Statement of Verification

BREG EN EPD No.: 000246 Issue 02

This is to verify that the

Environmental Product Declaration

provided by:

Cupa Pizarras S.A

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:

Cupa Heavy 3 Roof Slate

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CUPA PIZARRAS
The world leader in natural slate

Signed for BRE Global Ltd	Emma Baker Operator	05 January 2021 Date of this Issue
31 January 2019 Date of First Issue		30 January 2024 Expiry Date

BRE Global Verified EPD

Environmental Product Declaration

EPD Number: 000246

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**
María Lago Cupa Innovacion SLU Calle Macal nº 32 36213 Vigo	Simapro 8.5
Declared/Functional Unit	**Applicability/Coverage**
The Declared Unit is “1m2 roof covered with Cupa Heavy 3 a 60 year study period	Product Average.
EPD Type	**Background database**
Cradle to Gave	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(s)

CUPA PIZARRAS (Forcadas) Cr las canteras, San pedro de Trones, León, 24385 Spain	Cupa Pizarras Office 3,10 111 Buckingham Palace Road, Victoria London, SW1W 0SR T: +44 (0)203 904 3004 E: UK@cupapizarras.com W: www.cupapizarras.com/uk

Construction Product:

Product Description

Cupa Heavy 3 is blue black with a slightly gritty texture, and in some samples well defined parallel lines are clearly visible on the cleavage surfaces. The product declared includes a range of sizes and 7,5 mm of thickness. Cupa Heavy 3 slate is a suitable covering for roofs. Slate is a fine-grained metamorphic rock derived mainly from mudstone and shale. During metamorphism the quartz and clay minerals present in the original shale are recrystallised and the clay minerals replaced by white mica and chlorite. The ability to split slate into flat sheets is due to the alignment of the white mica and chlorite minerals during recrystallisation. The extent to which these processes have taken place affects the quality of the slate.

Technical Information

Property	Value, Unit
Size	300x200 mm 350x200 mm 400x200 mm 400x250 mm 500x250 mm
Thickness	7.5 mm
Weight	51.91 kg/m^2
Specific weight	2700-2900 Kg/m^3
Modulus of rupture	50 MPa

Property	Value, Unit
Water abortion	0.2 %
Carbonate content	0.5 %

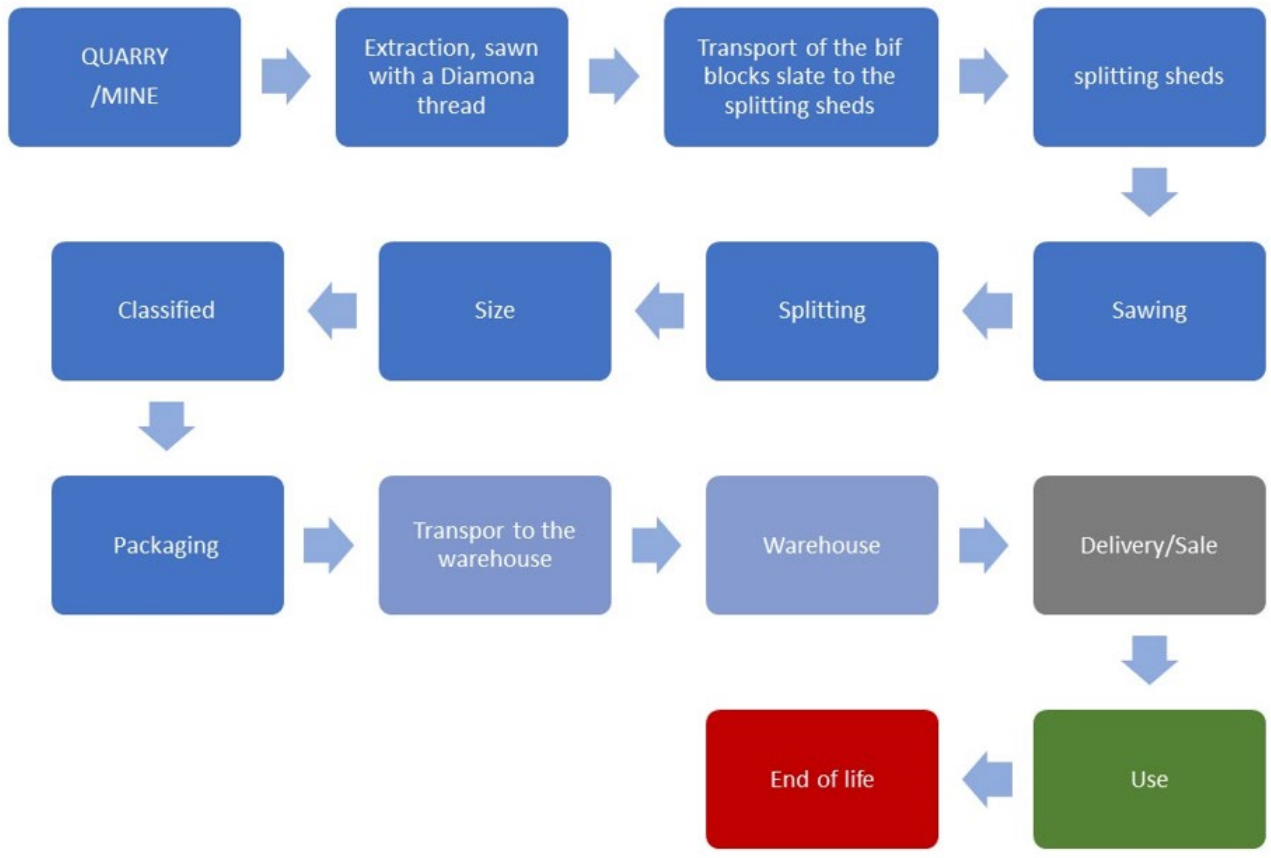
Main Product Contents

Material/Chemical Input	%
Natural stone, slate	100
Click here to enter text.	Click here to enter text.

Manufacturing Process

The slates are quarried or mined by cutting out large blocks with saws which use diamond studded wire at the sites noted. The large blocks are transported to the Splitting Sheds where they are sawn and split into the size and thickness required for the market. After splitting, the slates are classified and packed ready for transport to the warehouse for onward distribution to the market. After extraction and splitting, unused slate material or overburden is returned to the ground.

Process flow diagram



Construction Installation

In order to apply a real scenario, it has been established that for the traditional installation of the slate nails are required at a rate of 150 gr per m2 of installed roof. These nails are transported an average of 30 km by the supplier. In addition, a rejection of 5% of the slate has been considered due to breaks and defects that appeared on the slate when transported and installed.

It has been considered that during the installation of the slate on the roof, waste is generated due to the use of the packaging for the slate. This waste is mainly plastic and wood. Polypropylene plastic is recycled while wood is managed as construction waste. Slate waste is also generated due to 5% shrinkage during installation on the roof which, as inert material, is managed in landfills of inert materials.

Use Information

Cupa Heavy 3 complies with the standard EN 12326 Slate and stone for discontinuous roofing and external cladding

End of Life

90 % of slate can be recovered from demolition for re-use in new building and the 10% can be used as landfill for inert disposal.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

The Declared Unit is “1m^2 roof covered with Cupa Heavy 3 over a 60 year study period

System boundary

In accordance with the modular approach as defined in EN 15804:2012, this cradle-to-grave EPD includes the product stage A1 to C4. Benefits and loads beyond the system boundary (Module D) have not been included.

Data sources, quality and allocation

Data for manufacturing is based on specific consumption data for Cupa Pizarras in one year period from 01/01/2017 to 31/12/2017. Generic data is from Ecoinvent v.3.4. Modelling of life cycle of Cupa Heavy was performed using SimaPro v 8.5. LCA software from PRé consultants. Characterization factors were considered from EN15804: 2012 + A1: 2013

Cut-off criteria

All raw materials, packaging materials and consumable item inputs, and associated transport to the plant, process energy and water use are included. The production process for raw materials and energy flows that show very small amounts (<1%) are not 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	4.02E+00	2.16E-06	3.17E-02	2.95E-03	1.63E-03	2.68E-06	1.74E+02
Construction process stage	Transport	A4	4.47E+00	8.60E-07	2.30E-02	2.15E-03	9.56E-04	1.64E-08	6.66E+01
	Construction	A5	2.38E-01	1.74E-08	6.82E-04	1.31E-04	7.11E-05	9.13E-07	1.26E+00
Use stage	Use	B1	MNR	MNR	MNR	MNR	MNR	MNR	MNR
	Maintenance	B2	MNR	MNR	MNR	MNR	MNR	MNR	MNR
	Repair	B3	MNR	MNR	MNR	MNR	MNR	MNR	MNR
	Replacement	B4	MNR	MNR	MNR	MNR	MNR	MNR	MNR
	Refurbishment	B5	MNR	MNR	MNR	MNR	MNR	MNR	MNR
	Operational energy use	B6	MNR	MNR	MNR	MNR	MNR	MNR	MNR
	Operational water use	B7	MNR	MNR	MNR	MNR	MNR	MNR	MNR
End of life	Deconstruction, demolition	C1	MNR	MNR	MNR	MNR	MNR	MNR	MNR
	Transport	C2	1.05E-01	2.04E-08	1.81E-04	2.06E-05	1.21E-05	4.06E-10	1.58E+00
	Waste processing	C3	1.32E-02	2.48E-09	9.98E-05	2.16E-05	2.46E-06	4.15E-10	1.93E-01
	Disposal	C4	-3.34E+00	-1.92E-06	-2.74E-02	-2.46E-03	-1.34E-03	-2.18E-06	-1.52E+02
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	3.28E+01	2.21E+00	3.50E+01	0.00E+00	1.20E+02	1.20E+02
Construction process stage	Transport	A4	1.95E-01	0.00E+00	1.95E-01	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	2.76E-01	0.00E+00	2.76E-01	0.00E+00	0.00E+00	0.00E+00
Use stage	Use	B1	MNR	MNR	MNR	MNR	MNR	MNR
	Maintenance	B2	MNR	MNR	MNR	MNR	MNR	MNR
	Repair	B3	MNR	MNR	MNR	MNR	MNR	MNR
	Replacement	B4	MNR	MNR	MNR	MNR	MNR	MNR
	Refurbishment	B5	MNR	MNR	MNR	MNR	MNR	MNR
	Operational energy use	B6	MNR	MNR	MNR	MNR	MNR	MNR
	Operational water use	B7	MNR	MNR	MNR	MNR	MNR	MNR
End of life	Deconstruction, demolition	C1	MNR	MNR	MNR	MNR	MNR	MNR
	Transport	C2	4.87E-03	0.00E+00	4.87E-03	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	2.17E-03	0.00E+00	2.17E-03	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	-8.84E+00	0.00E+00	-8.84E+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	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	8,23E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	6,92E-03
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	2,48E-03
Use stage	Use	B1	MNR	MNR	MNR	MNR
	Maintenance	B2	MNR	MNR	MNR	MNR
	Repair	B3	MNR	MNR	MNR	MNR
	Replacement	B4	MNR	MNR	MNR	MNR
	Refurbishment	B5	MNR	MNR	MNR	MNR
	Operational energy use	B6	MNR	MNR	MNR	MNR
	Operational water use	B7	MNR	MNR	MNR	MNR
End of life	Deconstruction, demolition	C1	MNR	MNR	MNR	MNR
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	1,65E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	2,10E-05
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	-7,15E-02
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	1.43E+00	1.35E+00	1.36E-03
Construction process stage	Transport	A4	4.78E-02	4.63E-02	4.84E-04
	Construction	A5	8.41E-02	4.28E+00	1.44E-05
Use stage	Use	B1	MNR	MNR	MNR
	Maintenance	B2	MNR	MNR	MNR
	Repair	B3	MNR	MNR	MNR
	Replacement	B4	MNR	MNR	MNR
	Refurbishment	B5	MNR	MNR	MNR
	Operational energy use	B6	MNR	MNR	MNR
	Operational water use	B7	MNR	MNR	MNR
End of life	Deconstruction, demolition	C1	MNR	MNR	MNR
	Transport	C2	1.06E-03	1.03E-03	1.15E-05
	Waste processing	C3	1.75E-04	5.44E+00	1.40E-06
	Disposal	C4	-1.19E+00	-1.12E+00	-1.21E-03
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	MNR	MNR	MNR	MNR
	Maintenance	B2	MNR	MNR	MNR	MNR
	Repair	B3	MNR	MNR	MNR	MNR
	Replacement	B4	MNR	MNR	MNR	MNR
	Refurbishment	B5	MNR	MNR	MNR	MNR
	Operational energy use	B6	MNR	MNR	MNR	MNR
	Operational water use	B7	MNR	MNR	MNR	MNR
End of life	Deconstruction, demolition	C1	MNR	MNR	MNR	MNR
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	46.26	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	The slate is transported from the production centre to the final customer. The slate pallets are transported to distributors located in different parts of the country. This transport is done by truck or boat.		
	Fuel type / Vehicle type	Lorry >32 metric ton	0.37 L/km
	Distance:	km	1005
	Capacity utilisation (incl. empty returns)	%	50
	Bulk density of transported products	kg/m^3	2800
	Fuel type / Vehicle type	Transoceanic ship	89.29 L/km
	Distance:	km	1299.5
	Capacity utilisation (incl. empty returns)	%	65
	Bulk density of transported products	kg/m^3	2800
A5 – Installation in the building	This scenario includes the collection of the material in the distributor until it is installed on the roof, as well as the installation of the slate on the roof.		
	Nail	kg	0.308
	Pallet wood Waste	kg	1.63
	Slate waste	kg	2.6
	Plastic waste	kg	0.0109
B2 – Maintenance	No maintenance required		
B3 – Repair	No repair process required		
B4 – Replacement	No replacement considerations required		
B5 – Refurbishment	No refurbishment process required		
Reference service life	Reference service life is the same as for buildings and normally set to 60 years. Slate has almost unlimited life time and is therefore normally not being replaced during service life.		
	Reference Service life	Years	60
B6 – Use of energy; B7 – Use of water	No use phase requirements of either water or energy required		
C1 to C4 End of life,	This phase includes all the activities that lead to the "disappearance" of the roof, and the load of the resulting waste in trucks for transport to landfill.		

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
	Slate from demolition to landfill	%	10
	Slate from demolition for re-use	%	90
Module D	Module not declared		

Summary, comments and additional information

Interpretation

The Figure below represents the complete life assessment of the Cupa Heavy 3 slate. The production and transport phases are the major contributors. The environmental burden for the impact categories (GWP. ODP. AP. EP and POCP) result from the associated emissions directly linked to fossil fuel and electricity consumption in the transport of materials and site processes.

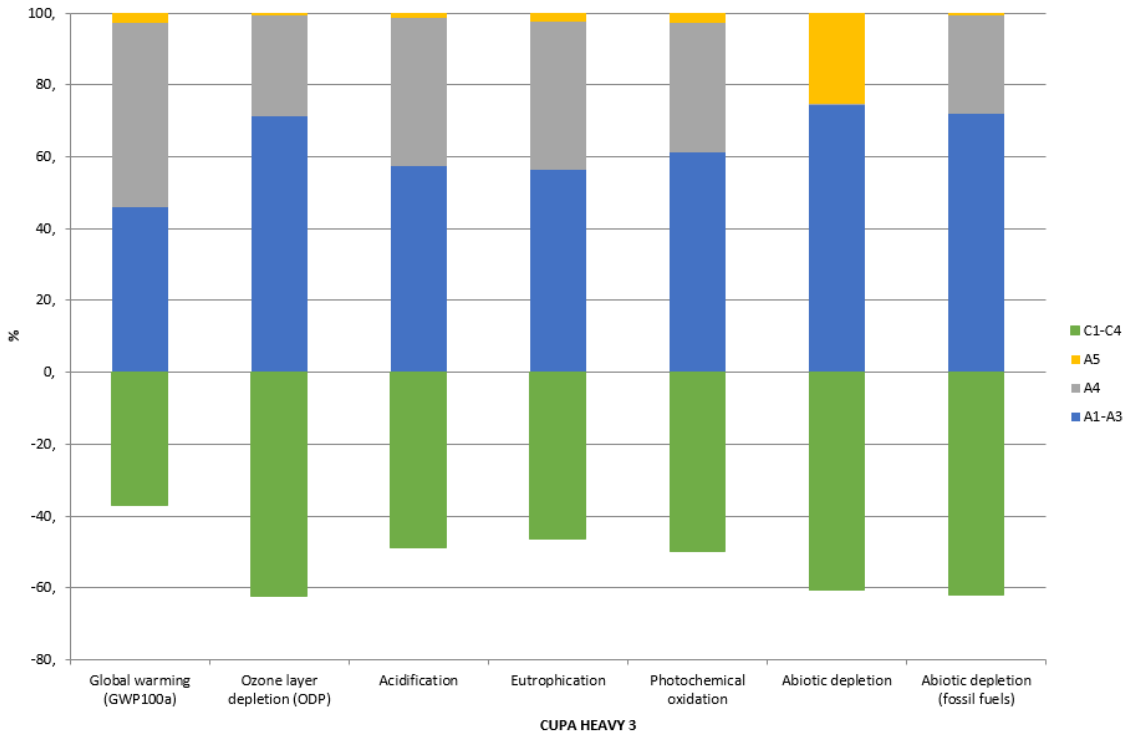


Figure 1. *Percentage of Total Impact for information Modules A1-C4.*

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