Statement of Verification

BREG EN EPD No.: 000339 Issue 03

This is to verify that the

Environmental Product Declaration

provided by:

Brett Martin Daylight Systems

BRE Global Verified EPD

is in accordance with the requirements of:

EN 15804:2012+A1:2013

and

BRE Global Scheme Document SD207

This declaration is for:

Site Assembled Trilite 1.8 / Cleartherm / Trilite 2.4 GRP Rooflight

Company Address

Sandford Close
Dutton Road
Alderman's Green Industrial Estate
Coventry
CV2 2QU

Signed for BRE Global Ltd	Emma Baker Operator	05 October 2023 Date of this Issue
30 November 2020 Date of First Issue		29 November 2025 Expiry Date

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Environmental Product Declaration

EPD Number: 000339

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**
Brett Martin Daylight Systems Sandford Close, Dutton Road, Alderman's Green Industrial Estate, Coventry CV2 2QU	BRE LINA
Declared/Functional Unit	**Applicability/Coverage**
1m^2 of Triple Skin site assembled triple skin unit, comprising Trilite 1.8 weather sheet / Cleartherm thermal interlayer / Trilite 2.4 liner sheet weighing 5.10kg/m^2	Product Average.
EPD Type	**Background database**
Cradle to Gate with options	Ecoinvent v3.2 & BRE LINA database V2.0.62

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 ☐Internal ☒ External
(Where appropriate [b])Third party verifier: Pat Hermon
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
☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑		☐

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

Brett Martin Daylight Systems
Sandford Close, Dutton Road,
Alderman's Green Industrial Estate,
Coventry
CV2 2QU

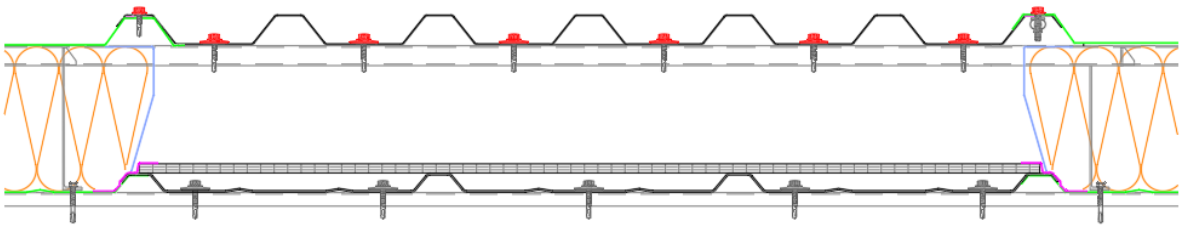
Construction Product:

Product Description

Trilite rooflights are corrugated translucent GRP sheets, and are typically supplied with fire ratings SAB to BS476 part 3 and Class 3 to BS476 part 7, they are also available with fire ratings of SAA or Class 1. Trilite rooflights are available to match most corrugated profiles for roof or wall, and are installed in site assembled applications. Trilite rooflights are typically of width 1000mm.

Technical Information

Property	Value, Unit
Harmonised Technical Specification EN 1013:2012 + A1:2014	N.B. NPD = No performance declared
External fire performance (EN13501 part 5)	$B_{ROOF}(t4)$
Reaction to fire	NPD - UK fire ratings declared separately
Water / Air permeability	Pass
U-value	1.3 W/m^2K
Light Transmission	58%
G-Value	0.55
Large soft body impact resistance (assembly)	NPD. Performance to ACR(M)001 declared separately in accordance with NARM NTD03
Dimensional tolerances	Pass
All other properties	NPD



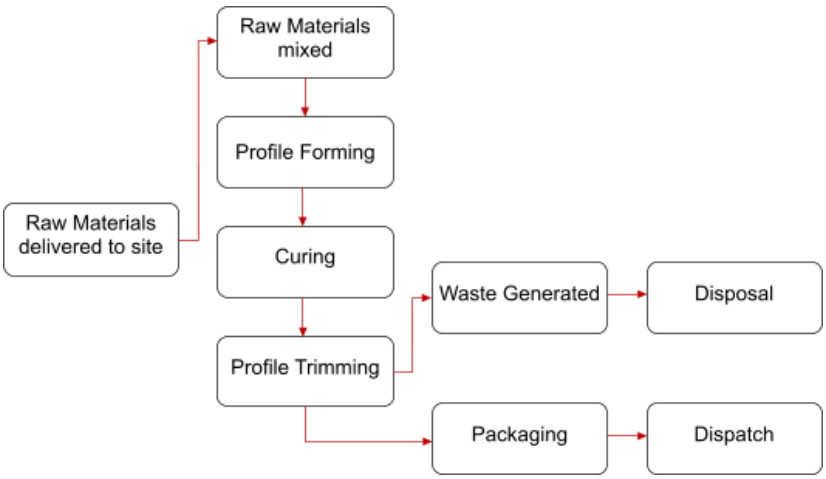
Main Product Contents

Material/Chemical Input	%
GRP Resin	49.8
Glass fibre	27.1
Minor Chemicals	2.7
Film	0.8
Cleartherm thermal interlayer	19.8

Manufacturing Process

The polyester resin and minor chemicals are mixed and deposited on a carrier film. Glass rovings are spread on top and sandwiched by a second film. The flat uncured sheet is then formed to the desired profile and passed through an oven to cure. The edges of the sheet are trimmed and sheets cut to the desired length.

Process flow diagram



Construction Installation

Liner Panel

Main fasteners - Liner panel

Stainless Steel 5.5mm diameter fastener with a large diameter washer, minimum 5 fixings per purlin.

Side Laps - Liner panel

The GRP should overlap the metal on both sidelaps. 50mm wide film backed butyl tape applied over the lap joints.

End Laps - Liner panel

Endlaps should be sealed with a 6x5mm strip of butyl mastic inside the lap along the line of fasteners.

Cleartherm layer

Laid in place after liner panel installed. This can be held in place with 50mm wide film back butyl tape or 9x3mm butyl sealant can be applied to the crown on each side lap of the liner panel.

Outer Sheet

Main fasteners - Outer sheet

Stainless Steel 5.5mm diameter with large diameter washed with bonded seal, typically poppy red colour. Located in the top flange of ashgrid bar, zed spacer or equivalent. Minimum 5 fixings per purlin.

Endlap Sealant - Outer Sheet

End laps should be sealed with 2 row of 6x5mm section UV stable butyl mastic. Located above and below the line of fasteners, no more than 25mm from line of fasteners.

Side stitch fasteners - rooflight overlap

Standard stitching screws should be used at 300mm-400mm centres. Typically poppy red colour.

Side stich fasteners - rooflight underlap

Expanding rubber bolts should be fitted at 300mm-400mm centres

Sidelap sealant - Outer sheet

Single strip of 6x5mm UV stable butyl mastic, positioned on crown of sheet, positioned on the crown of the sheet just outside the line of sidelap fasteners.

Use Information

Maintenance involves cleaning and inspection after one year, then subsequently at an appropriate frequency (depending on results of previous inspections and environmental conditions), typically 2-3 years but more frequently if necessary, and never exceeding 5 years.

The general condition of GRP rooflights, and the security of fasteners and sealants should be checked periodically as part of the overall maintenance program for the structure into which they are incorporated. If a rooflight is found to be damaged it must be replaced in accordance with the original specification.

End of Life

It is assumed that the end of life the GRP rooflights, Cleartherm layer, sealants and fixings will be disposed of via landfill, as this is the worst case outcome.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1m^2 of Triple Skin site assembled triple skin unit, comprising Trilite weather sheet / Cleartherm interlayer / Trilite liner sheet, weighing 5.10 kg/m^2.

System boundary

This is a cradle to gate with options EPD (i.e. processes covered in the extraction and processing in modules A1 to A3), the construction stage in modules A4 and A5 and end of life scenario in module C4.

Data sources, quality and allocation

Manufacture-specific data from Brett Martin Daylight Systems covering a production period of 1 year [01/01/2019 to 31/12/2019] from the Coventry site has been used for this EPD.

BMDS offer a range of rooflights, all manufactured at the Coventry site. For inputs where there is no alternative way to scale data, sales data for 2019 has been used to ascertain total resource usage for GRP production.

Once the total value (of energy or water) for the manufacture of GRP is known, then it has been scaled by production output in GRP linear metres, using the below equation.

$$\text{Usage} = \frac{\text{Total GRP usage} \times \text{Production output of product} \times 2}{\text{Total GRP production output}}$$

As BMDS run a large site, it is difficult to apportion waste correctly to the different manufacturing cells and therefore it is difficult to scale the waste correctly. The production waste element has been taken from the scrap allowances in the order processing system, which is based on historical material usage.

Cut-off criteria

Data collected at the Coventry manufacturing site was used. 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 and water use and direct production waste are included. Environmental impacts due to administration of the manufacturing process are assumed to be below cut off criteria.

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_2H_4 equiv.	kg Sb equiv.	MJ, net calorific value.
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	3.40E+01	2.43E-06	1.28E-01	4.52E-02	2.20E-02	5.87E-04	4.91E+02
Construction process stage	Transport	A4	8.82E-02	1.68E-08	3.03E-04	7.98E-05	6.26E-05	1.48E-07	1.38E+00
	Construction	A5	1.51E+00	3.55E-07	8.64E-03	2.58E-03	9.97E-04	3.00E-05	2.15E+01
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND	MND	MND	MND
	Disposal	C4	5.53E-01	1.51E-08	4.40E-04	3.81E-02	1.60E-04	8.46E-08	1.37E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND	MND	MND	MND	MND

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;

LCA Results (continued)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	1.85E+01	7.04E-03	1.85E+01	3.66E+02	1.42E+02	5.08E+02
Construction process stage	Transport	A4	2.08E-02	5.20E-08	2.08E-02	1.37E+00	0.00E+00	1.37E+00
	Construction	A5	3.44E+00	6.69E-06	3.44E+00	2.31E+01	0.00E+00	2.31E+01
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND	MND	MND
	Disposal	C4	5.18E-02	1.34E-07	5.18E-02	1.42E+00	0.00E+00	1.42E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND	MND	MND	MND

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

LCA Results (continued)

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	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	0.00E+00	0.00E+00	0.00E+00	5.00E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	3.20E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	3.07E-02
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.57E-03
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND	MND

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	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG
	Total (of product stage)	A1-3	4.21E-01	1.72E+00	7.27E-04
Construction process stage	Transport	A4	5.17E-04	1.17E-01	9.55E-06
	Construction	A5	8.22E-01	2.16E-01	5.01E-05
Use stage	Use	B1	MND	MND	MND
	Maintenance	B2	MND	MND	MND
	Repair	B3	MND	MND	MND
	Replacement	B4	MND	MND	MND
	Refurbishment	B5	MND	MND	MND
	Operational energy use	B6	MND	MND	MND
	Operational water use	B7	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND
	Transport	C2	MND	MND	MND
	Waste processing	C3	MND	MND	MND
	Disposal	C4	1.07E-03	5.41E+00	9.08E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND

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

LCA Results (continued)

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	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND	MND

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

Scenarios and additional technical information

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
A4 – Transport to the building site	Weighted average site distance was found to be 95km from Brett Martin's factory in Coventry. Delivery is by Brett Martin's fleet of delivery lorries. An empty return journey is also included, to make the total distance 190km		
	Vehicle type:	Tonnes	>32
	Distance:	km	190
A5 – Installation in the building	This scenario assumes the following energy and packaging waste are associated with the products installation on site. The scenario assumes no installation waste of the rooflight as the product is cut to the correct length in the factory and requires no on site modification.		
	Packaging waste	kg per F.U.	0.00115
	Diesel for crane	MJ per F.U.	2.50E-03
	Electricity for drill battery	MJ per F.U.	2.59E-03
	Stainless Steel Screws	kg per F.U.	0.15
	Sealant	Kg per F.U.	0.153
	Transport of Ancillary materials to site	Road transport - Van	30km
C1 to C4 End of life,	Although there are recycling and energy reclamation options at end of life, the worst case situation is considered. Disposal of GRP rooflight and polycarbonate intermediate layer is assumed to be to landfill.		
	GRP rooflight & polycarbonate intermediate layer to landfill	Kg per F.U.	5.10
	Stainless steel fixings to landfill at End of Life	Kg per F.U.	0.15
	Sealant waste at end of life	Kg per F.U.	0.153

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.