Statement of Verification

BREG EN EPD No.: 000112 Issue 02

ECO EPD Ref. No. 000458

This is to verify that the

Environmental Product Declaration

provided by:

Sika Ltd

is in accordance with the requirements of:

EN 15804:2012+A1:2013

and

BRE Global Scheme Document SD207

This declaration is for:

Sikalastic®-618

Company Address

Watchmead
Welwyn Garden City
AL7 1BQ

BUILDING TRUST

Signed for BRE Global Ltd	Emma Baker Operator	24 February 2022 Date of this Issue
28 November 2016 Date of First Issue		27 November 2026 Expiry Date

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Environmental Product Declaration

EPD Number: 000112

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	Text: e.g. 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**
Sika Ltd Watchmead Welwyn Garden City AL7 1BQ United Kingdom	Sika Services AG Tüffenwies 16 8048 Zurich Switzerland
Declared/Functional Unit	**Applicability/Coverage**
1 m^2 Sikalastic® 618 system	Product Average.
EPD Type	**Background database**
Cradle to Gate with options	ecoinvent and GaBi

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: Julia Barnard
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)

Sika House Miller Street Preston PR1 1EA United Kingdom	

Construction Product:

Product Description

Sikalastic®-618 is a single component, cold applied, moisture-triggered polyurethane membrane. It cures to for a seamless durable and weather resistant waterproofing solution for exposed roof areas. The results in this EPD refer to the standard 1.3 mm system, consisting of an embedment layer of 1 L/m2 and Sika Reemat Premium reinforcement, and a top coat of 0.75 L/m2.

Technical Information

Property	Value, Unit
Tensile elongation	~20%
Water vapour transmission	13.9 g/m²/24h
Dry film thickness	~1.3 mm
Density as per EN ISO 2811-1 (at +23°C)	~1.38 kg/L
Flash point	44°C
Tensile strength	14.5 N/mm²
Tensile load	660 N / 30 mm
Tear force	15.2 N
Tear strength	~14 N/mm
Resistance to wind loads	> 50 kPa

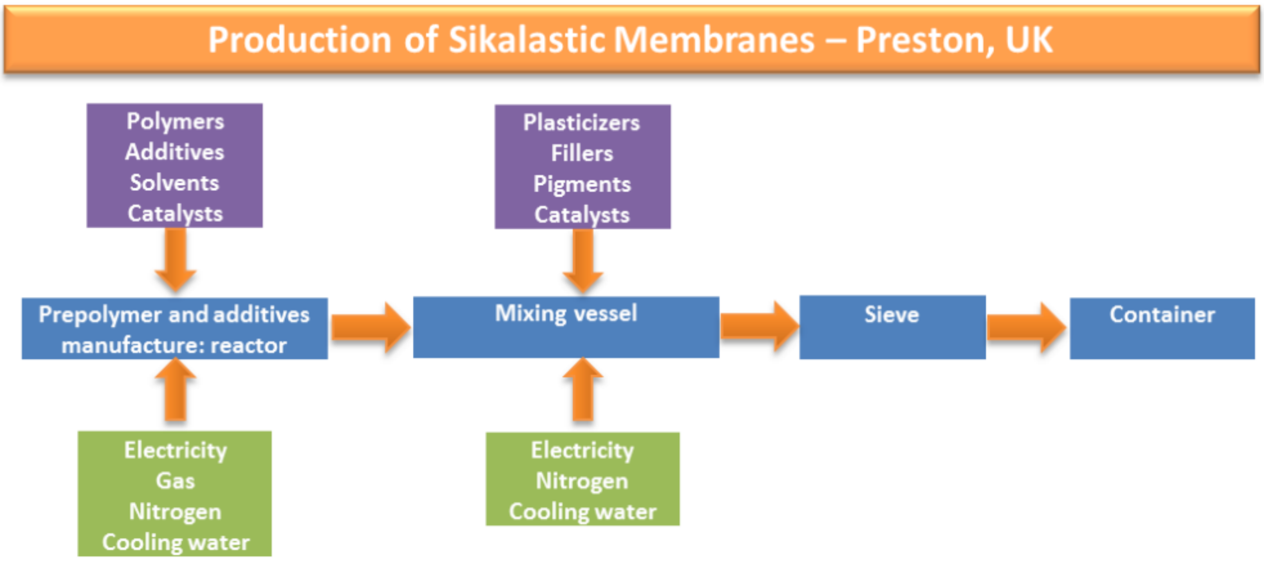
Main Product Contents

Material/Chemical Input	%
Polymers	20 - 40
Plasticizer	10 - 2
Additives	<5
Pigments	5 - 15
Solvent	15 - 30
Fillers	20 - 40

Manufacturing Process

A computer-generated batch card is raised with details of the required raw material proportions, order of additions and production conditions. This process is followed by the manufacture of a pre-polymer and hardener by Incorez Ltd under the control of Sika Liquid Plastics, in accordance with formal quality plans. The specified ingredients are blended and reacted together in stainless steel cylindrical mixing vessels in accordance with pre-set parameters which include temperature, mixing, time, vacuum pressure, and this is done under a nitrogen blanket to eliminate moisture. Every batch is QC tested both in process and on completion in accordance with formal quality plans. Once completed the batches are gravity fed via a filtering system into filing hoppers and tinned off as specified with nitrogen purging to each container.

Process flow diagram



Construction Installation

The Sikalastic®-618 is a single pack polyurethane coating that is cold applied on site; it cures to provide completely seamless waterproofing protection with an aesthetically pleasing finish. The product is available in a range of colours. The membrane is fully reinforced with glass fibre mat, which is easily moulded around detail areas allowing speed of application on complex roofs.

Use Information

Installation works must be carried out only by registered Liquid Plastics Contractors, in accordance with Sika limited Instructions and the liquid plastics project specification. During the service life of the membrane system there is no ordinary maintenance, repair/refurbishment or replacement required, if it is correctly and properly applied. Therefore, no scenario for the use phase and maintenance is defined.

Reference Service Life

The reference service life of Sikalastic®-618 membranes is as stated by the ETA Certificate 12/0316.
The provisions made in this ETA are based on an assumed working life of up to 10 years.

End of Life

When the Sikalastic®-618 reaches the end of its life, the system may be primed and further material applied. At the end of its service life the building is demolished, and as the Sikalastic® membrane systems are attached to the substrate it is generally taken to landfill. The demolition process concerns mainly the structure of which the membrane system is a minor part. Therefore, for this stage no other steps are considered necessary except for the transportation to landfill and landfilling.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1 m^2 of Sikalastic®-618 system for a reference service life of 10 years.

System boundary

In accordance with the modular approach as defined in EN 15804, this cradle to gate with options EPD includes the product stage (A1-A3), construction process stage (A4-A5), and end-of-life stage (C1-C4).

Data sources, quality and allocation

The primary data provided by Sika derive from the plant at Preston, UK for 2014, with total site mass-weighted allocation to product, as the process is similar for all membranes produced there. Background LCI datasets are taken from the databases of GaBi software and ecoinvent Version 3.1. All datasets are less than 10 years old.Benefits from incineration and landfilling of product losses and for the disposal of packaging are credited in Module D; this also applies to the reuse of wooden pallets.

Cut-off criteria

All data was taken into consideration (recipe constituents, thermal energy used, electricity used). Transportation was considered for all inputs and outputs. The manufacturing of the production machines and systems and associated infrastructure were not taken into account in the LCA.

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	8.33	2.51E-07	0.0336	1.13	0.00439	3.44E-05	159
Construction process stage	Transport	A4	0.0413	1.90E-13	0.0002	4.86E-05	2.24E-05	2.75E-09	0.569
	Construction	A5	3.90	2.51E-08	0.00704	0.115	0.132	2.58E-05	23.8
End of life	Deconstruction, demolition	C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transport	C2	0.0352	0.00	0.000156	4.02E-05	1.58E-05	0.00	0.00
	Waste processing	C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Disposal	C4	0.0388	3.81E-13	0.000232	3.16E-05	2.23E-05	1.34E-08	0.504
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-0.0106	-2.59E-09	-5.03E-04	-0.0011	-6.35E-05	-1.38E-07	-1.92

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	13.4	1.37	14.8	132	32.1	171
Construction process stage	Transport	A4	0.00	0.00	0.0324	0.00	0.00	0.571
	Construction	A5	1.34	0.137	2.65	13.2	10.3	25.7
End of life	Deconstruction, demolition	C1	0.00	0.00	0.00	0.00	0.00	0.00
	Transport	C2	0.00	0.00	0.00	0.00	0.00	0.00
	Waste processing	C3	0.00	0.00	0.00	0.00	0.00	0.00
	Disposal	C4	0.00	0.00	0.0594	0.00	0.00	0.522
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00	0.00	-3.36	0.00	0.00	-2.81

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	0.00	0.00	0.00	0.072
Construction process stage	Transport	A4	0.00	2.04E-06	3.11E-05	8.10E-05
	Construction	A5	0.00	0.00	0.00	0.00918
End of life	Deconstruction, demolition	C1	0.00	0.00	0.00	0.00
	Transport	C2	0.00	0.00	0.00	0.00
	Waste processing	C3	0.00	0.00	0.00	0.00
	Disposal	C4	0.00	0.000969	0.00198	0.000106
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00	-2.65E-05	-4.02E-04	-0.00137

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	0.0015	0.644	0.00367
Construction process stage	Transport	A4	4.32E-08	4.80E-05	8.16E-07
	Construction	A5	0.00015	2.23	0.000643
End of life	Deconstruction, demolition	C1	0.00	0.00	0.00
	Transport	C2	0.00	0.00	0.00
	Waste processing	C3	0.00	0.00	0.00
	Disposal	C4	1.19E-08	2.42	7.22E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.43E-09	-0.00136	-3.37E-04

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	0.00	0.00	0.00	0.00
Construction process stage	Transport	A4	0.00	0.00	0.00	0.00
	Construction	A5	0.00	0.00	0.00	1.08
End of life	Deconstruction, demolition	C1	0.00	0.00	0.00	0.00
	Transport	C2	0.00	0.00	0.00	0.00
	Waste processing	C3	0.00	0.00	0.00	0.00
	Disposal	C4	0.00	0.00	0.00	0.00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00	0.00	0.00	0.00

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	Fuel Consumption (truck)	L/km	0.000051
	Distance	km	250
	Capacity Utilisation	%	85
	Density of Product	kg/m^3	1380
A5 – Installation in the building	Ancillary materials for installation - Sika® Reemat Premium reinforcement	kg/m^2	0.225
	Ancillary materials for installation - Overlap reinforcement	%	9
	Waste materials from installation Wastage – Losses	%	10
	Direct emissions to air, soil and water - VOC	kg/m^2	0.361
C1, C2, and C4 – End-of-life	Waste for final disposal - Landfill	%	100
C2 – Transport to waste processing	Fuel Consumption (truck)	L/km	0.000051
	Distance	km	250
	Capacity Utilisation	%	85
	Density of Product	kg/m^3	1380
D – Reuse/Recovery/Recycling Potential	The benefits from incineration and landfilling of waste produced during installation are credited in Module D as avoided generation of electricity and thermal energy. The partial reuse of pallets from packaging is also included in Module D as avoided production of new pallets.		

Summary, comments and additional information

Interpretation

The following chart (Figure 1) shows the relative contributions of the different modules to the various environmental impact categories and to primary energy use in a dominance analysis. It is clear that most impacts come from Module A1-3, though the installation of the system (A5) also contributes, due to the impacts from the membrane's application (the VOC emissions are visible for POCP - Photochemical Ozone Creation Potential), from the production of the reinforcement (especially for ADPE - Abiotic Depletion Potential – Elements) and due to the disposal of waste to landfill (contributing to GWP -Global Warming Potential). For this reason, the Product Stage is examined more closely in the following interpretation.

Energy resource use
Pre-product manufacturing (72%), packaging (21%) and the manufacturing process (7%) account for the total of the use of renewable primary energy resources (PERT). The manufacturing of raw materials (93%) has the greatest impact on the use of non-renewable primary energy resources (PENRT), while the impact of the production process (due to electricity and nitrogen consumption) measures 7%.

Environmental impacts
The dominant influence in all impact categories for Module A1-A3 comes from pre-product manufacturing, with at least 92% in each case, except for Eutrophication Potential (EP), where the production process contributes the most (76%), from nitrogen released during processing. Within pre-product manufacturing, polymers play an important role regarding GWP, EP, Photochemical Ozone Creation Potential (POCP), ADPE and Abiotic Depletion Potential - Fossil Fuels (ADPF). The pigments and fillers contribute the most to Acidification Potential for Soil and Water (AP) and ADPE. The solvents have a significant role in Ozone Depletion Potential (ODP) and POCP. The plasticiser partakes in the impacts to GWP and ADPF. The thickener and other additives contribution is negligible. The raw materials with the greatest effect on the impacts also show the greatest percentage by mass of the system: polymers, pigments/fillers and solvents. The manufacturing process (mainly the energy inputs, nitrogen input and release) contributes mostly to EP (76%) and GWP (6%).

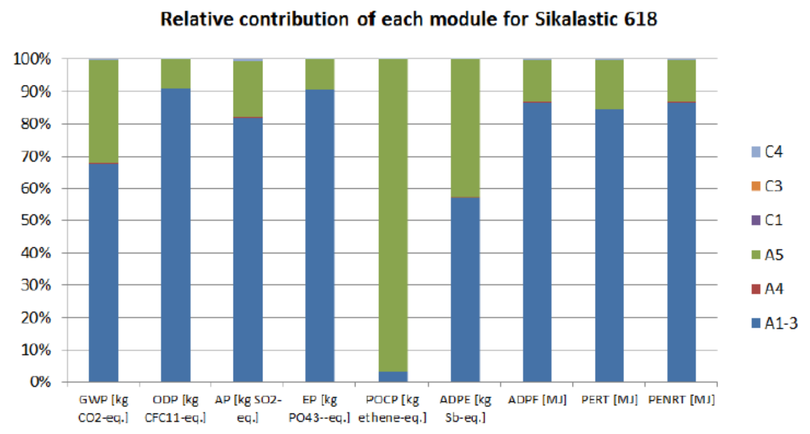


Figure 1

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