Statement of Verification

BREG EN EPD No.: 000081 Issue 04
ECO EPD Ref. No. 000331

This is to verify that the

Environmental Product Declaration

provided by:

PolyFoam™ XPS Ltd

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:

POLYFOAM Standard

Company Address

Hunter House Industrial Estate
Hartlepool
TS25 2BE

PolyFoam™ XPS

Signed for BRE Global Ltd	Emma Baker Operator	26 March 2021 Date of this Issue
17 March 2016 Date of First Issue		25 March 2024 Expiry Date

BRE Global Verified EPD

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ECO PLATFORM EPD EN 15804 VERIFIED

Environmental Product Declaration

EPD Number: 000081

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**
Polyfoam XPS Ltd Hunter House Industrial Estate Tofts Road East Hartlepool TS25 2BE UK	Chris Foster EuGeos Limited 387 Park Lane Macclesfield SK11 8JR www.eugeos.co.uk
Declared/Functional Unit	**Applicability/Coverage**
1 cubic metre of Polyfoam Standard	Product Average.
EPD Type	**Background database**
Cradle to Gate with options	ecoinvent

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: Kim Allbury
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

Hunter House Industrial Estate
Tofts Road East
Hartlepool
TS25 2BE
UK

Construction Product

Product Description

Extruded polystyrene (XPS) insulation boards sold under the names: Polyfoam Floorboard Standard; Polyfoam Laminating Board; Polyfoam Upstand Board.

Technical Information

Property	Value, Unit
Thermal conductivity (EN 12667)	0.033 W/mK
Compressive strength	200 kPa
Water vapour resistivity (EN 12086)	625 MNs/gm
Fire Classification (in accordance with BS EN 13501-1:2002	F
Gross dry density	23 – 32 kg/m³
Continuous service temperature limits	Up to +70 °C

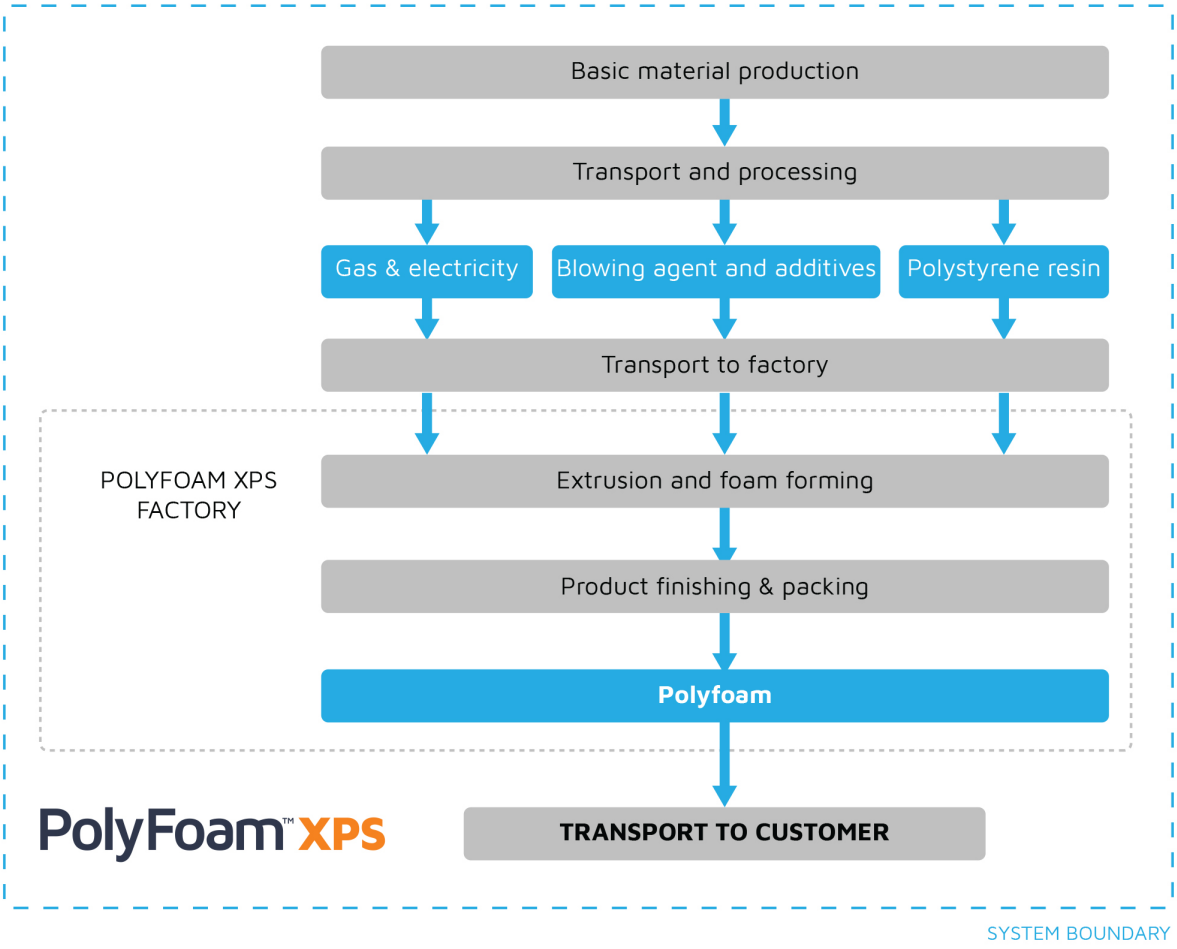
Main Product Contents

Material/Chemical Input	%
Polystyrene	> 95
Blowing agent	4.5 - 5
Colourants & process additives	< 0.5

Manufacturing Process

The product is approximately 95% polystyrene; the remaining 5% comprises a gaseous “blowing agent” and minor additives such as colourant. In the manufacturing process, raw materials are mixed, heated and extruded in equipment that allows controlled formation of a continuous foam strip. Boards are cut from this. All production waste is recycled within the factory and returned to the process.

Process flow diagram



Construction Installation

The product is typically installed in situations where insulation with relatively high inherent mechanical strength, in particular compressive strength, and moisture resistance is needed, for example under floors or as part of panels or other laminated solutions. It can be cut to shape and no special tools are required for installation. In accordance with good industry practice the product should be stored away from heat, flames and other sources of ignition.

Use Information

Polyfoam XPS insulation is used for thermal insulation in buildings and other end use applications. The principal performance characteristic of thermal insulation is its thermal conductivity (lambda). Compressive strength is also a key property of XPS in many applications. The product is stable under normal temperature conditions and in recommended use; it does not require maintenance or replacement. In normal conditions of use, the product is not exposed to either internal or external environments. The product is non-hazardous in finished form.

End of Life

The product may be disposed of as a non-hazardous material, EWC Code 17-06-04. Being a polystyrene foam insulant, Polyfoam is 100% recyclable. The material does not degrade, therefore it can be either recycled or re-used when removed from the original installation.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1 cubic metre of Polyfoam standard grade XPS insulation product. Results are presented for a product with density 31 kg/m³: The average density of all production of this grade in the year covered by the producer-specific data.

System boundary

The system boundary of the EPD is defined using the modular approach set out in EN 15804. This cradle-to-gate with options EPD includes the product stage (A1-A3); transport to the construction site (A4); transport to waste processing (C2) and disposal at end-of-life (C4).

Data sources, quality and allocation

Following EN 15804, the most current available data was used to calculate the EPD. Specific foreground data derived from production information was used in the product-stage LCA for modules A1 - A3. The data covers a period of 1 year (Jan 01 to Dec 31, 2014). The producer-specific data used for calculations is therefore based on 1 year averaged data and has been updated within the last 5 years. Other (generic) data sets used for calculations have been updated within the last 10 years. The site data has been checked to ensure that sufficient materials and water are included within the inputs to account for all outputs, including products, wastes and material-derived emissions. Background data for minor raw materials, water and fuels/energy carriers was taken from the ecoinvent v 3.1 database. To comply with the requirement that the most current available data be used, data for general purpose polystyrene (GPPS), the major raw material, was taken from Plastics Europe. This data was updated in 2010.

Cut-off criteria

According to EN 15804, where there is insufficient data, or data gaps exist for a unit process in the LCA, the flow in question can be omitted (cut-off) up to a maximum of 1% of the total mass of inputs to that process. The total of input flows omitted in this way for any single module must not exceed 5% of the total energy usage and mass inputs for that module. The data used in this study encompassed all raw materials, packaging materials and process aids, as well as associated transport to the manufacturing site. Process energy and water use, direct production waste and emissions to air and water are included within the data. One process additive for which no data are available was omitted from the LCA; this comprises <0.1% of the finished product.

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	110	3.69E-06	0.334	0.0292	0.18	4.88E-05	2950
Construction process stage	Transport	A4	0.576	1.04E-07	0.00202	0.00036	7.88E-05	1.39E-06	8.25
	Construction	A5	MND	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND	MND	MND	MND
	Transport	C2	0.288	5.22E-08	0.00101	0.00018	3.94E-05	6.96E-07	4.12
	Waste processing	C3	MND	MND	MND	MND	MND	MND	MND
	Disposal	C4	13.2	8.21E-08	0.00315	0.00119	0.00068	4.81E-07	8.22

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	101	0.00	104	1810	1240	3050
Construction process stage	Transport	A4	8.91	INA	8.91	0.054	INA	0.054
	Construction	A5	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND	MND	MND
	Transport	C2	4.46	INA	4.46	0.027	INA	0.027
	Waste processing	C3	MND	MND	MND	MND	MND	MND
	Disposal	C4	0.231	INA	0.211	8.66	INA	8.66

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	0.0503	0.02	0.21	0.612
Construction process stage	Transport	A4	0.0092	INA	INA	0.00104
	Construction	A5	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND
	Transport	C2	0.00046	INA	INA	0.00052
	Waste processing	C3	MND	MND	MND	MND
	Disposal	C4	0.00556	INA	INA	0.0087

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	0.0814	1.79	0.00037
Construction process stage	Transport	A4	0.00082	0.0067	2.81E-07
	Construction	A5	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND
	Transport	C2	0.00041	0.00335	1.41E-07
	Waste processing	C3	MND	MND	MND
	Disposal	C4	0.0602	31.1	7.96E-07

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	INA	INA	INA	INA
Construction process stage	Transport	A4	INA	INA	INA	INA
	Construction	A5	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND
	Transport	C2	INA	INA	INA	INA
	Waste processing	C3	MND	MND	MND	MND
	Disposal	C4	INA	INA	INA	INA

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	Value
A4 – Transport to the building site	Transport of product to building site by lorry		
	Fuel type / Vehicle type	Litre of fuel type per distance or vehicle type	0.2
	Distance	km	100
	Capacity utilisation (incl. empty returns)	%	21
	Bulk density of transported products	kg/m^3	31
C2 & C4 – End of life	Transport of product at end of life to waste processing; and disposal		
	Transport to waste processing by lorry – fuel consumption	Litre of fuel type per distance or vehicle type	0.2
	Transport to waste processing by lorry – distance	km	50
	Transport to waste processing by lorry – capacity utilisation	%	21
	Transport to waste processing by lorry – density of product	kg/m³	31
	Waste for energy recovery – 10% of product waste to incineration with energy recovery	kg	3.1
	Waste for final disposal – 90% of waste product to landfill	kg	27.9

Summary, comments and additional information

Interpretation

The polystyrene production system accounts for approximately 60% of the total indicator values for the impact categories GWP and ADPF. For EP and AP its contribution is between 40 & 45%. For all of these categories, UK electricity generation from coal and gas accounts for much of the rest of the indicator total. The ODP indicator is dominated by flows upstream in the energy production chain, with a contribution of c.12% from polystyrene production; there is no contribution to this indicator from Polyfoam XPS Ltd process. POCP is the only impact category for which Polyfoam XPS Ltd processes directly account for most of the indicator value: blowing agent constituents are released in the course of recycling process waste internally and these emissions contribute strongly to this indicator. The polystyrene production system again makes the largest contribution to the ADPE indicator, although both other raw materials and raw material transport are significant. There is high uncertainty associated with some of these contributions from generic data; the mineral content of the product itself is <1%. Figure 1 shows the contributions of the different life-cycle stages, or modules, covered by this EPD to the overall LCA results for the product. Clearly, the product stage (modules A1 -A3) makes the dominant contribution in all categories. There is a noticeable contribution to total GWP from disposal as a result of the assumption that 10% of XPS is incinerated, releasing its fossil carbon content as carbon dioxide to air.

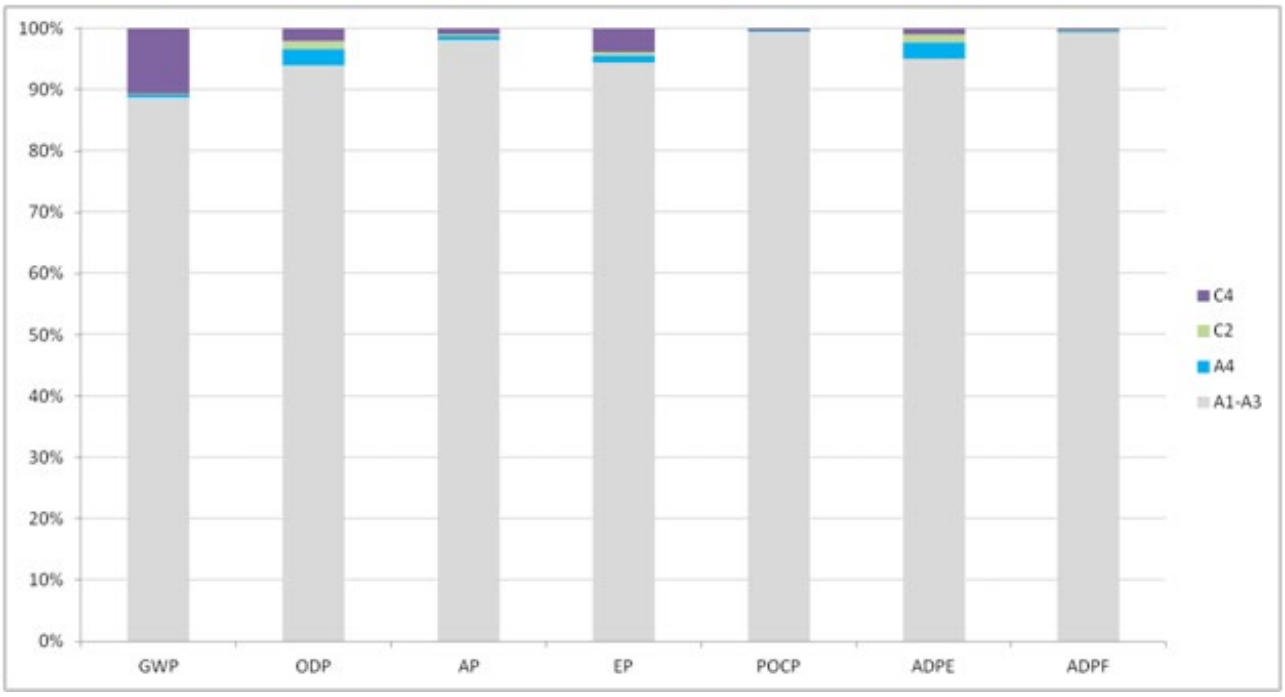


Figure 1

References

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