Statement of Verification

BREG EN EPD No.: 000171 Issue 02

This is to verify that the

Environmental Product Declaration

provided by:

Pasquill, Saint-Gobain

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:

1 m³ of timber roof truss

Company Address

Wigan Lane
Duxbury
Chorley
Lancashire
PR7 4BU
United Kingdom

PASQUILL
SAINT-GOBAIN

Signed for BRE Global Ltd	Emma Baker Operator	16 September 2021 Date of this Issue
15 September 2017 Date of First Issue		14 September 2022 Expiry Date

BRE Global Verified EPD

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Environmental Product Declaration

EPD Number: 000171

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom www.bre.co.uk	BRE Global product category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013, PN514
Commissioner of LCA study	**LCA consultant/Tool**
Pasquill, Saint-Gobain Wigan Lane Duxbury Chorley Lancashire PR7 4BU United Kingdom	Kim Allbury BRE Bucknalls Lane Watford WD25 9XX United Kingdom
Declared/Functional Unit	**Applicability/Coverage**
1 m^3 of timber roof truss	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: Dr. Fei Zhang
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 sites

Bodmin site
Cooksland Road
Bodmin
Cornwall
PL31 2RH

Buckley site
Pinfold Industrial Estate
Pinfold Lane
Buckley
CH7 3PL

Chorley site
Wigan Lane
Duxbury
Chorley
PR7 4BU

Inverness site
3 Dalcross Industrial Estate
Inverness
IV2 7XB

Leeds site
Jawbone Industrial Estate
Woods Lane
Rothwell
Leeds
LS26 0RS

Newport Site
Westway Road
Alexandra Dock
Newport
NP20 2WD

Redhill Site
Salbrook Road
Salfords
Redhill
RH1 5GJ

Stoney Stanton site
Station Road
Stoney Stanton
Leicestershire
LE9 4DJ

Taunton site
Livingston Way
Off Bindon Rd
Taunton,
TA2 6BD

Uddingston site
9 Grays Road
Green Elms Trading Estate
Uddingston
Glasgow
G71 6ET

Construction Product:

Product Description

Saint-Gobain Building Distribution Ltd t/a Pasquill design, manufacture and supply timber roof trusses assembled from solid structural timber (European Whitewood/Redwood graded TR26) with individual timber members joined together with punched metal plate fasteners. Engineered timber roof trusses are designed and manufactured specifically to support the roof structure of each buildings specific purpose, layout, roof covering and location. The engineered timber roof truss is designed in accordance with BS5268-3:2006 or EC5 and with a life span of 60 years to conform with NHBC requirements.

Further information from www.pasquill.co.uk and www.tra.org.uk

Technical Information

As engineered timber roof trusses are designed and manufactured for each specific building's design, purpose and location, technical specifications are bespoke to each design, however the following characteristics are considered as defined within BS EN 14250:2010.

Property	Value, Unit
Timber grade	TR26 in accordance with EN14081-1
Timber size – Thickness (width)	Not less than 35mm in accordance with EN336:2013 tolerance class 2
Timber size – Depth, external (chord) members	Not less than 68mm in accordance with EN336:2013 tolerance class 2
Timber size – Depth, internal (web) members	Not less than 58mm in accordance with EN336:2013 tolerance class 2
Moisture content	Less than 22%
Size, load bearing capacity and stiffness	As defined by design in accordance with BS5268/EN1995-1-1 (EC5)
Dimensional accuracy to design	Up to and including 10m accuracy +/- 10mm
Reaction to fire	D-s2, d0 in accordance with BS EN 13501-1:2007+A1:2009
Density of product	585 kg/m^3

Main Product Contents

The values provided in the table below presents the mean percentage of inputs per m^3 of timber roof truss.

Material/Chemical Input	%
European Whitewood / Redwood Timber*	96.3
Punched metal plate fasteners	3.7

*For treated timber trusses, 2% of the mass of the timber treatment is left on the final product (which accounts for a maximum of 0.2% of the final product mass).

Manufacturing Process

The Pasquill manufacturing facilities are certified to ISO9001 Quality Management System, ISO14001 Environmental Management System, ISO50001 Energy Management System, OHSAS18001 Health & Safety Management System, Chain of Custody schemes and product is designed and manufactured to the appropriate European Standard and CE mark applied.

The manufacturing process for engineered timber roof trusses is split into the following 5 segments and is the same for all roof trusses at all Pasquill sites.

1. Raw Material Handling and Picking
   The raw materials for timber roof trusses are received in bulk quantities and stored in bulk storage areas according to section size and length. Stock is picked for production to the optimum length to reduce waste.

2. Sawing
   Timber for the complete truss is cut to the desired length and placed on carts, waste off cuts are placed in the timber waste skip.

3. Setting
   Chocks and blocks are placed on the setting press to correctly position the timbers for the required design.

4. Pressing
   Timbers are positioned within the jig and metal plate fasteners are accurately positioned at each joint according to the design. The metal plates are fully pressed into the timber to form each joint.

5. Removal, storage and loading
   After pressing all joints each truss in turn is removed from the jig and placed on suitable truss trolleys, finally each batch of trusses is banded together using banding tape. Once all trusses for the designed roof structure have been completed they are ready to be loaded onto lorries for transportation to the customer site.

Process flow diagram

Life Cycle Assessment Calculation Rules

Declared unit description

1 m^3 of timber roof truss

System boundary

In accordance with the modular approach as defined in EN 15804:2012, this cradle-to-gate with options EPD includes the processes covered in the manufacture of the roof trusses (A1 to A3), plus transport of trusses to construction site (A4).

Data sources, quality and allocation

Manufacturer-specific data covering a production period of 1 year (1/01/16 – 31/12/16) obtained from Pasquill production processes in the ten production sites was used.

At some of the production sites, Pasquill manufacture other finished products in addition to the roof trusses. Where this has been the case, calculations were performed to allocate total site energy use, water, and waste to the roof truss products. Allocation procedures were by physical allocation and are according to EN 15804 and are based on the ISO14044 guidance.

SimaPro v8 software was used to carry out the LCA modelling, with background LCI datasets taken from the ecoinvent database v3.2. All ecoinvent datasets are complete within the context used and conform to the system boundary and the criteria for the exclusion of inputs and outputs according to the requirements specified in EN15804.

The trusses produced at the Pasquill sites include both treated and untreated wood. This EPD covers both truss types and the individual site data have been combined on a mass weighted average based on production volume.

Cut-off criteria

All raw materials and consumable item inputs, and associated transport to the plant, process energy and water use, direct production waste and wastewater 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_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	-1014	5.38E-05	2.15	0.739	0.286	0.0156	4813
Construction process stage	Transport	A4	9.78	1.80E-06	0.0327	0.00863	0.00571	2.58E-05	148

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	16897	0.000907	16897	5117	0	5177
Construction process stage	Transport	A4	1.96	7.30E-06	1.96	147	0	147

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	0	0	3.72
Construction process stage	Transport	A4	0	0	0	0.032

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	14.4	55.9	0.0203
Construction process stage	Transport	A4	0.0619	6.89	0.00102

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	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	0	26.3	0	0
Construction process stage	Transport	A4	0	0	0	0

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	Trusses manufactured by Pasquill are transport by road to construction sites across the UK. Distance will vary depending on where the project is located so a 100km distance has been assumed.		
	Lorry (Diesel)	kg/tkm	0.037
	Distance	km	100
	Capacity utilisation (incl. empty returns)	%	37
	Bulk density of transported products	kg/m^3	585

Summary, comments and additional information

Interpretation

The results record a negative GWP value during the production phases (A1-A3). This is due to the carbon storage within the timber, and can be viewed as a positive contribution to the climate change indicator category.

Looking in detail at the sources of GWP resulting from the life cycle modules assessed, the main contributor to the category is the transportation of the raw materials to site (Figure 1). The raw material production of the punched metal plate fasteners and the energy used during the production process are also prominent. The transport of the finished product to site (A4) has a minimal contribution.

All Pasquill products are manufactured under Environmental Management System ISO14001 and are available with chain of custody certification.

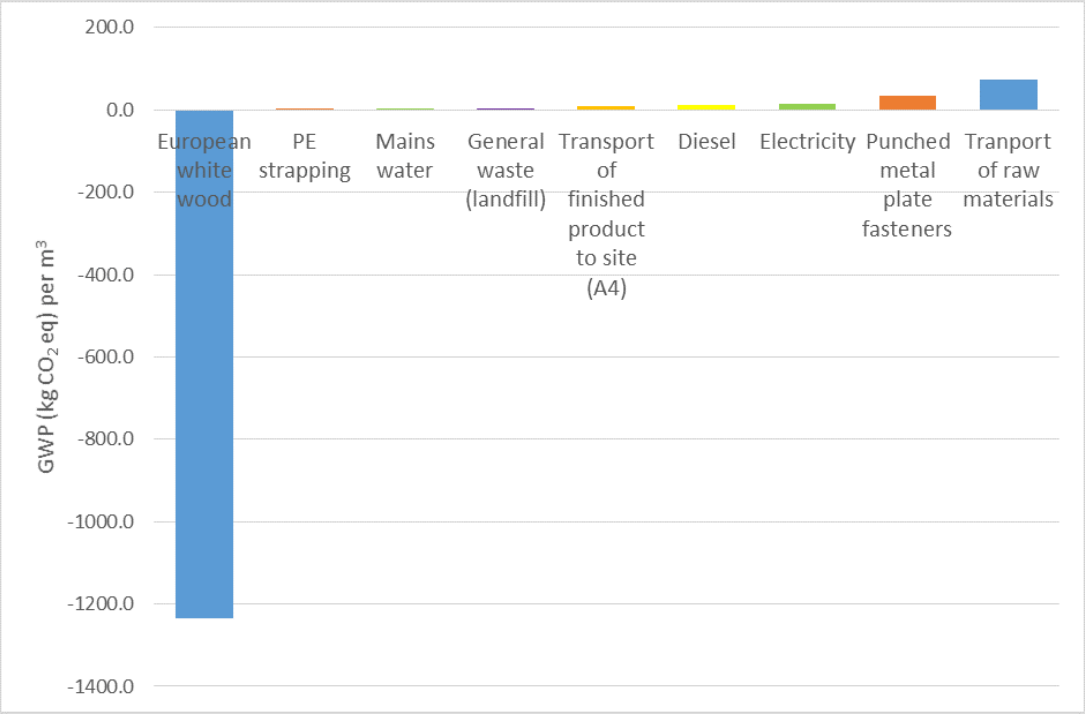

Figure 1: GWP by source (kg CO_2 eq.) per m^3 of mass weighted average timber roof truss

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.

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CPR. Declaration of Performance – BS EN 14250:2010, Timber structures – Product requirements for pre-fabricated structural members assembled with punched metal plate fasteners.

BS 5268-3:2006 - Structural use of timber. Code of practice for trussed rafter roofs

BRE. BRE Global product category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013, PN514. Watford, UK, BRE Global Limited, 2014

BS EN 13501-1:2007+A1:2009 -Fire classification of construction products and building elements. Classification using test data from reaction to fire tests

BS EN 14081-1:2016. Timber structures. Strength graded structural timber with rectangular cross section. General requirements

BS EN 336:2013. Structural timber. Sizes, permitted deviations.

BS EN 1995-1-1 Euro Code 5 (EC5). Design of timber structures. Common rules and rules for buildings