Statement of Verification

BREG EN EPD No.: 000371 Issue 02

This is to verify that the

Environmental Product Declaration

provided by:

Superglass Insulation Ltd

is in accordance with the requirements of:

EN 15804:2012+A1:2013

and

BRE Global Scheme Document SD207

This declaration is for:

1Kg of Cured Glass Wool Insulation

Company Address

Thistle Industrial Estate
Kerse Road
Stirling
FK7 7QQ

Signed for BRE Global Ltd	Emma Baker Operator	28 June 2022 Date of this Issue
25 October 2021 Date of First Issue		24 October 2026 Expiry Date

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Environmental Product Declaration

EPD Number: 000371

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**
Superglass Insulation Limited, Thistle Industrial Estate, Kerse Road, Stirling, FK7 7QQ	Andrew Dutfield/ BRE LINA v2.0
Declared Unit	**Applicability/Coverage**
1 kg of Superglass Cured Glass Wool Insulation with an installed thermal conductivity (λ_D) of 0.032-0.044 $W \cdot m^{-1} \cdot K^{-1}$	Product Average.
EPD Type	**Background database**
Cradle to Gate with options	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 ☐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)

Superglass Insulation Limited,
Thistle Industrial Estate, Kerse Road,
Stirling,
FK7 7QQ

Construction Product:

Product Description

Glass mineral wool, made from recycled glass and other raw materials with added binder, formed into rolls and slabs. The product is used for the purposes of thermal and acoustic insulation across a wide range of applications in domestic and non-domestic buildings. The products covered are:

- Multi Roll 44, Multi Roll 40
- Timber and Rafter Roll 040, Timber and Rafter Roll 035, Timber and Rafter Roll 032
- Timber and Rafter Batt 040, Timber and Rafter Batt 035, Timber and Rafter Batt 032
- Party Wall Roll
- Superwall 32 Cavity Wall Batt, Superwall 34 Cavity Wall Batt, Superwall 36 Cavity Wall Batt,
- Multi-Purpose Acoustic Slab, Multi-Acoustic Roll, Acoustic Partition Roll (APR), Superglass Slab 45
- Cladding Mat 032, Cladding Mat 035, Cladding Mat 037, Cladding Mat 040

The EPD covers other products not listed but which are within the stated lambda range of λ_D 0.032 - λ_D 0.044. The products are similar but have different fibre diameters and fibre length which manifest in different characteristics at the point of installation (which include the installed density).). The number suffix generally refers to the λ_D value i.e. '34' equates to 0.034 $W \cdot m^{-1} \cdot K^{-1}$.

Technical Information

Property	Value, Unit
Thermal conductivity (λ_D)	0.032-0.044 $W \cdot m^{-1} \cdot K^{-1}$
Nominal density (average)	22 kg/m^3
Fire classification: BS EN 13501-1:2018	A1
Water vapour permeability factor: EN12086:2013 (μ)	$\geq$ 1
Roll or pack of finished product	11.44 kg

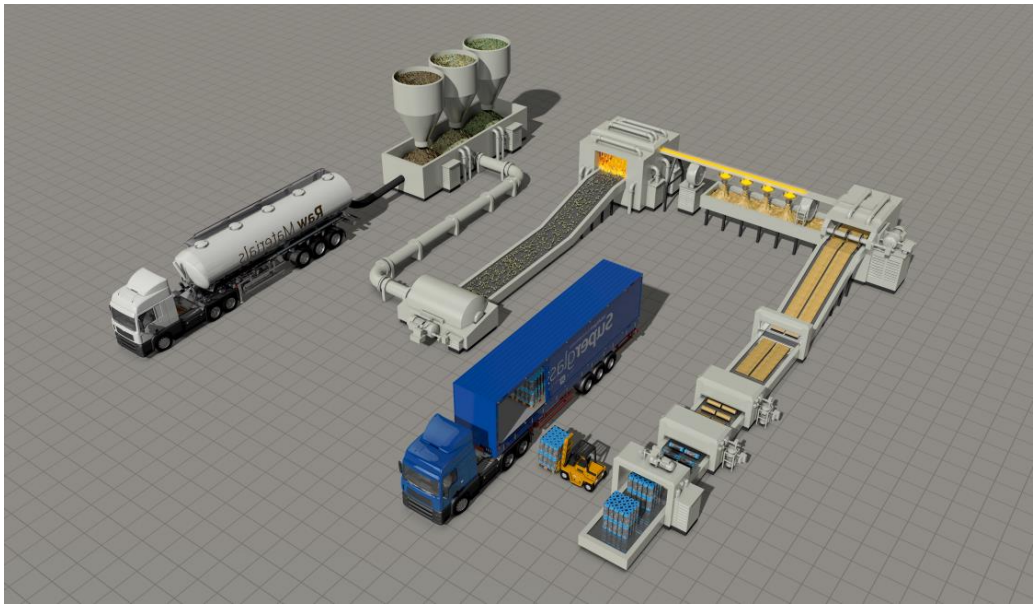
Main Product Contents

Material/Chemical Input	%
Glass cullet	82%
Process additives	18%

Manufacturing Process

The manufacturing process involves the melting of recycled waste glass with additional raw materials that are needed to give the required compositions. The molten glass leaves the furnace and is formed into glass fibres. A water repellent additive is applied. All glass mineral wool products are compression packed to reduce both storage and transport space.

Process flow diagram



Construction Installation

All Superglass cured roll and slab products are manufactured for easy installation and waste minimisation. Full installation instructions can be found at www.superglass.co.uk or by contacting the technical help line.

Use Information

As the product is confined within the wall cavity and has suitable durability, maintenance is not required.

End of Life

Superglass assume that at the end of life the product will be disposed of in landfill. Technologies are being developed that could allow the product (at end of life) to be recycled or reprocessed.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1 kg of Superglass Cured Glass Wool Insulation with an installed thermal conductivity (λ_D) of 0.032-0.044 $W \cdot m^{-1} \cdot K^{-1}$

System boundary

This is a cradle to gate with options EPD referring to all Superglass cured wool insulation products with a declared thermal conductivity from 0.032 to 0.044 $W \cdot m^{-1} \cdot K^{-1}$. Production life cycle stages of modules from A1 to A3, A4, C2 and C4 are reported in accordance with EN 15804:2012+A1:2013.

Data sources, quality and allocation

Data collected by Superglass for the production of the Superglass cured wool insulation product at the Stirling site for the period 1st July 2019 to 31st August 2020 has been used for this EPD. The months of April and May 2020 are excluded due to a factory shutdown and so the resultant assessment period is for 12 months. The mass balance of all material inputs and outputs is 100%.

Superglass manufacture other insulation products at the Stirling site. Figures for the raw materials, ancillary materials and packaging are compiled from actual usages for all included products. Allocation of energy, water, and waste has been done according to the provisions of the BRE PCR PN514 and EN 15804. Energy per product type is not individually metered. Values of total site electricity and natural gas have been taken from bills for the 2019-2020 years, and allocated based on percentage of mass of overall production output as the other insulation products are of similar density. All energy used on site (i.e. energy such as factory and office lighting and heating) is included, not only that specifically used in the manufacture of the product.

Data for transport to installation and disposal to landfill at end of life were supplied by Superglass. No losses are assumed during transportation.

Superglass cured wool products have BBA certification which assesses the product for durability. The certificate states "*The product is unaffected by the normal conditions in a wall, and is durable, rot-proof, water resistant and sufficiently stable to remain effective as insulation for the life of the building*.".
Using this information and by looking at publicly available data on average lifetime of buildings it is possible to estimate a service life of 60 years.

Secondary data have been drawn from the BRE LINA database v2.0.83 and the background LCI datasets are based on ecoinvent v3.2 (2015). As there is no background dataset in ecoinvent 3.2 for Ammonium Sulphate, the Ammonium Chloride dataset (Ammonium Chloride (GLO)| production | Alloc Def, U) used as proxy as it is similar in chemical properties.

Quality Level	Geographical representativeness	Technical representativeness	Time representativeness
Very Good	Data from area under study	Data from processes and products under study. Same state of technology applied as defined in goal and scope (i.e. identical technology)	n/a
Fair	n/a	n/a	Less than 10 years of difference between the reference year according to the documentation, and the time period for which data are representative

The quality level of geographical and technical representativeness is Very Good. The quality level of time representativeness is Fair as the background LCI datasets are based on ecoinvent v3.2 which was compiled in 2015 and so there is less than 10 years between the reference year according to the documentation, and the time period for which data are representative.

Cut-off criteria

No inputs or outputs have been excluded and all raw materials, packaging and transport, energy, water use and wastes as well as direct emissions to air and water are included. Emissions to air directly related to burning of natural gas have been excluded to avoid double-counting. Direct emissions to soil are not measured and are also excluded. Upstream extraction and/or processing of inputs are included within the use of the background datasets within LINA.

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	1.35E+00	1.49E-07	9.20E-03	2.48E-03	9.62E-04	1.96E-04	2.56E+01
Construction process stage	Transport	A4	7.25E-02	1.33E-08	2.51E-04	6.47E-05	4.27E-05	1.90E-07	1.10E+00
End of life	Transport	C2	8.36E-03	1.54E-09	2.80E-05	7.38E-06	4.88E-06	2.20E-08	1.26E-01
	Disposal	C4	5.94E-02	2.05E-08	4.57E-04	1.13E-04	7.90E-05	6.42E-08	1.73E+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	2.78E+00	4.97E-06	2.78E+00	2.83E+01	8.74E-01	2.92E+01
Construction process stage	Transport	A4	1.46E-02	5.40E-08	1.46E-02	1.09E+00	0.00E+00	1.09E+00
	Transport	C2	1.68E-03	6.24E-09	1.68E-03	1.25E-01	0.00E+00	1.25E-01
	Disposal	C4	4.46E-02	6.75E-08	4.46E-02	1.71E+00	0.00E+00	1.71E+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^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	1.04E+01	0.00E+00	0.00E+00	3.95E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	2.38E-04
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	2.74E-05
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.97E-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	9.33E-03	2.87E-01	1.05E-04
Construction process stage	Transport	A4	4.59E-04	5.08E-02	7.55E-06
	Transport	C2	5.29E-05	5.89E-03	8.71E-07
	Disposal	C4	6.19E-04	1.14E+01	1.16E-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	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
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	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	Distances derived from analysis of delivery data for period covered. Split by delivery area (including goods that are exported)		
	Diesel/ 16-32 t lorry	Kg/vkm	0.3
	Distance:	km	431
	Lorry capacity utilisation (incl. empty returns)	%	35
	Ship distance by sea	km	42
	Ship capacity utilisation (incl. empty returns)	%	65
	Bulk density of transported products	kg/m^3	22
Reference service life	Superglass cured wool products have BBA certification which assesses the product for durability. The certificate states "*The product is unaffected by the normal conditions in a wall, and is durable, rot-proof, water resistant and sufficiently stable to remain effective as insulation for the life of the building*.". Using this information and by looking at publicly available data on average lifetime of buildings it is possible to estimate a service life of between 50-60 years.		
C2 - Transport from site to pre-processing facility or landfill	Estimate of average distance from a typical building site where Superglass wool is installed to the nearest waste disposal / landfill facility		
	Diesel/ 16-32 t lorry	Kg/vkm	0.3
	Distance:	km	50
	Lorry capacity utilisation (incl. empty returns)	%	35
	Density of waste insulation	kg/m^3	22
C4 - Disposal	Superglass assume that at the end of life the product will be disposed of in landfill. Technologies are being developed that could allow the product (at end of life) to be recycled or reprocessed.		
	Disposal to landfill	kg	1.0

Interpretation

Glass cullet is by far the largest material input at 82% of the total. However it only forms 5% of the overall impact in terms of GWP. The largest impacts in terms of GWP in modules A1-A3 are electricity usage at 40% and gas usage at 20%.

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.