

## Environmental Product Declaration

BREG EN EPD No.: 000145

Issue: 01

ECO EPD Ref. No.: 000473

This is to certify that this verified Environmental Product Declaration provided by:

**ROCKPANEL Group**

Is in accordance with the requirements of:

**EN 15804:2012+A1:2013**

This declaration is for:

**ROCKPANEL® FS-Xtra Cladding Panel**



### Company Address

PO Box 1160  
Roermond  
The Netherlands  
6040 KD



Emma Baker  
Operator

19 December 2016  
Date of this Issue

19 December 2016  
Date of First Issue

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Expiry Date



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## EPD verification and LCA details

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 <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External
Third party verifier <sup>b</sup> : <b>Kim Allbury</b>
a: Product category rules b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)

LCA Consultant	Verifier
Fei Zhang BRE Ltd Bucknalls Lane Watford WD25 9XX www.bre.co.uk	Kim Allbury BRE Global Bucknalls Lane Watford WD25 9XX www.bre.co.uk

## General Information

### Summary

This environmental product declaration is for 1 square metre of ROCKPANEL® FS-Xtra Cladding Panel produced by ROCKPANEL Group at the following manufacturing facilities:

Roermond Site  
 ROCKPANEL GROUP  
 Konstruktieweg 2  
 Roermond  
 6045 JD  
 Netherlands

This is a Cradle to gate with options EPD. The life cycle stages included are as shown below (X = included, MND = module not declared):

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	Transport	Waste processing	Disposal	Reuse, Recovery and/or Recycling potential
X	X	X	X	MND	MND	X	MND	MND	MND	MND	MND	MND	MND	MND	X	MND

### Programme Operator

BRE Global, Watford, Herts, WD25 9XX, United Kingdom.

This declaration is based on the BRE Environmental Profiles 2013 Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013.

### Comparability

Environmental declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A1:2013. Comparability is further dependent on the product category rules used and the source of the data, e.g. the database. See EN 15804:2012+A1:2013 for further guidance.

## Construction Product

### Product Description

ROCKPANEL® board material is used, mostly in ventilated constructions, for facade cladding, roof detailing, soffits and fascias. The product is manufactured from the sustainable rock, basalt. ROCKPANEL® is a very robust and flexible board material which fits perfectly with modern trends such as organic shapes and sustainability, with a strong emphasis on cost efficiency and short installation times. [www.Rockpanel.com](http://www.Rockpanel.com)

## Technical Information

Property	Value	Unit
Thickness	9.0 ± 0.5	mm
Length, max	3050	mm
Width, max	1250	mm
Density, nominal	1250 ± 100	kg/m <sup>3</sup>
Bending strength (BS EN 310 / EN 1058)	length and width f <sub>05</sub> greater than or equal to 25.5	N/mm <sup>2</sup>
Modulus of elasticity	greater than or equal to 4740	N/mm <sup>2</sup>
Thermal conductivity	0.55	W/(m.K)
Fire classification, on aluminium subframe	A2-s1, d0	n/a

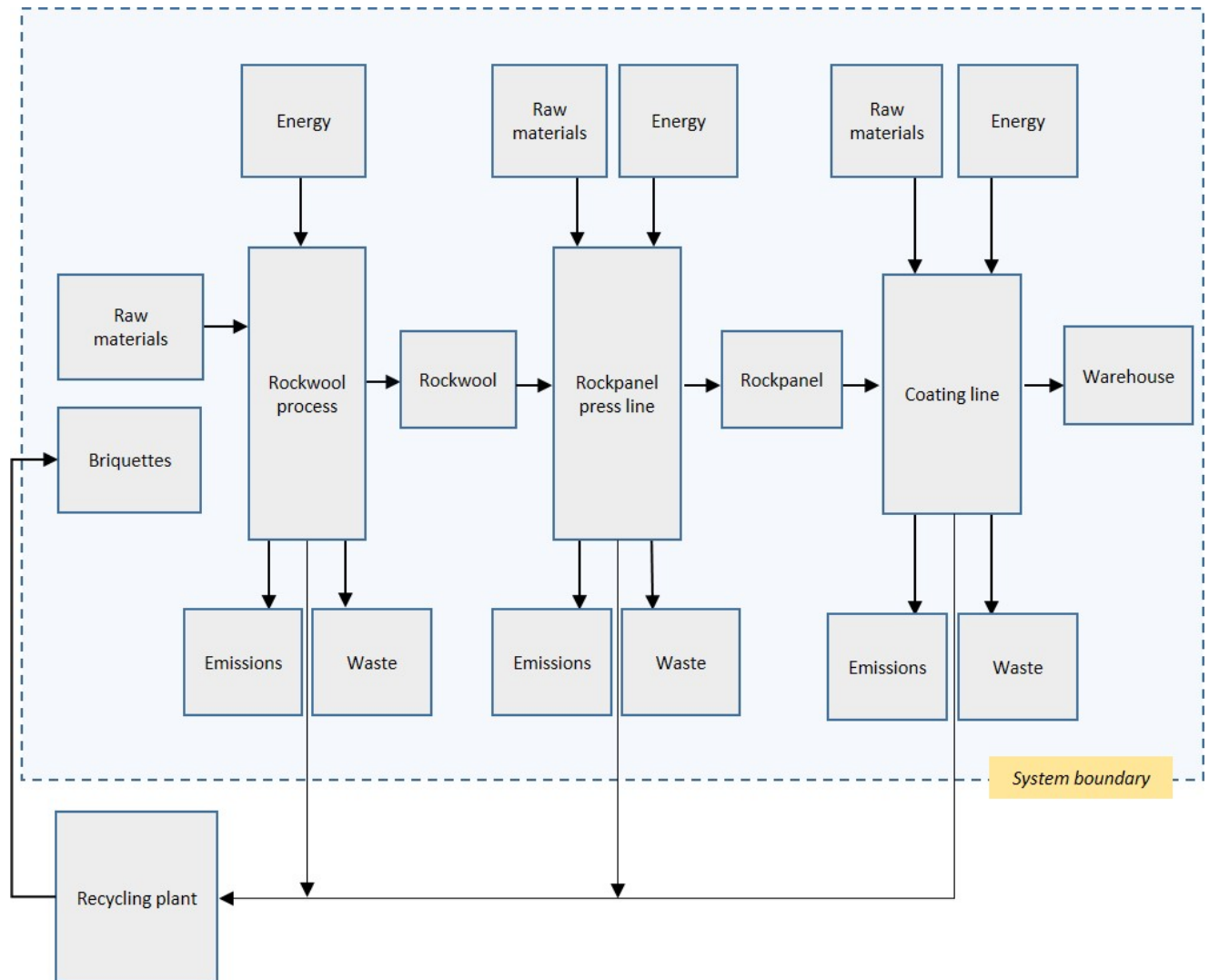
## Product Contents

Material/Chemical Input	%
Stone wool	90 - 92
Binder	7 - 9
Cured coating	0 - 2.5

## Manufacturing Process

The sustainable ROCKPANEL® board material is - like all ROCKWOOL products - produced from the natural source basalt rock. This is the volcanic rock from which all ROCKWOOL products derive their unique properties. The basalt is melted and spun into fibres. From these fibres the high density board is pressed in a state of the art press line. The board is finished with a waterborne coating system which has a high durability. Products such as the Woods, Metallics and Chameleon are finished with an extra ProtectPlus coating which creates a self-cleaning surface with an even higher weathering resistance.

The process flow diagram is shown below:



### Construction Installation

ROCKPANEL® FS-Xtra boards are fastened to aluminium sub-frames. Fastening to aluminium sub-frame is carried out with corrosion resistant rivets. Mechanical fasteners, gaskets and aluminium profiles are specified by the ETA holder.

### Use Information

The boards are intended for external cladding and for fascias and soffits. The cladding on vertical aluminium support shall be carried out with a ventilated cavity at the back.

### Reference Service Life

The assumed intended working life of the boards for the intended use is 60 years, provided that they are subject to appropriate use and maintenance. This means that it is expected that, when this working life has elapsed, the real working life may be, in normal use conditions, considerably longer without major degradation affecting the essential requirements. The indications given as to the working life of the boards cannot be interpreted as a guarantee given by ROCKWOOL B.V. / ROCKPANEL Group.

## End of Life

The ROCKPANEL® boards can be recycled at the end of life. For this the manufacturer can be contacted. Cutting waste can be disposed of in accordance with regulations and procedures in force in country of use or disposal. The boards contain no dangerous materials. No biocides or flame retardant are used in the ROCKPANEL® boards.

## Life Cycle Assessment Calculation Rules

### Declared / Functional unit

The declared unit is 1 m<sup>2</sup> of ROCKPANEL® FS-Xtra cladding panel.

### System boundary

In accordance with the modular approach as defined in EN 15804:2012, this cradle-to-gate with options EPD includes the product stage (A1-A3), transport to site (A4), maintenance (B2) and disposal at end-of-life (C4).

### Data sources, quality and allocation

Specific foreground data derived from the ROCKPANEL B.V. production process at Roermond is used in the production LCA for modules A1-A3. Generic data is used for all other upstream and downstream processes that are beyond the control of the manufacturer (i.e. raw material production). Modelling of the life cycle of ROCKPANEL® FS-Xtra is performed using SimaPro 8 LCA software from PRé. Background LCI datasets are taken from ecoinvent database v3.2. Where the creation of BRE background datasets was required, these were created using ecoinvent datasets. In accordance with the requirements of EN 15804, the most current available data is used. The manufacturer-specific data from ROCKPANEL B.V. covers a production period of 1 year (01/01/2013 to 31/12/2013). Allocation procedures in the background datasets is according to EN 15804 and are based on the ISO 14044 guidance. ROCKPANEL B.V. manufactures other finished products at the Roermond site in addition to those covered by this EPD. Calculations were performed to enable allocation of total site energy use, water use, waste and emissions to the ROCKPANEL® FS-Xtra product.

### Cut-off criteria

All raw materials, packaging materials and consumable item inputs, and associated transport to the plant, process energy and water use, direct production waste emissions to air and water are included.

## LCA Results

(INA = Indicator not assessed, AGG = Aggregated, NA = Not Applicable)

Indicator	Unit	A1	A2	A3	A1-A3	A4	B2	C4
		Raw Material supply	Transport to factory	Manufacturing	Merged A1/A2/A3	Transport to site	Maintenance	Disposal
<b>Environmental impacts per declared/functional unit</b>								
GWP	kg CO <sub>2</sub> eq.	AGG	AGG	AGG	8.78	2.03	2.81	8.56
ODP	kg CFC 11 eq.	AGG	AGG	AGG	1.16E-06	3.73E-07	3.26E-07	3.60E-08
AP	kg SO <sub>2</sub> eq.	AGG	AGG	AGG	0.0628	0.00679	0.0247	0.00209
EP	kg (PO <sub>4</sub> ) <sup>3-</sup> eq.	AGG	AGG	AGG	0.0166	0.00183	0.00604	0.035
POCP	kg C <sub>2</sub> H <sub>4</sub> eq.	AGG	AGG	AGG	0.0118	0.00118	0.00254	0.00151
ADPE	kg Sb eq.	AGG	AGG	AGG	9.61E-05	5.36E-06	2.71E-05	6.72E-07
ADPF	MJ eq.	AGG	AGG	AGG	210	30.7	51.00	4.05
GWP = Global Warming Potential (Climate Change); ODP = Ozone Depletion Potential; AP = Acidification Potential for Soil and Water; EP = Eutrophication Potential; POCP = Photochemical Ozone Creation; ADPE = Abiotic Depletion Potential – Elements; ADPF = Abiotic Depletion Potential – Fossil Fuels								
<b>Resource use</b>								
PERE	MJ	AGG	AGG	AGG	51.5	0.46	4.08	0.201
PERM	MJ	AGG	AGG	AGG	0.000363	1.59E-06	2.07E-05	3.64E-07
PERT	MJ	AGG	AGG	AGG	51.5	0.46	4.08	0.201
PENRE	MJ	AGG	AGG	AGG	219	30.6	54.9	4.20
PENRM	MJ	AGG	AGG	AGG	0.00	0.00	0.00	0.00
PENRT	MJ	AGG	AGG	AGG	219	30.6	54.9	4.20
SM	kg	AGG	AGG	AGG	0.00	0.00	0.00	0.00
RSF	MJ	AGG	AGG	AGG	0.00	0.00	0.00	0.00
NRSF	MJ	AGG	AGG	AGG	0.00	0.00	0.00	0.00
FW	m <sup>3</sup>	AGG	AGG	AGG	0.317	0.00695	0.137	0.00487
PERE = Use of renewable primary energy excluding renewable primary energy resources 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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water								
<b>Waste to disposal</b>								
HWD	kg	AGG	AGG	AGG	0.967	0.0135	0.355	0.0548
NHWD	kg	AGG	AGG	AGG	1.08	1.42	0.92	10.4
TRWD	kg	AGG	AGG	AGG	0.000448	0.000212	0.000159	2.09E-05
RWDHL	kg	AGG	AGG	AGG	4.23E-06	2.07E-07	1.61E-06	9.65E-08
HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; TRWD = Total Radioactive waste disposed; RWDHL = Radioactive waste disposed (high-level nuclear waste)								
<b>Other output flows</b>								
CRU	kg	AGG	AGG	AGG	0.283	0.00	0.00	0.00
MFR	kg	AGG	AGG	AGG	0.00	0.00	0.00	0.00
MER	kg	AGG	AGG	AGG	0.00	0.00	0.00	0.00
EE	MJ	AGG	AGG	AGG	0.00	0.00	0.00	0.00
CRU = Components for reuse; MFR = Materials for recycling; MER = Materials for energy recovery; EE = Export energy								

## Scenarios and Additional Technical Information

Module A4 – Transport to the building site				
Vehicle Type	Fuel Consumption (L/km)	Distance (km)	Capacity Utilisation (%)	Density Of Product (kg/m <sup>3</sup> )
Lorry - diesel	0.227	1069.5	24	1250
Train, electric - electricity	0.0478 kWh/tkm	50.5	50	1250
Train, electric - diesel	0.000677 kg/tkm	50.5	50	1250

Module B2 - Maintenance			
Parameter	Description	Unit	Value
Maintenance process description or source of information	Reapplication of ROCKPANEL® waterborne coating over the 60 year study period	year	15

End-of-life modules – C1, C3, and C4			
Parameter	Description	Unit	Value
Waste for final disposal	ROCKPANEL® FS-Xtra cladding panel from demolition to landfill	%	90
Waste for final disposal	ROCKPANEL® FS-Xtra cladding panel from demolition to incineration	%	10

## Interpretation

The raw material inputs to the ROCKPANEL® FS-Xtra cladding product and the fuels consumed in the manufacturing process, transport of product to site, and in the end-of-life processes are responsible for the majority of the impacts to the environment.

In the production stage (A1-A3), impacts can be attributed to emissions associated with the combustion of and extraction of fossil fuels used in the manufacturing process and production or processing of the raw material inputs.

In the transport of the product to site scenario (A4), impacts results from the direct emissions from the combustion of diesel used in the lorries and to produce the electricity used for train transport, the upstream processing of this diesel fuel and depletion of fossil fuel resources.

Impacts from the maintenance scenario (B2) are attributed to the waterborne coating input, the manufacture of this, and associated extraction of resources.

For the end-of-life disposal scenario (C4), impacts result from the associated emissions from fuel consumption in transport and machinery processes carried out at the landfill site, from the upstream processing of the diesel fuel used in landfill machinery and grid electricity used direct at the landfill. Impacts from incineration result from emissions associated with combustion and depletion of fossil fuel resources.

The environmental impacts from the product stage are greater than the impacts from all other stages modeled. This can be seen in the graph below showing GWP impacts for the ROCKPANEL® FS-Xtra cladding product by declared module.



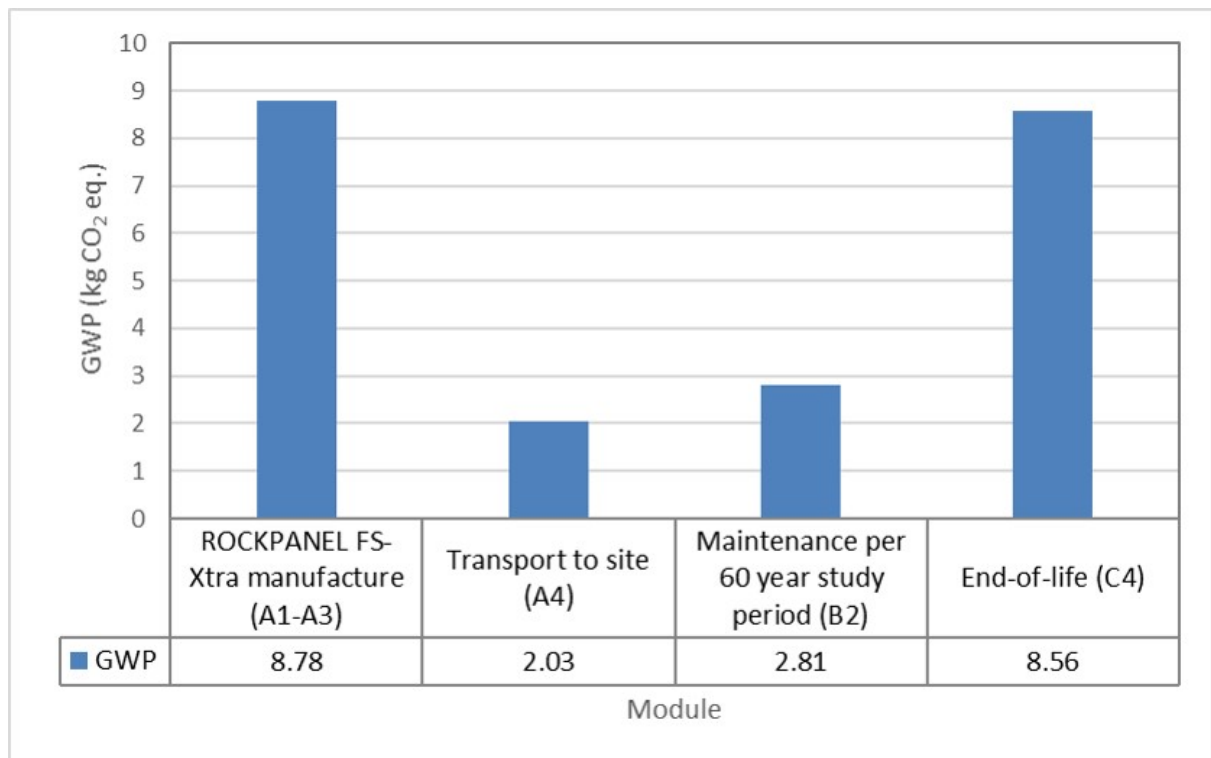


Figure 1

## Sources of additional information

BRE Global. BRE Environmental Profiles 2013: Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013. PN 514. Watford, BRE, 2014.

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.

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BS EN 310:1993, Wood-based panels. Determination of modulus of elasticity in bending and of bending strength

BS EN 1058:2009, Wood-based panels. Determination of characteristic 5-percentile values and characteristic mean values

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Rockpanel, Material Properties of Rockpanel board material. <http://www.rockpanel.co.uk/material+properties>