ENVIRONMENTAL PRODUCT DECLARATION

as per /ISO 14025/ and /EN 15804/

Owner of the Declaration	Sika Deutschland GmbH
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-SIK-20170120-IBA1-EN
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Valid to	10.12.2022

Sikaplan® U
Sika Deutschland GmbH

Institut Bauen und Umwelt e.V.

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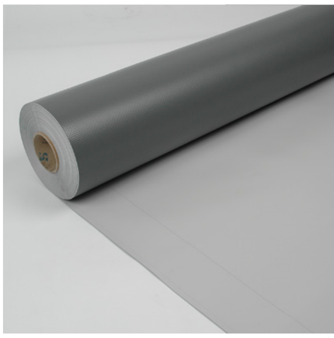


1. General Information

Sika Deutschland GmbH	Sikaplan® U
Programme holder IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany	**Owner of the Declaration** Sika Deutschland GmbH Kornwestheimer Straße 103-107 70439 Stuttgart Deutschland
Declaration number EPD-SIK-20170120-IBA1-EN	**Declared product / Declared unit** 1 m² Sikaplan U polymeric waterproofing membrane
This Declaration is based on the Product Category Rules: Plastic and elastomer roofing and sealing sheet systems, 07.2014 (PCR tested and approved by the SVR) **Issue date** 11.12.2017 **Valid to** 10.12.2022	**Scope:** This document applies to Sikaplan U polymeric waterproofing membrane manufactured by Sika Trocal GmbH in 53840 Troisdorf, Germany. The lifecycle assessment data are based on production data from 2016 and 2017 collected by Sika Services AG. The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences. This document is translated from the German Environmental Product Declaration into English. It is based on the German original version EPD-SIK-20170120-IBA1-DE. The verifier has no influence on the quality of the translation. The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.
Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)	**Verification** The CEN Norm /EN 15804/ serves as the core PCR Independent verification of the declaration according to /ISO 14025/ ☐ internally ☒ externally
Dr. Burkhart Lehmann (Managing Director IBU)	Dr.-Ing. Andreas Ciroth (Independent verifier appointed by SVR)

2. Product

2.1 Product description / Product definition

Sikaplan U is a multi-layer polymeric waterproofing sheet based on polyvinyl chloride (PVC) with an embedded fleece layer and polyester scrim (DE/E1 PVC-P-NB-V-PG-GV-1.5).
Sikaplan U polymeric waterproofing sheets are available in the following thicknesses: 1.5 mm (U-15), 1.8 mm (U-18) and 2.0 mm (U-20).
An average value of the various thicknesses of Sikaplan U waterproofing membrane was not used for the calculation of the life cycle assessment. Rather, all values given apply to Sikaplan U-15, and a formula for individually calculating values for the other thicknesses is given in Chapter 5.

Placement on the market in the EU/EFTA (except for Switzerland) is subject to EU Regulation No. 305/2011 /CPR/. The product requires a Declaration of Performance as per /EN 13956:2012/ Flexible sheets for waterproofing and the CE marking.
Application is subject to the regulations of each specific country; in Germany the application standard is /DIN SPEC 20000-201/.

2.2 Application

Sikaplan U waterproofing sheets are used mainly for waterproofing flat roofs. They sheets are either loose laid and mechanically fastened for non-ballasted roofs with slope < 20° or loose laid for extensive green roofs and ballasted roofs. The ballast is to be applied immediately after the membrane is laid. Flashings and connections are to be executed with Sikaplan U; details are to be executed with moulded pieces or Sikaplan S.

2.3 Technical Data

Performance values of the product in accordance with the Declaration of Performance regarding its significant characteristics as per /EN 13956:2012/ Flexible sheets for waterproofing.

Technical data

Name	Value	Unit
Waterproof as per /DIN SPEC 20000-201 / EN 1928/	400	kPa
Tensile strain performance as per /EN 12311-2/	≥ 15	%
Watertightness as per /EN 1928/	passed	-
Peel resistance of the seam joint as per /DIN EN 12316-2/	≥ 300	N/50mm
Shear resistance of the seam joint as per /DIN EN 12317-2/	≥ 600	N/50mm
Shear resistance of the seam joint as per /DIN SPEC 20000-201 / DIN EN 12317-2/	Tear outside seam joint	-
Tear propagation resistance as per /EN 12310-2/	≥ 150	N
Dimensional stability as per /EN 1107-2/	≤ |0.5|	%
Artificial ageing as per /DIN EN 1297/	passed (> 5000 hrs)	
Artificial ageing as per /DIN SPEC 20000-201 / DIN EN 1297/	Class 0	-
Folding in the cold as per /EN 495-5/	≤ -25	°C
Resistance to root penetration (for green roofs) as per /EN 13948 or FLL/	in testing	-

2.4 Delivery status
Sikaplan U polymeric waterproofing sheets are delivered on pallets (21 rolls per pallet):

- Roll length: 20.00 m
- Roll width: 2.00 m
- Roll weight: 72.00 kg

2.5 Base materials / Ancillary materials
The base materials and ancillary materials of Sikaplan U polymeric waterproofing membrane are:

- Polyvinyl chloride (PVC): 50-70 %
- Plasticiser (phthalate): 34-41 %
- Stabilisers (UV/heat): 0-3 %
- Flame retardant (inorganic): 0-1 %
- Carrier/reinforcing material, embedded (glass fleece-polyester composite): 1-3 %
- Colourants (pigments): 0-8 %

To the best of current knowledge, this product contains no substances of very high concern (SVHC) on the /REACH Candidate List/ in a concentration exceeding 0.1 % (by unit weight).

2.6 Manufacture
Sikaplan U polymeric waterproofing sheets are manufactured in the following steps:

- Dosing of the various raw materials and plasticisation of the mixture in an extruder
- Rolling the melt into sheets by calender pressing
- Cooling and reeling the sheets
- Heat fusing of two sheets (top and bottom layers), embedding a glass fleece / polyester scrim composite layer, on a lamination machine
- Trimming the sheets and winding them onto cardboard spools made of recycled paper
- Wrapping the roles in PE stretch film, palletising

Production waste such as scrap is recycled by feeding it directly back into the manufacturing process.

Sika maintains a quality management system certified in accordance with /ISO 9001/.

2.7 Environment and health during manufacturing
In the production of Sikaplan U polymeric waterproofing membrane, the regulatory standards for exhaust gases, waste water and solid waste as well as for noise emissions are fully met and the corresponding limits are not exceeded.
Waste gases from the production process or collected and filtered in exhaust gas scrubbers.
Water used is used exclusively for cooling and does not come into contact with the waterproofing membrane.

Sika maintains an environmental management system certified in accordance with /ISO 14001/ and an energy management system certified in accordance with /ISO 50001/.

2.8 Product processing/Installation
Sikaplan U polymeric waterproofing sheets are loose laid and mechanically fastened or ballasted (e.g. gravel, concrete pavers, green roof layer). The material can also be installed in inverted roof assemblies.
Seams between sheets are hot-air welded.
The current product data sheet for each product is available at **www.sika.com** and should be observed.

2.9 Packaging
The membrane rolls are wrapped in PE stretch film and loaded onto pallets for shipping. The cardboard spools are made of recycled paper. The packaging materials can be sorted and collected for recycling.

2.10 Condition of use
Professionally installed and properly used, the condition of Sikaplan U waterproofing membrane remains unchanged throughout its service life.

2.11 Environment and health during use
Throughout its service life, Sikaplan U polymeric waterproofing membrane has no known negative influence on the environment or on the health of users.

2.12 Reference service life
The reference service life of Sikaplan U waterproofing membrane is at least 30 years. Based on the study */Sika Roof Waterproofing Systems - Sika Mechanically Fastened System - Sikaplan G/* from 2012, experience to date with Sikaplan waterproofing membranes indicates that a service life of over 30 years can be expected.

This conclusion reflects the high resistance to weathering and ageing of the product when properly used

2.13 Extraordinary effects

Fire
Sikaplan U polymeric waterproofing membrane is classified in Class E as defined by /DIN EN 13501-1/.

Water
No environmental impact is known due to water exposure of installed Sikaplan U polymeric waterproofing membrane.

Mechanical destruction
Sikaplan U waterproofing membrane possesses good mechanical strength and is highly robust. No environmental impact is known to result from unexpected mechanical damage.

2.14 Re-use phase
At the end of the service life or when roofing sheets must be replaced, Sikaplan U waterproofing sheets can be selectively removed and recycled. This makes for a closed-loop material cycle.
Sika Deutschland GmbH is affiliated with Roofcollect, the recycling system for polymeric roofing and waterproofing membranes. This enables increasingly more material recovery from sorted polymeric waterproofing membranes. Alternatively, spent Sikaplan U polymeric membrane sheets can be used for thermal energy recovery.

2.15 Disposal
Sika Deutschland GmbH supports material recycling of Sikaplan U polymeric membrane sheets at the end of their service life. Collection of the sheets is organised through Interseroh Dienstleistungs GmbH (Contract No. 27704), which has been collaborating with Roofcollect since 2003.
For recycling, the coarsely cleaned and rolled up waterproofing sheets are picked up at the building site by Interseroh in so-called big bags (1 m³ capacity) or in containers.
These sheets are fully recycled by Roofcollect in recycling plants, and new products are manufactured from the recovered material.
In the case of using the spent material for thermal energy recovery, the sheets are delivered to an incineration plant. Sikaplan U waterproofing membrane can be classified under Waste Code 170904 as defined by the /European Waste Catalogue/.

2.16 Further information
More information about the company and its products is available through the internet at **www.sika.com**.
Detailed information on the polymeric waterproofing membranes is available at **www.sika.com**.

3. LCA: Calculation rules

3.1 Declared Unit
This declaration applies to 1 m² of Sikaplan U polymeric waterproofing membrane, thickness 1.5 mm. A formula is given for independent calculation of the values for other thicknesses.

Declared unit

Name	Value	Unit
Declared unit	1	m^2
Grammage	1.8	kg/m^2
Type of sealing	Hot-air weld	-
Conversion factor to 1 kg	0.555555556	-

3.2 System boundary
Type of EPD: Cradle to gate with options

The system boundaries of the EPD follow the modular structuring system described by /EN 15804/. The LCA takes into account the following modules:

- A1-A3: Manufacturing of pre-products, packaging, ancillary materials, transport to the factory, production including energy supply and waste handling
- A4: Transport to the building site
- A5: Installation into the building (welding energy, disposal of packaging and scrap membrane)
- C1: Deconstruction and demolition
- C2: Transport to waste-processing facility
- C3: Waste processing for reuse, recovery and/or recycling
- C4: Disposal (waste incineration)
- D: Potential for reuse, recovery and/or recycling as net flows and benefits

3.3 Estimates and assumptions
Various stabilisers and additives were valued with a general chemical data set (conservative approach). The percentage by mass is < 1 %.
At the end of service life, either a recycling fraction of 100 % (Scenario 1) or thermal energy recovery of 100 % (Scenario 2) is assumed.

3.4 Cut-off criteria
The foreground system was modelled in its entirety, excluding the necessary production machines and systems and associated infrastructure.

3.5 Background data
The primary data provided by Sika derive from the plant at Troisdorf, Germany. The background data were taken from the databases of /GaBi software / and /ecoinvent Version 3.1/. The German Electrical Energy Mix was applied.

3.6 Data quality
To simulate the product stage, data recorded by Sika from production years 2016 and 2017 were used. All other relevant background data sets were taken from generic data not older than 10 years.

3.7 Period under review
The period under review is the years 2016 and 2017.

3.8 Allocation
Production waste that was reclaimed and reused internally has been simulated as *closed-loop recycling* in Modules A1-A3.
Regarding the recycling of the polymeric waterproofing sheets, the amount of recyclable membrane was treated as a corresponding PVC benefit. Benefits for the disposal of packaging, scrap and roofing

membrane are credited in Module D; this also applies to the reuse of wooden pallets.
Regarding disposal through thermal energy recovery, credits for electrical and thermal energy from Module C4 were accounted for in Module D for each input and in consideration of the elementary composition as well as the calorific value.

3.9 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are taken into account.
The background data were taken from the databases of GaBi software and ecoinvent Version 3.1.

4. LCA: Scenarios and additional technical information

The following technical information serves as a basis for the declared modules or can be used for the development of specific scenarios in the context of a building assessment.

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel	0.0034	l/100km
Transport distance	400	km
Capacity utilisation (including empty runs)	85	%
Gross density of products transported	1230	kg/m^3
Capacity utilisation volume factor	100	-

Installation into the building (A5)

Name	Value	Unit
Electricity consumption	0.016	kWh/m^2
Material loss (membrane)n)	2	%
Overlaps (membrane)	6	%

Reference service life

Name	Value	Unit
Reference service life	30	a

Experience shows that the reference service life of the roofing membrane is about 30 years provided it is professionally installed and properly used.

End-of-life stage (C1-C4)

Two different scenarios were calculated to model the end-of-life stage. Each is a 100% scenario, but calculating a mix of the two would also be possible (e.g. Scenario 1 at 80 % and Scenario 2 at 20 %)

Name	Value	Unit
For recycling (Scenario 1: C1, C2/1, C3/1, C4/1)	100	%
Transport to recycling (Scenario 1: C1, C2/1, C3/1, C4/1)	250	km
For thermal energy recovery (Scenario 2: C1, C2/2, C3/2, C4/2)	100	%
Transport for thermal energy recovery (Scenario 2: C1, C2/2, C3/2, C4/2)	50	km

5. LCA: Results

The results displayed below apply to Sikaplan U-15. To calculate results for other thicknesses, please use this formula:

$I_x = ((x+1.1)/2.6)\ I_{1.5}$

[Ix = the unknown parameter value for Sikaplan U products with a thickness of "x" mm (e.g. 2.0 mm)]

Two scenarios were calculated for the end-of-life stage and in Module D:
Scenario 1 (C2/1, C3/1, C4/1, D/1) describes the impact of a 100% recycling scenario, whereas Scenario 2 (C2/2, C3/2, C4/2, D/2) represents 100% thermal energy recovery.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	X	X	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 m² of membrane

Parameter	Unit	A1-A3	A4	A5	C1	C2/1	C2/2	C3/1	C3/2	C4/1	C4/2	D/1	D/2
GWP	[kg CO_2-Eq.]	5.40E+0	4.63E-2	6.59E-1	0.00E+0	2.88E-2	5.75E-3	1.15E-1	0.00E+0	1.29E-1	5.23E+0	-4.19E+0	-1.32E+0
ODP	[kg CFC11-Eq.]	5.12E-9	5.87E-15	4.10E-10	0.00E+0	9.66E-15	1.93E-15	4.33E-13	0.00E+0	4.04E-14	2.19E-12	-2.28E-9	-1.91E-9
AP	[kg SO_2-Eq.]	1.40E-2	1.02E-4	1.30E-3	0.00E+0	6.44E-5	1.29E-5	1.71E-4	0.00E+0	5.26E-5	6.98E-3	-6.71E-3	-2.80E-3
EP	[kg $(PO_4)^{3-}$-Eq.]	2.39E-3	2.38E-5	2.04E-4	0.00E+0	1.53E-5	3.06E-6	2.73E-5	0.00E+0	9.67E-6	2.40E-4	-1.82E-3	-1.08E-3
POCP	[kg ethene-Eq.]	2.71E-3	-3.25E-5	2.19E-4	0.00E+0	-2.03E-5	-4.06E-6	1.18E-5	0.00E+0	3.14E-6	1.33E-4	-1.58E-3	-1.91E-4
ADPE	[kg Sb-Eq.]	2.48E-5	4.81E-9	2.03E-6	0.00E+0	2.32E-9	4.63E-10	5.79E-8	0.00E+0	5.74E-9	2.30E-6	-1.76E-5	-1.79E-7
ADPF	[MJ]	1.30E+2	6.28E-1	1.07E+1	0.00E+0	3.98E-1	7.95E-2	1.12E+0	0.00E+0	5.30E-2	9.05E+0	-9.90E+1	-2.08E+1

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources

RESULTS OF THE LCA - RESOURCE USE: 1 m² of membrane

Parameter	Unit	A1-A3	A4	A5	C1	C2/1	C2/2	C3/1	C3/2	C4/1	C4/2	D/1	D/2
PERE	[MJ]	1.16E+1	0.00E+0	9.28E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.69E+0	0.00E+0	0.00E+0
PERM	[MJ]	1.92E+0	0.00E+0	1.53E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	1.35E+1	4.16E-2	1.16E+0	0.00E+0	2.00E-2	4.00E-3	6.28E-1	0.00E+0	8.52E-3	1.69E+0	-9.42E+0	-3.37E+0
PENRE	[MJ]	9.21E+1	0.00E+0	7.37E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.99E+0	0.00E+0	0.00E+0
PENRM	[MJ]	4.51E+1	0.00E+0	3.49E+0	0.00E+0	0.00E+0	0.00E+0	-4.61E+1	0.00E+0	0.00E+0	-4.61E+1	0.00E+0	0.00E+0
PENRT	[MJ]	1.37E+2	6.30E-1	1.14E+1	0.00E+0	3.99E-1	7.98E-2	1.46E+0	0.00E+0	6.07E-2	9.99E+0	-1.07E+2	-2.40E+1
SM	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.05E+0	0.00E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m³]	2.69E-2	4.84E-5	2.75E-3	0.00E+0	3.71E-5	7.42E-6	4.27E-4	0.00E+0	3.82E-4	1.08E-2	-1.86E-2	-3.40E-3

Caption	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 = Use of net fresh water

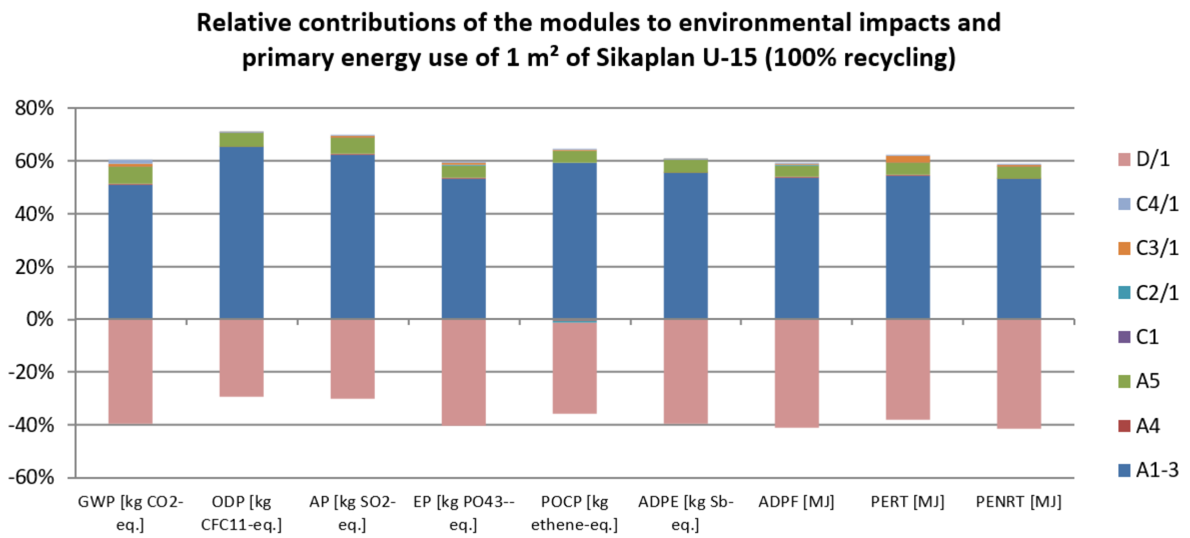
RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 m² of membrane

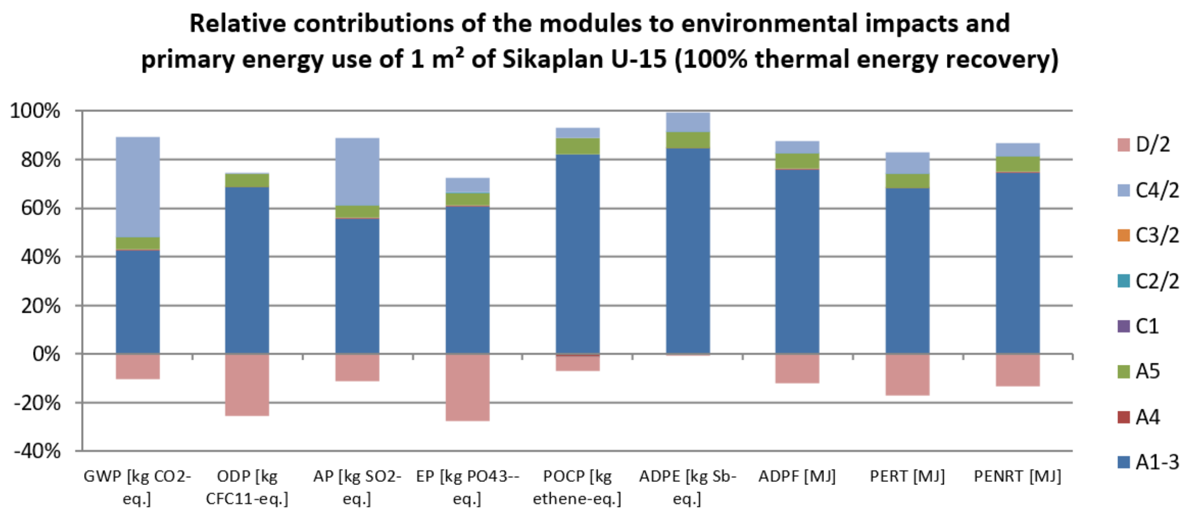
Parameter	Unit	A1-A3	A4	A5	C1	C2/1	C2/2	C3/1	C3/2	C4/1	C4/2	D/1	D/2
HWD	[kg]	8.08E-6	3.97E-8	6.52E-7	0.00E+0	2.10E-8	4.19E-9	9.57E-10	0.00E+0	2.71E-10	6.25E-8	-2.20E-6	-4.57E-9
NHWD	[kg]	3.30E-1	4.59E-5	9.01E-2	0.00E+0	3.05E-5	6.10E-6	1.38E-3	0.00E+0	1.68E-2	3.24E+0	-4.25E-2	-9.29E-3
RWD	[kg]	2.91E-3	7.23E-7	2.64E-4	0.00E+0	5.44E-7	1.09E-7	1.34E-4	0.00E+0	3.04E-6	3.72E-4	-3.10E-3	-1.30E-3
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.94E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	1.83E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.23E-1	4.63E+0	0.00E+0	0.00E+0
EET	[MJ]	0.00E+0	0.00E+0	5.16E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.04E-1	1.09E+1	0.00E+0	0.00E+0

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

6. LCA: Interpretation

The following chart shows the relative contributions of the different modules to the various LCA categories and to primary energy use in a dominance analysis. Credits for the value flows resulting from the waste treatment shown in Module D are displayed in the negative area. These are significantly higher in the case of recycling (Scenario 1).





The product stage (Modules A1-A3) has by far the greatest impact on all indicators; only the Global Warming Potential (GWP) in Scenario 2 is also significantly impacted by the energy recovery. For this reason, the product stage is examined more closely in the following interpretation.

Indicators of the inventory analysis:
Due to electricity use, the production process (10 %), pre-product manufacturing (60 %) and packaging (30 %) account for most of the use of renewable primary energy resources (**PERT**). The manufacturing of polymers and plasticisers in the production stage has the greatest impact (84 %) on the use of non-renewable primary energy resources (**PENRT**), while the impact of the production process (electrical energy) measures 4 %.

Indicators of the impact assessment:
The dominant influence in all impact categories comes from pre-product manufacturing, measuring at least 92 % in each case. Within pre-product manufacturing, polymers play an important role regarding Global Warming Potential (**GWP**) (42 %), Eutrophication Potential (**EP**) (36 %), Formation Potential of Tropospheric Ozone Photochemical Oxidants (**POCP**) (30 %), Abiotic Depletion Potential for Non-Fossil Resources (**ADPE**) (37 %) and Abiotic Depletion Potential for Fossil Resources (**ADPF**) (41 %). Plasticisers significantly influence **GWP** (36 %), **AP** (26 %), **EP** (26 %), **POCP** (52 %) and **ADPF** (44%). Pigments impact **ADPE** (25 %), **AP** (21 %) and **EP** (13 %). Flame retardants affect **AP** (13 %), and stabilisers affect **ODP** (81 %) and **EP** (15 %).

In addition, the carrier material impacts the parameters **ADPE** (24 %), **AP** (10 %) and **GWP** (11 %). The raw materials with the greatest effect on the impacts also show the greatest percentage by mass of the polymeric waterproofing membrane: polymers, plasticisers, carrier material and stabilisers. The manufacturing process (due to electricity use) contributes the most to **GWP** (4 %), **AP** (3 %) and **ADPF** (3 %).

7. Requisite evidence

No requisite evidence is required for Sikaplan U polymeric roofing membrane.

8. References

Institut Bauen und Umwelt
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	Publisher Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany	Tel +49 (0)30 3087748- 0 Fax +49 (0)30 3087748- 29 Mail info@ibu-epd.com Web **www.ibu-epd.com**
	Programme holder Institut Bauen und Umwelt e.V. Panoramastr 1 10178 Berlin Germany	Tel +49 (0)30 - 3087748- 0 Fax +49 (0)30 – 3087748 - 29 Mail info@ibu-epd.com Web **www.ibu-epd.com**
BUILDING TRUST	**Author of the Life Cycle Assessment** Sika Services AG Tüffenwies 16 8048 Zürich Switzerland	Tel +41 (0)58 436 43 42 Fax +41 (0)58 436 44 33 Mail product.sustainability@ch.sika.com Web **www.sika.com/sustainability**
BUILDING TRUST	**Owner of the Declaration** Sika Deutschland GmbH Kornwestheimer Straße 103 - 107 70439 Stuttgart Germany	Tel +49 (0)711 80 09-0 Fax +49 (0)711 80 09-321 Mail info@de.sika.com Web **www.sika.de**