacturing applications

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 1.7 kg from a height of 30 cm.
Certification Mark	IECEx/ATEX (Zone 1,2, 21 & 22), CE, RCM, INMETRO (depending on target market)



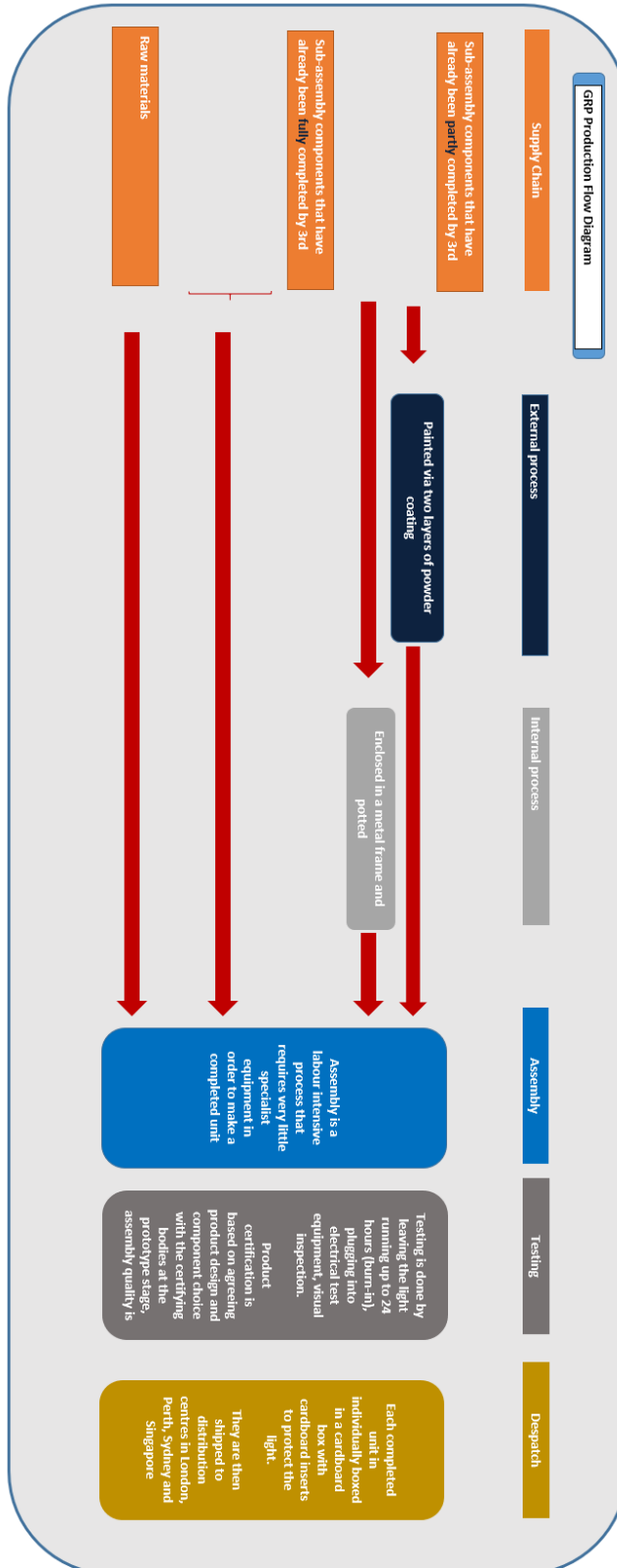
Main Product Contents

Material/Chemical Input	%
GRP Housing	51.5
Power Supply	11.3
Light Engine	6.6
Cables	7.6
Potting	4.1
Lens	10.1
Heat Sink	6.6
Other electrical	2.0

Manufacturing Process

This is an assembly process where major sub-components that are pre-built to Dialight specifications are assembled and tested to ensure compliance with the relevant electrical standard for the applicable target market.

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

GRP Linear 4ft is an industrial LED light for use for lighting solutions within heavy industrial and hazardous applications including upstream and downstream oil and gas, petrochemical, mining and heavy manufacturing applications. It carries no specific maintenance requirements and is expected to last beyond its 10 year life expectancy.

End of Life

GRP Linear 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. GRP is not currently widely recycled. The main avenue for recycling would be in the smelting and recasting of any aluminium parts 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 Dialight GRP Linear 4ft weighing 10.9kg

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

GRP 4ft is an industrial LED light system weighing 10.9 kg model (excl. packaging).

The product is manufactured in Penang, Malaysia from both fully and part completed sub-assemblies and raw materials that have been fully or partly completed.

Once these elements are fully completed, the final product is assembled and tested which is largely a manual process.

The data supplied relates to the Penang 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 and values for energy, water, waste and wastewater have been allocated on 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 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	424	0.000037	3.01	2.44	0.412	0.0538	6130
	Transport	A2	0.43	7.38E-08	0.00641	0.00134	0.000435	5.75E-07	6.32
	Manufacturing	A3	31.4	0.000001	0.153	0.000435	0.0105	0.000028	484
	Total (of product stage)	A1-3	455.83	3.80E-05	3.16941	2.441775	0.422935	0.05382	6620.32

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	539	0.0183	539	5940	16.5	5960
	Transport	A2	0.0926	1.76E-07	0.0926	4.64	0	4.64
	Manufacturing	A3	42.4	0.0000175	42.4	482	0	482
	Total (of product stage)	A1-3	581.4926	0.01831768	581.4926	6426.64	16.5	6446.64

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	21.6
	Transport	A2	0	0	0	0.0011
	Manufacturing	A3	0	0	0	0.234
	Total (of product stage)	A1-3	0	0	0	21.8351

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	0.857	2.14	0.000543
	Transport	A2	0.00209	0.106	0.0000313
	Manufacturing	A3	0.0907	0.759	0.000321
	Total (of product stage)	A1-3	0.94979	3.005	0.0008953

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	0.443	0	0
	Total (of product stage)	A1-3	0	0.443	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.

BSI. Environmental management – Life cycle assessment – requirements and guidelines. BS EN ISO 14044:2006. London, BSI, 2006.

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>