Statement of Verification

BREG EN EPD No.: 000113 Issue 02
ECO EPD Ref. No. 000459

This is to verify that the

Environmental Product Declaration

provided by:

Sika Ltd

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:

Decothane Ultra / Sikalastic®-641

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

Environmental Product Declaration

EPD Number: 000113

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**
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 of Decothane Ultra / Sikalastic®-641 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

Sika Liquid Plastics' Decothane Ultra or Sikalastic®-641 is a high performance polyurethane coating with low odour used for the Decothane Ultra 15, 20 and 25 systems, or Sikalastic® Economic, Standard, Enhanced and Premium systems. It cures to form a seamless, durable and weather resistant waterproofing solution for the exposed roof areas. The results in this EPD refer to the Ultra 15 or Standard system, consisting of an embedment layer of 1.25 L/m^2 and Sika Reemat Premium reinforcement, and a top coat of 0.55 L/m^2.

Technical Information

Property	Value, Unit
Vapour permeability as per EN 1931 Method B (μ)	NPD
Dry film thickness	~1.5 mm
Density as per EN ISO 2811-1 (at +20°C)	1.41 kg/L
Flash point	> 100°C
Tensile strength as per CQP 037-1	6.4 N/mm²
Tensile load as per CQP 037-1	240 N / 25 mm
Tear strength as per CQP 037-1	23 N/mm
Elongation at break CQP 037-1	50%
Water vapour transmission as per EN 1931 Method B	NPD g/m²/24 h

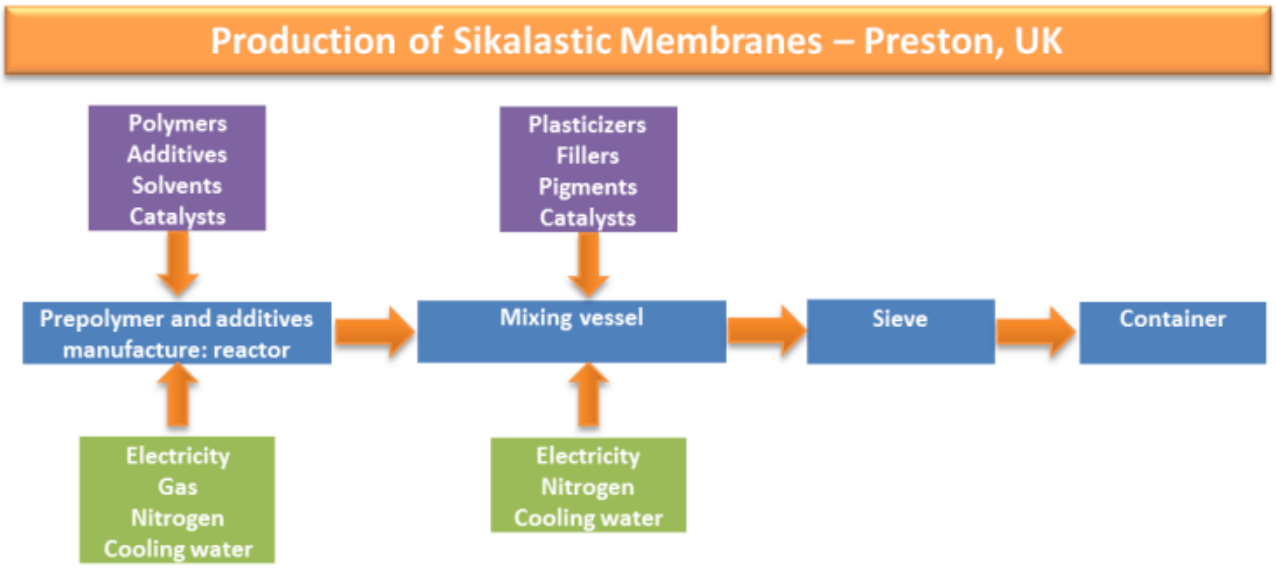
Main Product Contents

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

Manufacturing Process

A computer-generated batch card is raised with details of the required raw material proportions, order of addition 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 the filling hoppers and tinned off as specified with nitrogen purging to each container.

Process flow diagram



Construction Installation

The Decothane Ultra / Sikalastic®-641 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 following speed of application.

Use Information

Installation works must be carried out only be 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 to service life of Decothane Ultra / Sikalastic®-641 membranes is as stated by the BBA Agrement Certificate 14/5158.
Accelerated weathering tests confirms that a satisfactory retention of properties is achieved. All available evidence indicates that the Decothane Ultra 20 and Ultra 25 Roof Waterproofing System should achieve an initial life expectancy of up to 25 years depending on film thickness, and Decothane Ultra 15 at least 10 years, with a 15 year guarantee. See BBA for details.

End of Life

When the Decothane Ultra / Sikalastic®-641 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 installed Decothane Ultra / Sikalastic® -641 system for a reference service life of 15 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	8.83	1.30E-07	0.0298	0.991	0.00317	2.35E-05	164
Construction process stage	Transport	A4	0.0388	1.78E-13	0.000188	4.57E-05	2.11E-05	2.58E-09	0.535
	Construction	A5	3.79	1.30E-08	0.00661	0.102	0.0333	2.48E-05	24.1
End of life	Deconstruction, demolition	C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transport	C2	0.0367	0.00	0.000162	4.19E-05	1.65E-05	0.00	0.00
	Waste processing	C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Disposal	C4	0.0405	3.98E-13	0.000243	3.30E-05	2.33E-05	1.40E-08	0.526
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-0.0129	-2.38E-09	-4.69E-04	-0.00101	-5.88E-05	-1.27E-07	-1.79

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	12.6	1.26	13.8	145	25.2	176
Construction process stage	Transport	A4	0.00	0.00	0.0304	0.00	0.00	0.536
	Construction	A5	1.26	0.126	2.53	14.5	9.57	26.1
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	0.062	0.00	0.00	0.545
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00	0.00	-3.10	0.00	0.00	-2.63

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	0.0625
Construction process stage	Transport	A4	0.00	1.92E-06	2.92E-05	7.62E-05
	Construction	A5	0.00	0.00	0.00	0.00821
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	0.00101	0.00206	0.000111
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00	-2.49E-05	-3.78E-04	-0.00128

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	0.00424	0.973	0.00448
Construction process stage	Transport	A4	4.06E-08	4.51E-05	7.67E-07
	Construction	A5	0.000424	2.15	0.000717
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	1.25E-08	2.52	7.53E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.35E-09	-0.00128	-3.17E-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	1.01
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	AGG	AGG	AGG	AGG

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	1420
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	0.0885
C1, C3, 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	1420
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 displayed results apply to Sikalastic 641 Standard system/ Decothane Ultra 15. To calculate results for other systems (Ultra 25, Ultra 20), please use this formula:
Impact_x = ((x+3.8)/18.8)*Impact_15
[Impact_x = the unknown parameter value for Decothane Ultra systems products (e.g. 25, 20)]

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 ofrenewable primary energy resources (PERT). The manufacturing of raw materials (94%) 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 5%.

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 (81%), from nitrogen released during processing. Within pre-product manufacturing, polymers play an important role regarding GWP, EP, Ozone Depletion Potential (ODP), Photochemical Ozone Creation Potential (POCP), and Abiotic Depletion Potential - Fossil Fuels (ADPF). The pigments/fillers contribute the most to Acidification Potential for Soil and Water (AP), POCP and ADPE. The solvents contribute mostly to ODP, ADPE and POCP. The plasticiser, thickener and other additives' contribution is not so significant. The raw materials with the greatest effect on the impacts also show the greatest percentage by mass of the system: polymers and pigments/fillers. The manufacturing process (mainly the energy inputs, nitrogen input and release) contributes mostly to EP (81%) and GWP (5%).

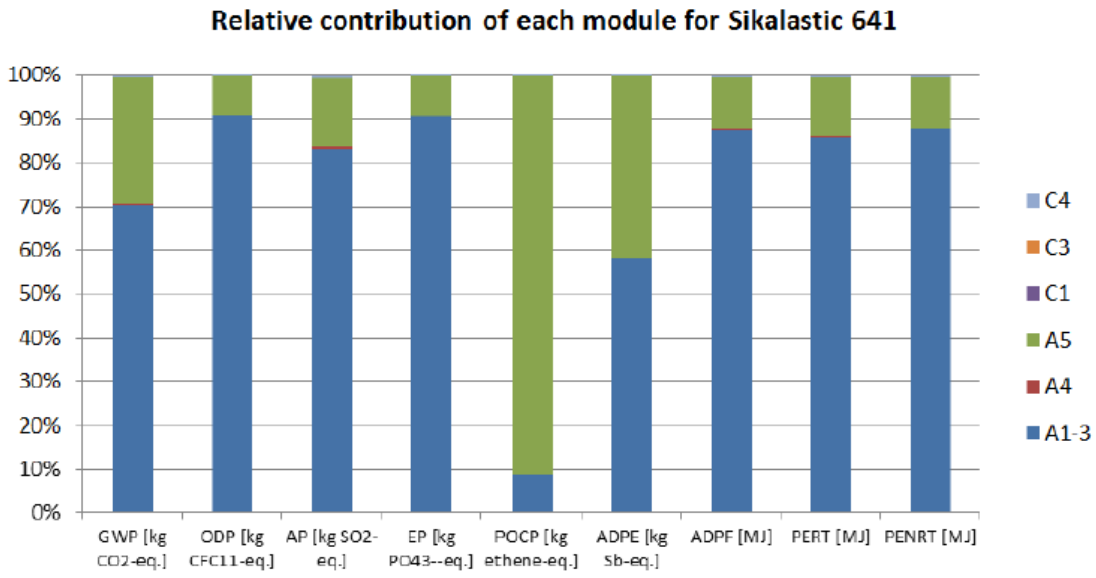


Figure 1

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