

## Statement of Verification

BREG EN EPD No.: 000249

Issue 1

This is to verify that the  
**Environmental Product Declaration**  
provided by:  
**Hambleside Danelaw Ltd**



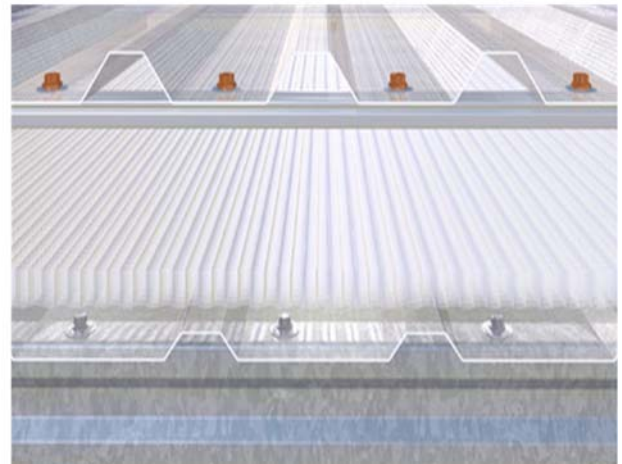
is in accordance with the requirements of:  
**EN 15804:2012+A1:2013**

and  
**BRE Global Scheme Document SD207**

This declaration is for:  
**Site Assembled Zenon Pro/Polycarbonate/Zenon Pro**

### Company Address

Hambleside Danelaw Ltd  
Long March  
Daventry  
Northamptonshire  
NN11 4NR



**Z E N O N**®  
A Hambleside Danelaw Ltd brand

  
Signed for BRE Global Ltd

Laura Critien  
Operator

14 February 2019  
Date of this Issue

14 February 2019  
Date of First Issue

13 February 2024  
Expiry Date



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BRE Global Ltd., Garston, Watford WD25 9XX.  
T: +44 (0)333 321 8811 F: +44 (0)1923 664603 E: [Enquiries@breglobal.com](mailto:Enquiries@breglobal.com)

# Environmental Product Declaration

**EPD Number: 000249**

## 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
Hambleside Danelaw Ltd Long March Daventry Northamptonshire NN11 4NR	BRE LINA tool
Declared/Functional Unit	Applicability/Coverage
1 linear metre of site assembled Zenon Pro/ Polycarbonate/ Zenon Pro site assembled rooflight weighing 6.31 kgs	Product Average.
EPD Type	Background database
Cradle to Gate with options	ecoinvent

### Demonstration of Verification

CEN standard EN 15804 serves as the core PCR <sup>a</sup>

Independent verification of the declaration and data according to EN ISO 14025:2010

Internal  External

(Where appropriate <sup>b</sup>)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 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 checked="" type="checkbox"/>	<input type="checkbox"/>

Note: Ticks indicate the Information Modules declared.

## Manufacturing site(s)

Hambleside Danelaw Ltd  
 Long March  
 Daventry  
 Northamptonshire  
 NN11 4NR

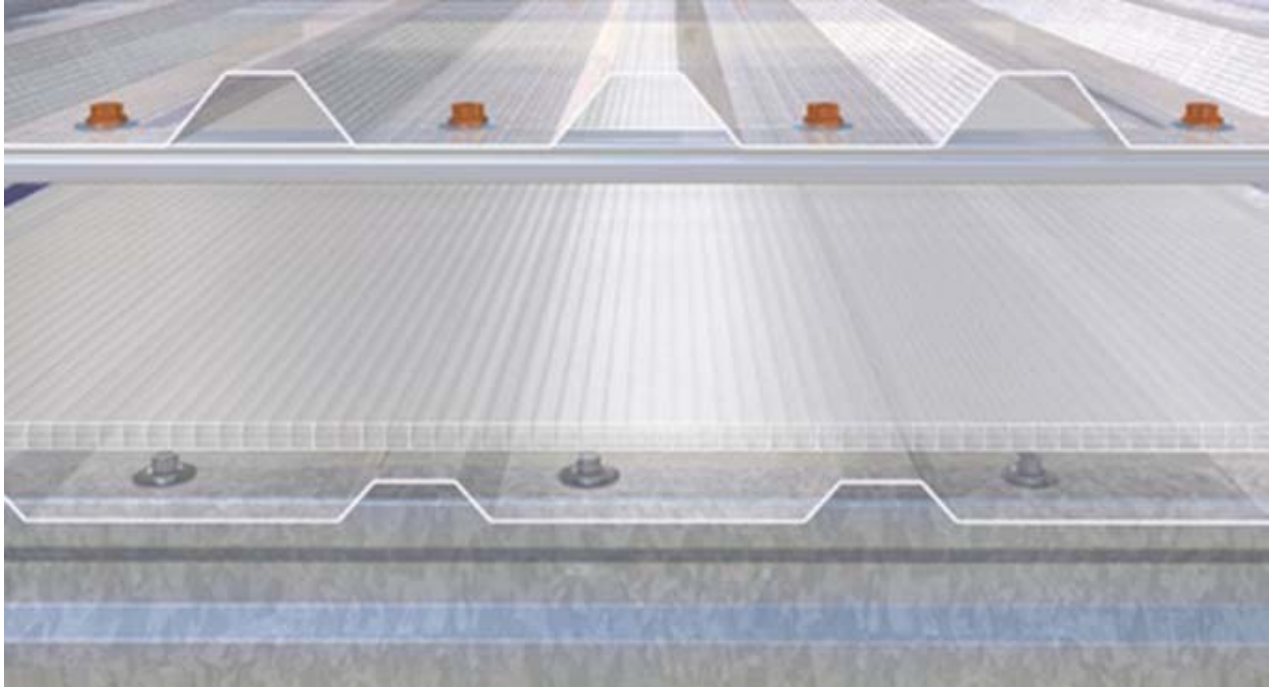
## Construction Product

### Product Description

Zenon site assembled rooflights typically combine Zenon Pro weather sheet and liner panel configurations to suit the building requirements (other product weight combinations are also available). Manufactured to match all commonly available metal cladding profiles for both new build and refurbishment projects, the various sheet weights can be mixed and matched to meet the best performance criteria for your building design. Where insulated assemblies are required to meet Building Regulations and to improve building energy performance, various polycarbonate options can be selected

### Technical Information

Property	Value, Unit
Harmonised Technical Specification EN 1013:2012 + A1:2014	N.B. NPD = No performance declared
External fire performance	NPD - UK fire ratings declared separately
Reaction to fire	NPD - UK fire ratings declared separately
Water vapour permeability	1.5 x 10 <sup>-5</sup> mg(m.h.Pa)
Water / air permeability	Pass
Dimensional tolerances	Pass
Large soft body impact resistance (assembly)	NPD. Performance to ACR(M)001 declared separately in accordance with NARM NTD03
All other properties	NPD



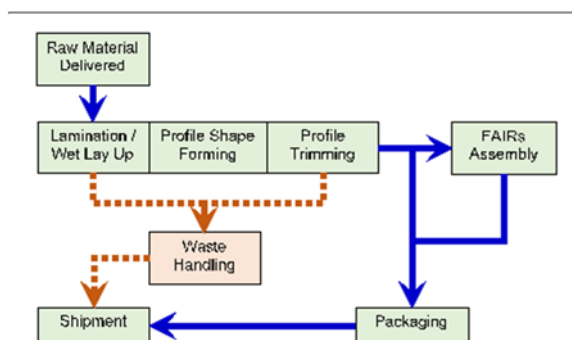
### Main Product Contents

Material/Chemical Input	%
GRP Sheet	
GRP resin	53
Glass fibre	27
Minor chemicals	1
Film	2
Intermediate insulation components (plastic)	18

### Manufacturing Process

The mixed raw materials are sandwiched between carrier film, heated and formed into shape. Once the product has cured, it is cut to length and width. If the GRP is being used in a multi-skin factory assembled application (FAIR) then it undergoes an additional process to bond the layers together.

### Process flow diagram



## Construction Installation

### 1. Rooflight Outer Sheet

GRP (Glass Reinforced Polyester) rooflight outer sheets available in a wide variety of profiles to match the surrounding metal cladding, different specifications and weights to meet all customer requirements.

### 2. Rooflight Liner Sheet

GRP rooflight liner sheets available in a wide variety of profiles to match the surrounding roof liner panels, different specifications and weights to meet all customer requirements.

### 3. Structured Polycarbonate Insulation Layer

The Polycarbonate is simply notched to fit between the spacer brackets or, where the space brackets occur outside of the rooflight, laid directly over the liner panel rooflight using a butyl/foil tape.

### 4. Primary Fixings

The purpose of primary fixings is to secure the rooflight outer sheet in position. They must also create sufficient compression of the sealant strips to provide a continuous weather seal across the width of the profile. Differences in the design and shape of profiles means the number and position of fixings required to achieve a complete seal may vary.

There should always be a minimum of 5 fixings per purlin and each should have a minimum 29mm diameter self-sealing washer with a poppy red cap. Ideally, the fixings should be positioned as evenly as possible across the profile of the sheet and central to each trough. Wider troughs may need two each.

### 5. Side Stitch Fastener

A sidelap stitch fastener is used when fixing the rooflight sidelaps over the metal profile. These fixings should have a poppy red cap and use a minimum of a 16mm diameter self-sealing washer and be placed at a maximum of 400mm centres.

### 6. Expanding Grommet Fastener

When the metal cladding is fitted over the GRP, an expanding grommet type fastener to suit durability requirements should be used to fasten the side lap of the metal over the rooflight.

### 7. Sidelap Sealant

The sidelap sealant is essential and must be installed on the crown of the underlapping panel. The sealant should be a continuous 6x5mm butyl type strip.

### 8. Sealing Strip - Liner Panel

A 40x1mm butyl/foil type tape should be positioned half onto the rooflight and half onto the metal liner panel.

### 9. End Lap Sealant

The sealant strips should be 6x5mm, 6mm Ø or 8mm Ø bead butyl type strip sealant. Two strips should be positioned approximately 10 to 15mm either side of the fixing, and a further strip positioned 15mm from the outer end lap. Where a better seal is required at the bottom of the lap to keep out dirt and trapped water, a bead of premium quality neutral cure silicone sealant positioned approximately 10 to 15mm from the bottom of the lap may be used.

Alternatively, and for improved sealing, the sealing strip on the line of the fixings can be a single 18x4mm or 22x5mm U-section butyl type strip sealant with a 6x5mm, 6mm Ø or 8mm Ø bead placed 15mm from the end of each sheet as illustrated in Hambleside Danelaw Ltd Installation Guidelines.

The end laps of the liner panels should be sealed with one row of 6x5mm, 6mm Ø or 8mm Ø bead butyl type strip sealant.

## Use Information

Maintenance - Clean periodically with warm water and soap solution, avoid harsh detergents. Remove persistent stains by rubbing with a bristle brush. Remove tar and grease with white spirit.

Repairs - Dependent upon condition. Repairs sometimes possible; seek advice from Technical Department.

## End of Life

At the end of life the product can be disposed of via landfill or alternatively can be sent to an Energy from waste (EFW) plant where it is converted to SRF (Solid Recovery Fuel). Following this sophisticated SRF manufacturing process, the end product produced has a high calorific value and is a resource from which energy can be harnessed. It is used in cement kilns, paper mills and power stations as an alternative to fossil fuels. However as the end of life options are site dependent the worst case scenario of landfill has been used.

## Life Cycle Assessment Calculation Rules

### Declared / Functional unit description

Declared unit: 1 linear metre of site assembled Zenon Pro/ Polycarbonate/ Zenon Pro rooflight weighing 6.31 kgs

### 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

Manufacturer-specific data from Hambleside Danelaw Ltd covering a production period of 1 year [01/07/2017 to 30/06/2018] from the Daventry site has been used for this EPD.

Additional components for FAIRs and additional optional components for enhanced FAIRs options have been allocated by FAIRs assembly BOM/FAIRs assembly yield.

Additional components for stated Site Assembled combinations have been allocated by site assembly BOM/FAIRs assembly yield.

Energy, water and waste have been scaled by production output in GRP linear metres run. FAIRs & Site assembled systems have been treated as double GRP skinned. Therefore energy, water and waste have been calculated by total site usage x production output of product (m) / Total production output of whole site (m) x (x1 if single GRP skin or x2 if double GRP skin)

### Cut-off criteria

Data collected at the Daventry 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.

## 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 <sub>2</sub> equiv.	kg CFC 11 equiv.	kg SO <sub>2</sub> equiv.	kg (PO <sub>4</sub> ) <sup>3-</sup> equiv.	kg C <sub>2</sub> H <sub>4</sub> 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	4.42E+01	3.48E-06	1.72E-01	6.01E-02	3.32E-02	6.57E-04	6.70E+02
Construction process stage	Transport	A4	2.21E-01	4.06E-08	7.37E-04	1.95E-04	1.29E-04	5.81E-07	3.33E+00
	Construction	A5	2.99E+00	5.96E-07	1.93E-02	7.66E-03	2.79E-03	1.46E-04	5.97E+01
End of life	Disposal	C4	5.54E-01	1.76E-08	5.10E-04	4.65E-02	1.69E-04	9.85E-08	1.61E+00

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	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	4.93E+01	8.53E-03	4.93E+01	7.01E+02	0.00E+00	7.01E+02
Construction process stage	Transport	A4	4.42E-02	1.65E-07	4.42E-02	3.31E+00	0.00E+00	3.31E+00
	Construction	A5	3.33E+00	2.27E-05	3.33E+00	6.27E+01	0.00E+00	6.27E+01
End of life	Disposal	C4	5.88E-02	1.54E-07	5.88E-02	1.66E+00	0.00E+00	1.66E+00

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 <sup>3</sup>
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	7.01E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	7.22E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	7.13E-02
End of life	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.85E-03

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

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

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	5.55E-01	1.86E+00	1.16E-03	
Construction process stage	Transport	A4	1.40E-03	1.55E-01	2.30E-05	
	Construction	A5	2.28E-01	3.38E-01	1.97E-04	
End of life	Disposal	C4	1.24E-03	6.32E+00	1.06E-05	

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	1.34E-01	1.08E+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	8.87E-01	0.00E+00	0.00E+00
End of life	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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	This scenario is based on a typical delivery trip from Daventry to Manchester		
	Vehicle type: Lorry	tonnes	31
	Distance:	km	209
A5 – Installation in the building	This scenario assumes the following energy, ancillary materials and packaging waste are associated with the products installation on site. The scenario assumes no installation wastage of the rooflight as the product is installed on site as a pre-manufactured unit.		
	Sealant tube	kg per F.U.	0.21
	Sealant tape	kg per F.U.	0.39
	Screws	kg per F.U.	0.31
	Electricity for drill battery	kJ per F.U.	4.21
	Diesel for crane	kg per F.U.	2.9E-05
	Transport from supplier to installation site	km	30
	Crane exhaust	kg per F.U.	2.9E-05
	Wooden pallets waste	kg per F.U.	0.89
	GRP sheet waste	kg per F.U.	0.15
	PC sheet waste	kg per F.U.	0.01
C1 to C4 End of life,	Disposal of GRP rooflight at end of life		
	GRP rooflight to landfill (100%)	Kg per F.U.	6.31

## 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.
- Harmonised Technical Specification EN 1013:2012 + A1:2014 'Light transmitting single skin profiled plastics sheets for internal and external roofs, walls and ceilings. Requirements and test methods'.