

Statement of Verification

BREG EN EPD No.: 000236

Issue 1

This is to verify that the
Environmental Product Declaration
provided by:
Lapitec Spa



is in accordance with the requirements of:
EN 15804:2012+A1:2013
and
BRE Global Scheme Document SD207

This declaration is for:
1kg of Lapitec Sintered Stone Slab

Company Address

Lapitec SpA
Via Bassanese 6
31050 Veduggio TV
Italy



Laura Critien
Operator

10 January 2019
Date of this Issue

10 January 2019
Date of First Issue

09 January 2024
Expiry Date



This Statement of Verification is issued subject to terms and conditions (for details visit www.greenbooklive.com/terms.)

To check the validity of this statement of verification please, visit www.greenbooklive.com/check or contact us.

BRE Global Ltd., Garston, Watford WD25 9XX.
T: +44 (0)333 321 8811 F: +44 (0)1923 664603 E: Enquiries@breglobal.com

Environmental Product Declaration

EPD Number: 000236

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
Lapitec SpA Via Bassanese 6 31050 Veduggio TV Italy	Fei Zhang
Declared/Functional Unit	Applicability/Coverage
1 kg of Lapitec sintered stone slab	Manufacturer product specific
EPD Type	Background database
Cradle to Gate	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 <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External	
(Where appropriate ^b)Third party verifier: Nigel Jones	
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
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

Lapitec SpA Via Bassanese 6 31050 Vedelago TV Italy	Click here to enter address.
--	------------------------------

Construction Product

Product Description

Lapitec is a non-porous sintered stone slab made with a range of surface textures, in three thicknesses of 12 mm, 20 mm, and 30 mm. Its uses in construction and interior design, as both internal and external cladding, paving and flooring, as well having uses as worktop surfaces and in swimming pools.

Technical Information

Characteristics of the Lapitec sintered stone slabs covered in this LCA can be seen in the table below. Further technical characteristics of the Lapitec sintered stone slabs can be found in the product specification datasheet (<https://www.lapitec.com/download/Certificates>).

Property	Value, Unit
Standard dimensions (length x breadth), EN 14617-16	3365 mm x 1500 mm
Thicknesses, EN 14617-16	12 mm, 20 mm, 30 mm
Density, EN 14617-1	2400 kg/m ³
Mass per m ² (for 12 mm, 20 mm and 30 mm thicknesses)	28.8 kg/m ² , 48.0 kg/m ² , 72.0 kg/m ²
Flexural strength, EN 14617-2	54.8 N/mm ²
Compressive strength, ASTM C170	483 N/mm ²

Main Product Contents

Composition of the Lapitec sintered stone slabs in terms of solid input content prior to firing can be seen in the table below.

Material/Chemical Input	% mass
Minerals	84
Frit	11
Silica solids (from colloidal silica)	3
Iron oxide	2

Manufacturing Process

Once received and tested, raw materials are ground to a fine powder. When required, the ground raw materials are taken from silos in measured quantities to be mixed. Water is added to the powdered raw materials and a homogenous mixture created. The mixture is pressed into slab shapes and slabs are dried at 200°C prior to entry in the kiln where they are sintered at temperatures up to 1190°C. After cooling, slabs are then polished or textured (depending on the required aesthetics of the final product) and are packaged for dispatch or storage.

Process flow diagram



Life Cycle Assessment Calculation Rules

Declared / Functional unit description

The declared unit of the Lapitec sintered stone slabs is 1 kg. The weight per m² of each slab thickness have been given which the user can apply to obtain results for 1m² of slab at each of the three manufactured thicknesses.

System boundary

The system boundary of the EPD is according to the modular approach as defined in EN 15804. This cradle-to-gate EPD includes the product life cycle stages of A1 to A3.

The product stage covered by these modules, includes the provision of all materials, products and energy, as well as waste processing up to the end-of-waste state (i.e. no longer considered a waste material) or disposal of final residues during the product stage.

Upstream processes relating to resource extraction e.g. extraction of clay are included in the system. All energy used in factories and factory support offices is included but energy used in head offices and sales offices etc. are excluded. Maintenance of equipment is also not included.

Data sources, quality and allocation

The LCA study was carried out using SimaPro v8 software. Manufacturer specific primary data was collected and provided by Lapitec for the Vedelago manufacturing site in Italy, for the 12 months of 2017.

Only sintered stone slabs are made at Lapitec so no allocation of site data was required. An uplift of raw materials was applied to account for production waste.

Secondary data for upstream and downstream processes are provided by the use of ecoinvent v3.2 LCI datasets. Where no exact match datasets were available to represent some raw materials, other ecoinvent v3.2 proxy datasets were used, based on

Cut-off criteria

No inputs or outputs have been excluded. The inventory process in this LCA includes all data related to raw material and packaging of the products, as well as the associated transport of such materials to the manufacturing site. Energy and water use, direct production waste, non-production waste and wastewater to sewer are included.

LCA Results

The tables below show the characterised results for the production stage (A1 – A3) of 1kg of Lapitec sintered stone slab. To obtain results per m² of Lapitec sintered stone slabs of 12 mm, 20 mm and 30 mm thicknesses, multiply by their weights per m², of 28.8 kg, 48.0 kg and 72.0 kg, respectively.

(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 ₂ H 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	1.63	2.24E-07	0.007955	0.00193	0.000770	5.24E-06	25.4

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	3.72	5.58E-06	3.72	27.6	0	27.6

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	0.0233

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	0.0614	0.167	8.55E-05	

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	0.704	0	0

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

Summary, comments and additional information

Interpretation of results

The graph in Figure 1 shows that the total GWP value for the production stage of 1kg of Lapitec sintered stone slab is 1.63 kg CO₂ eq. Approximately 62% of this value arises from the electricity usage on site, mainly from the upstream combustion of coal linked to a component of the Italian mains electricity mix.

At 9.6%, largely the combustion of fuels required for the transport of raw materials and packaging to site is the second highest contributor to the GWP value. This is closely followed at 9.5% by the upstream production of the iron oxide pigments.

Cumulatively the raw materials are responsible for 23% of the total GWP value with the frit being the highest contributing raw material after the iron oxide pigments

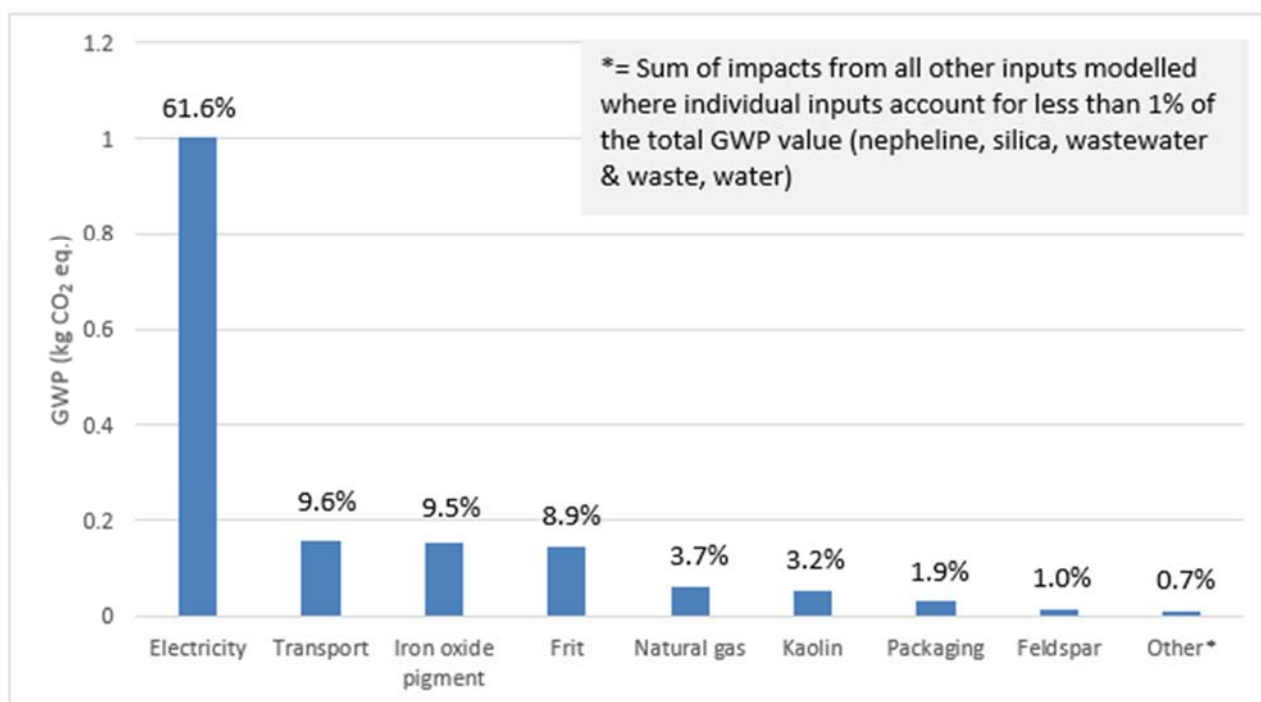


Figure 1: GWP (kg CO₂ eq.) per kg of Lapitec sintered stone slab production (modules A1-A3)

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.