Statement of Verification

BREG EN EPD No.: 000173 Issue 02

ECO EPD Ref. No. 00000643

This is to verify that the

Environmental Product Declaration

provided by:

Sika Services AG

is in accordance with the requirements of:

EN 15804:2012+A1:2013

and

BRE Global Scheme Document SD207

This declaration is for:

Sika® CoolRoof i-Cure/ SikaRoof® i-Cure

Company Address

Tüffenwies 16
8048 Zurich

BUILDING TRUST

Signed for BRE Global Ltd

Emma Baker
Operator

14 April 2023
Date of this Issue

02 February 2018
Date of First Issue

31 January 2025
Expiry Date

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Environmental Product Declaration

EPD Number: 000173

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 Services AG Tüffenwies 16 8048 Zurich www.sika.com/sustainability	Sika Services AG Tüffenwies 16 8048 Zurich www.sika.com/sustainability GaBi Version 7.3.3, Databases 2017 Edition
Declared/Functional Unit	**Applicability/Coverage**
This declaration is for Sika® CoolRoof i-Cure / SikaRoof® i-Cure - 1m^2 installed system for a reference service life of 15 years.	Product Specific.
EPD Type	**Background database**
Cradle to Gate with options	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: 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

Specific Sika® CoolRoof i-Cure / SikaRoof® i-Cure for the EMEA region. The EMEA extrapolation is based on UK data. The transport distances were adapted to EMEA region, typical and average transport distances at Sika in EMEA region were used for raw materials transport, as well as for transport to building site and transport to waste final disposal and processing.

Construction Product:

Product Description

Sika® CoolRoof i-Cure / SikaRoof® i-Cure is a cold applied and highly reflective waterproofing system with two components, Sikalastic®-631 as base coat and Sikalastic®-641 as top coat. It is applied to enhance surface appearance and to reduce cooling and overall energy consumption in conditioned buildings. It conforms with LEED® v2009/ v4 requirements and the attested initial SRI of 105 exceeds the cool roof requirements of LEED®.

The base coat component is a cold-applied, seamless, highly elastic moisture triggered polyurethane with significantly reduced odour, designed to provide easy application and a durable solution as part of the Sika® CoolRoof i-Cure / SikaRoof® i- Cure system. The top coat component is a high performance polyurethane coating with low odour and high UV stability, which cures to form seamless, durable and weather resistant waterproofing solution for the exposed roof areas.

The results in this EPD refer to the standard 1.5 mm system, consisting of an embeddment layer of 1 L/m^2 and Sika® Reemat Premium reinforcement, and a top coat of 0.75 L/m^2.

Technical Information

Property	Value, Unit
Tensile Strength as per CQP 037-1	6.4 N/mm^2
Tensile Load as per CQP 037-1	240 N/25mm
Tear Strength as per CQP 037-1	23 N/mm
Elongation at break CQP 037-1	50%
Solar reflectance	<108[1)]
Water vapour transmition as per EN 1931 method B	NPD $g/m^2/24h$
Service Temperature with Fleece	-30 °C min. / +90 °C max.

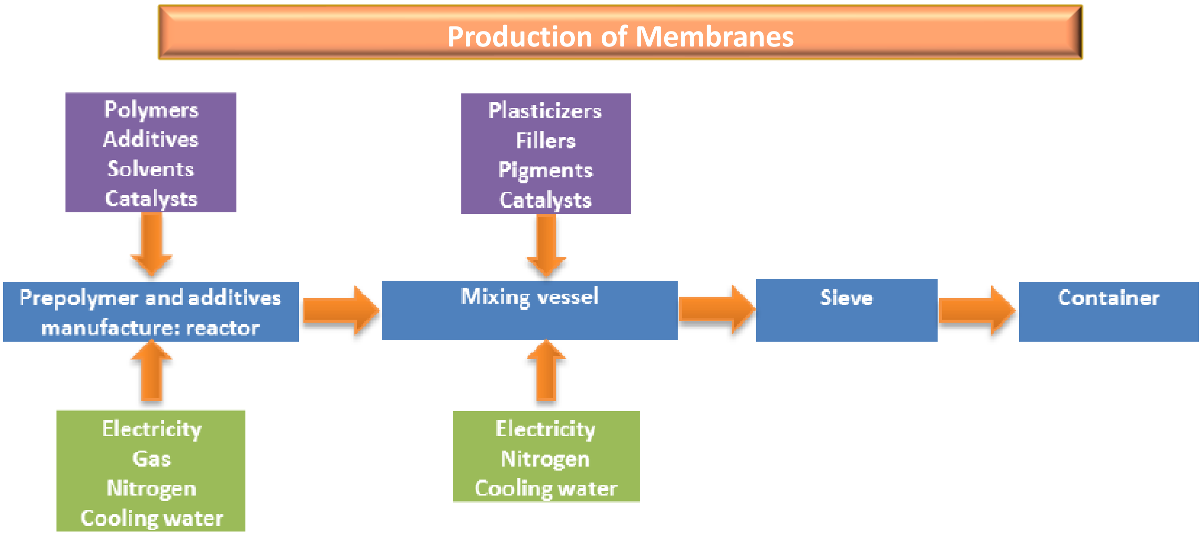
Main Product Contents

Material/Chemical Input	%
Polymers	20 – 40
Plasticizer	< 10
Additives	< 15
Pigments	< 5
Solvent	5 – 10
Fillers	30 – 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 Ltd, 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 Sika® CoolRoof i-Cure / SikaRoof® i-Cure 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 Sika® Reemat Premium reinforcement.

Use Information

Installation works must be carried out only by registered Sika contractors, in accordance with Sika instructions and the 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.

End of Life

When the Sika® CoolRoof i-Cure / SikaRoof® i-Cure 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 Sika® CoolRoof i-Cure / SikaRoof® i-Cure 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.

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Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1 m^2 installed 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 2016, with total site mass-weighted allocation to product, as the process is similar for all membranes produced there. The EMEA extrapolation is based on UK data. The transport distances were adapted to EMEA region, typical and average transport distances at Sika in EMEA region were used for raw materials transport, as well as for transport to building site and transport to waste final disposal and processing.

Background LCI datasets are taken from the databases of GaBi software Version 7.3.3 with Database 2017 and ecoinvent Version 3.3. All datasets are less than 6 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	1.62E-07	2.85E-02	1.93	2.68E-03	5.02E-05	1.62E+02
Construction process stage	Transport	A4	1.15E-01	3.85E-14	5.36E-04	1.32E-04	4.90E-05	9.24E-09	1.59
	Construction	A5	3.46	1.60E-08	3.36E-03	1.95E-01	1.49E-02	2.81E-06	1.81E+01
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0	0	0	0	0	0	0
	Transport	C2	3.86E-02	0	1.70E-04	4.40E-05	1.41E-05	0	0
	Waste processing	C3	0	0	0	0	0	0	0
	Disposal	C4	4.26E-02	4.02E-14	2.52E-04	3.44E-05	1.99E-05	1.53E-08	5.52E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-9.15E-03	-2.39E-09	-4.86E-04	-1.06E-03	-4.95E-05	-1.40E-07	-1.81

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	1.36E+01	1.32	1.49E+01	1.50E+02	1.91E+01	1.76E+02
Construction process stage	Transport	A4	0	0	7.98E-02	0	0	1.59
	Construction	A5	1.36	1.32E-01	1.56	1.50E+01	8.98	1.95E+01
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0	0	0	0	0	0
	Transport	C2	0	0	0	0	0	0
	Waste processing	C3	0	0	0	0	0	0
	Disposal	C4	0	0	6.67E-02	0	0	5.72E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0	0	-2.45	0	0	-2.68

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	9.36E-02
Construction process stage	Transport	A4	0	0	0	1.48E-04
	Construction	A5	0	0	0	9.62E-03
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0	0	0	0
	Transport	C2	0	0	0	0
	Waste processing	C3	0	0	0	0
	Disposal	C4	0	0	0	1.09E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0	0	0	-1.42E-03

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	1.26E-03	8.35E-01	4.48E-03
Construction process stage	Transport	A4	8.35E-08	1.22E-04	2.17E-06
	Construction	A5	1.26E-04	2.17	4.60E-04
Use stage	Use	B1	MND	MND	MND
	Maintenance	B2	MND	MND	MND
	Repair	B3	MND	MND	MND
	Replacement	B4	MND	MND	MND
	Refurbishment	B5	MND	MND	MND
	Operational energy use	B6	MND	MND	MND
	Operational water use	B7	MND	MND	MND
End of life	Deconstruction, demolition	C1	0	0	0
	Transport	C2	0	0	0
	Waste processing	C3	0	0	0
	Disposal	C4	9.04E-09	2.65	7.72E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.75E-10	-1.42E-03	-3.31E-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	0	0	0
Construction process stage	Transport	A4	0	0	0	0
	Construction	A5	0	0	0	1.07
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	0	0	0	0
	Transport	C2	0	0	0	0
	Waste processing	C3	0	0	0	0
	Disposal	C4	0	0	0	0
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0	0	0	0

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	Truck	L/km	0.000051
	Distance:	km	700
	Capacity utilisation (incl. empty returns)	%	85
	Bulk density of transported products	kg/m^3	1435
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 emission to air, soil and water: VOC	kg/m^2	0.102
B2 – Maintenance	Module not declared	MND	MND
B3 – Repair	Module not declared	MND	MND
B4 – Replacement	Module not declared	MND	MND
B5 – Refurbishment	Module not declared	MND	MND
Reference service life	The reference service life of SikaRoof® i-Cure / SikalRoof® i-Cure is defined by the top layer, the most important one of the membrane. It is a stated by the ETA Certificate 14/0177. The provisions made in this ETA are based on an assumed working life of up 15 years	years	15
B6 – Use of energy; B7 – Use of water	Module not declared	MND	MND
C1 to C4 End of life	Module not declared	MND	MND
	Waste for final disposal: Landfill	%	100
	Transport to waste processing: Truck, fuel consumption	L/km	0.000051
	Transport to waste processing: Distance	km	700
	Transport to waste processing: Capacity utilisation	%	85
Module D – Reuse / Recovery / Recycling Potential	The benefits from incineration of waste produced during installation are credited in Module D as avoided generation of electricity and thermal energy, since in modern incineration plants the energy of combustion is used to produce power and thermal energy. The partial reuse of pallets from packaging is also included in Module D as avoided production of new pallets.		

Interpretation

The 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.

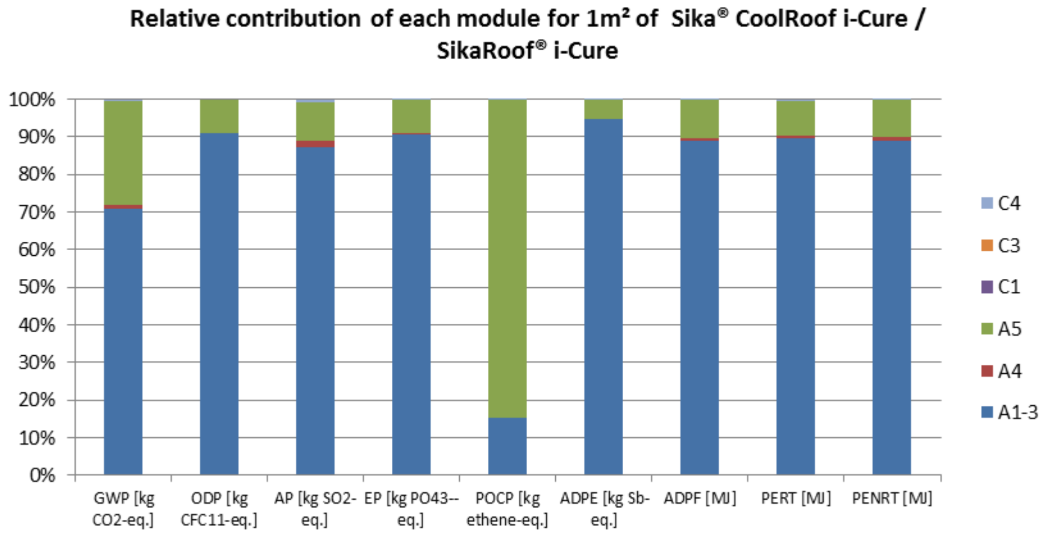

Figure 1

Energy resource use

Pre-product manufacturing (70%), production (16.5%) and packaging (13.5%) account for the total of the use of renewable primary energy resources (PERT). The manufacturing of raw materials (91%) has the greatest impact on the use of non-renewable primary energy resources (PENRT), while the impact of the production process (due to electricity consumption) measures 7%.

Environmental impacts

The dominant influence in all impact categories for Module A1-A3 comes from pre-product manufacturing, with at least 90% in each case. Within pre-product manufacturing, polymers play an important role regarding Global Warming Potential (GWP), Eutrophication Potential (EP), Photochemical Ozone Creation Potential (POCP) and Abiotic Depletion Fossil (ADPF), all with the highest values compared with the other components (40-98%). The fillers contribute the most (62%) to Abiotic Depletion Elements (ADPE) and to Ozone Depletion Potential (43%) (ODP).

The polymer is the raw material with the greatest effect on the impacts and it has also the greatest percentage by mass of the system.

The packaging materials contribute mostly to POCP (5%). The pigments, defoamers, thickeners and other additives contribution are not significant. The plasticizers partake in the impacts to GWP and ADPF with 12% and 11%, respectively.

The display results in Figure 1 apply to Sika® CoolRoof i-Cure / SikaRoof® i-Cure standard system with 2.4 kg/1.5 mm. To calculate results for other systems (1.8 mm and 2.2 mm), please use the following equation:

$$Impact\_x = (x - 0.776) / 0.7236 * Impact\_SR\_1.5 \qquad (Eq.1)$$

Where:

Impact_x = unknow parameter value for Sika® CoolRoof i-Cure / SikaRoof® i-Cure system products (1.8, 2.2 mm)

Impact_SR_1.5 = impacts for Sika® CoolRoof i-Cure / SikaRoof® i-Cure system with 1.5 mm thickness, presented in this EPD

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