

# Environmental Product Declaration

BREG EN EPD No.: 000109

Issue: 01

ECO EPD Ref. No.: 000333

This is to certify that this verified Environmental Product Declaration provided by:

**Sika Ltd.**

Is in accordance with the requirements of:

**EN 15804:2012+A1:2013**

This declaration is for:

**SikaProof A**



## Company Address

Watchmead

Welwyn Garden City  
AL7 1BQ



**BUILDING TRUST**



  
Signed for BRE Global Ltd

Laura Critien  
Operator

17 March 2016  
Date of this Issue

17 March 2016  
Date of First Issue

16 March 2021  
Expiry Date



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## EPD verification and LCA details

Demonstration of Verification
CEN standard EN 15804 serves as the core PCR <sup>a</sup>
Independent verification of the declaration and data according to EN ISO 14025:2010 <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External
Third party verifier <sup>b</sup> : <b>Kim Allbury</b>
<small>a: Product category rules            b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)</small>

LCA Consultant	Verifier
Sika Services AG Tüffenwies 16  Zurich 8048 <a href="http://www.sika.com/sustainability">www.sika.com/sustainability</a>	Kim Allbury BRE Global Bucknalls Lane Watford WD25 9XX <a href="http://www.bre.co.uk">www.bre.co.uk</a>

## General Information

### Summary

This environmental product declaration is for 1 square metre of SikaProof A produced by Sika Ltd. at the following manufacturing facilities:

Sika Manufacturing CH-Sarnen  
Industriestrasse

Sarnen  
6060  
Switzerland

This is a Cradle to grave EPD. The life cycle stages included are as shown below (X = included, MND = module not declared):

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	Transport	Waste processing	Disposal	Reuse, Recovery and/or Recycling potential
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

### Programme Operator

BRE Global, Watford, Herts, WD25 9XX, United Kingdom.

This declaration is based on the BRE Environmental Profiles 2013 Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013.

### Comparability

Environmental declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A1:2013. Comparability is further dependent on the product category rules used and the source of the data, e.g. the database. See EN 15804:2012+A1:2013 for further guidance.

## Construction Product

### Product Description

SikaProof A is a pre-applied fully bonded composite sheet membrane waterproofing system based on high flexible FPO membrane. SikaProof A is available either in 1.0 or 2.0m wide sheets in the following thicknesses: 0.5mm (SikaProof A-05), 0.8mm (SikaProof A-08), 1.2mm (SikaProof A-12). The results in this EPD refer to SikaProof A-08, with a mass of 1.15 kg/m<sup>2</sup>.

## Technical Information

Property	Value	Unit
Visual defects as per EN 1850-2	Pass	-
Straightness as per EN 1848-2	≤ 50	mm/ 10m
Resistance to impact as per EN 12691	≥ 50	mm
Resistance to tear - nail shank (cross direction) as per EN 12310-1	≥ 450	N
Resistance to tear - nail shank (machine direction) as per EN 12310-1	≥ 450	N
Elongation (cross directional) as per EN 12311-1	≥ 1000	%
Elongation (machine direction) as per EN 12311-1	≥ 700	%
Joint strength as per EN 12310-1	≥ 200	N/ 50 mm
Tensile strength (machine direction) as per EN 12311-1	≥ 450	N/ 50 mm
Tensile strength (cross direction) as per EN 12311-1	≥ 450	N/ 50 mm
Water vapour transmission as per EN 1931	m = 58,000	-
Resistance to static load as per EN 12730	≥ 20	kg
Reaction to fire as per EN 13501	Class E	-

## Product Contents

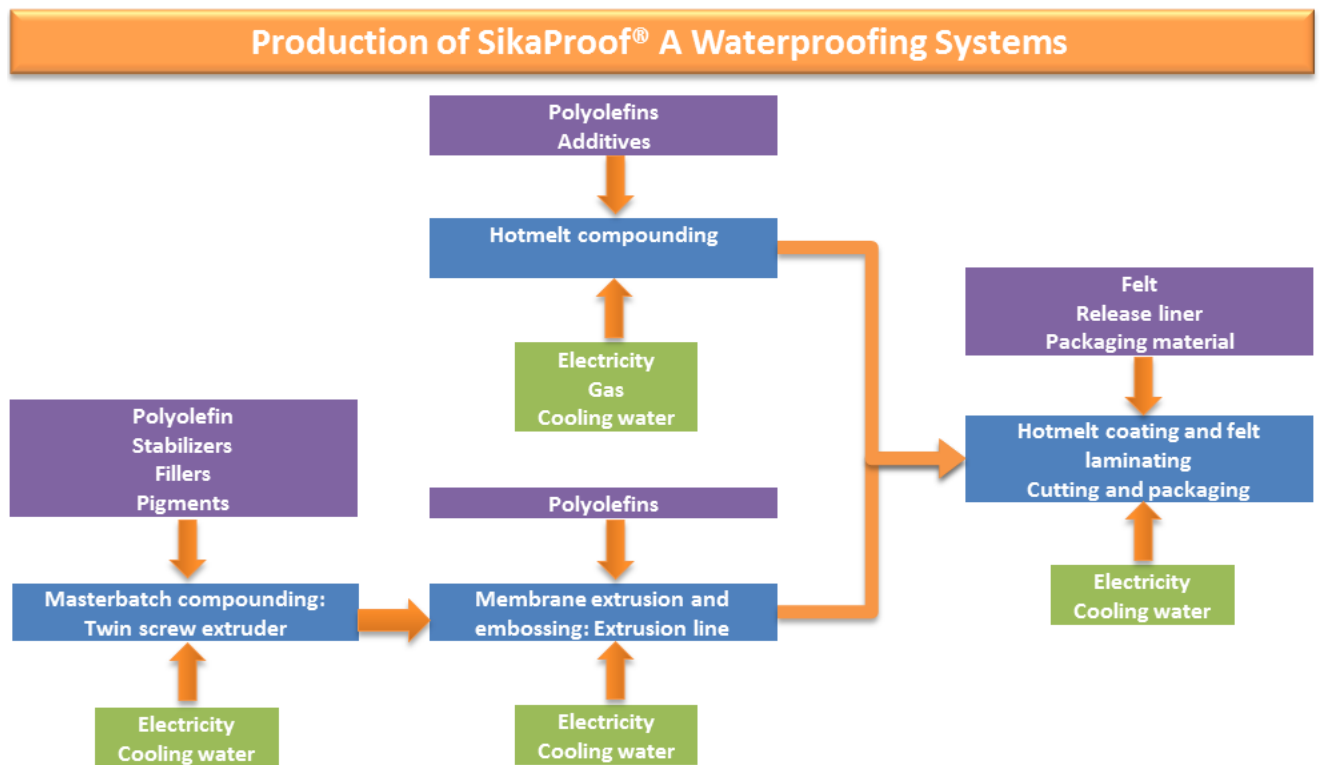
Material/Chemical Input	%
Thermoplastic polyolefins	50 – 70
Stabilizers (UV/heat)	0 – 1
Pigments	0 – 1
Fillers	5 – 15
Carrier material (polypropylene)	2 – 10
Surface sealant	10 – 20
Adhesive joint	1 – 5

## Manufacturing Process

A master batch is compounded on an extruder using a small part of the polymer and all powdery ingredients as stabilizers, fillers and colours. This master batch is pelletized and blended inline with additional polymers and extruded into the membrane. Line start-up waste and edge trim are inline processed and fed to the extruder again. The membrane is inline embossed and wound to master rolls.

The membrane is inline coated with hotmelt sealant and laminated with a felt. In the same step, the adhesive edge is coated on one side and protected with a release liner, finally the edge is trimmed, the membrane wound to contractor rolls, single-roll packaged and palletized.

The process flow diagram is shown below:



### Construction Installation

SikaProof A is cold-applied and pre-applied, as it is installed without heat or open-flames, and before the steel reinforcement is fixed and the concrete is poured.

The overlaps of the sheets are adhered by the prefabricated self-adhesive edge of the sheets and all roll ends and details are sealed with accessory tapes. Due to the overlaps of the membrane sheets the average consumption of membrane per 1m<sup>2</sup> is approx. plus 7.5%.

Installation work must be carried out only by Sika instructed contractors. Please see [www.sika.co.uk](http://www.sika.co.uk) for datasheet.

### Use Information

During the service life of the building there is no ordinary maintenance, repair/refurbishment or replacement required, if the SikaProof membrane system is correctly and properly applied.

On the other hand the high durability and reliability of the fully bond waterproofing system SikaProof will limit any repair work to a minimum, if a membrane damage occur.

The fully bond characteristic will prevent any lateral water underflow of the membrane in the event of any leakage. Therefore no scenario for repair work is defined.

## Reference Service Life

The reference service life of SikaProof A is as stated by the BBA Agreement Certificate 13/5075 for the life of the structure in which they have been incorporated. See BBA for details. Therefore a 60-year building service life can be assumed.

## End of Life

At the end of its service life the building is demolished, and as the SikaProof systems are attached to the concrete it is generally taken to landfill. The demolition process concerns mainly the concrete structure of which the SikaProof 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

1 m<sup>2</sup> of waterproofing system for a reference service life of 60 years.

### System boundary

In accordance with the modular approach as defined in EN 15804, this cradle to grave EPD includes the product stage (A1-A3), construction process stage (A4-A5), use stage (B1-B7) and end-of-life stage (C1-C4).

### Data sources, quality and allocation

The primary data provided by Sika derive from the plant at Sarnen, Switzerland for 2013. Background LCI datasets are taken from the databases of GaBi software and ecoinvent Version 3.1. All datasets are less than 10 years old. Production waste that was reclaimed and reused internally was simulated as closed-loop recycling in Modules A1-A3. Benefits from incineration 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

(INA = Indicator not assessed, AGG = Aggregated, NA = Not Applicable)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3
		Raw Material supply	Transport to factory	Manufacturing	Merged A1/A2/A3	Transport to site	Construction - installation	Use	Maintenance	Repair
<b>Environmental impacts per declared/functional unit</b>										
GWP	kg CO <sub>2</sub> eq.	AGG	AGG	AGG	3.23	0.0815	0.842	0.00	0.00	0.00
ODP	kg CFC 11 eq.	AGG	AGG	AGG	2.41E-09	3.35E-13	2.06E-10	0.00	0.00	0.00
AP	kg SO <sub>2</sub> eq.	AGG	AGG	AGG	0.00771	0.000403	0.000773	0.00	0.00	0.00
EP	kg (PO <sub>4</sub> ) <sup>3-</sup> eq.	AGG	AGG	AGG	0.00158	0.000101	0.000158	0.00	0.00	0.00
POCP	kg C <sub>2</sub> H <sub>4</sub> eq.	AGG	AGG	AGG	0.00124	4.38E-05	0.000116	0.00	0.00	0.00
ADPE	kg Sb eq.	AGG	AGG	AGG	2.35E-06	3.20E-09	2.06E-07	0.00	0.00	0.00
ADPF	MJ eq.	AGG	AGG	AGG	92.2	1.12	8.05	0.00	0.00	0.00
GWP = Global Warming Potential (Climate Change); ODP = Ozone Depletion Potential; AP = Acidification Potential for Soil and Water; EP = Eutrophication Potential; POCP = Photochemical Ozone Creation; ADPE = Abiotic Depletion Potential – Elements; ADPF = Abiotic Depletion Potential – Fossil Fuels										
<b>Resource use</b>										
PERE	MJ	AGG	AGG	AGG	3.32	0.00	0.332	0.00	0.00	0.00
PERM	MJ	AGG	AGG	AGG	3.05	0.00	0.259	0.00	0.00	0.00
PERT	MJ	AGG	AGG	AGG	6.37	0.0629	0.559	0.00	0.00	0.00
PENRE	MJ	AGG	AGG	AGG	49.5	0.00	4.21	0.00	0.00	0.00
PENRM	MJ	AGG	AGG	AGG	48.2	0.00	4.10	0.00	0.00	0.00
PENRT	MJ	AGG	AGG	AGG	97.7	1.12	8.54	0.00	0.00	0.00
SM	kg	AGG	AGG	AGG	0.00	0.00	0.00	0.00	0.00	0.00
RSF	MJ	AGG	AGG	AGG	0.00	0.00	0.00	0.00	0.00	0.00
NRSF	MJ	AGG	AGG	AGG	0.00	0.00	0.00	0.00	0.00	0.00
FW	m <sup>3</sup>	AGG	AGG	AGG	0.0686	0.000111	0.00722	0.00	0.00	0.00
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 = Net use of fresh water										
<b>Waste to disposal</b>										
HWD	kg	AGG	AGG	AGG	0.000609	5.35E-07	5.19E-05	0.00	0.00	0.00
NHWD	kg	AGG	AGG	AGG	0.0587	0.00016	0.011	0.00	0.00	0.00
TRWD	kg	AGG	AGG	AGG	0.00198	1.54E-06	0.000176	0.00	0.00	0.00
RWDHL	kg	AGG	AGG	AGG	2.51E-06	2.22E-09	2.24E-07	0.00	0.00	0.00
HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; TRWD = Total Radioactive waste disposed; RWDHL = Radioactive waste disposed (high-level nuclear waste)										
<b>Other output flows</b>										
CRU	kg	AGG	AGG	AGG	0.00	0.00	0.00	0.00	0.00	0.00
MFR	kg	AGG	AGG	AGG	0.00	0.00	0.00	0.00	0.00	0.00
MER	kg	AGG	AGG	AGG	0.00	0.00	0.00	0.00	0.00	0.00
EE	MJ	AGG	AGG	AGG	0.00	0.00	0.699	0.00	0.00	0.00
CRU = Components for reuse; MFR = Materials for recycling; MER = Materials for energy recovery; EE = Export energy										

## LCA Results (continued)

(INA = Indicator not assessed, AGG = Aggregated, NA = Not Applicable)

Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
		Replacement	Refurbishment	Operational energy use	Operational water use	Demolition	Transport	Waste Processing	Disposal	Reuse/ Recovery/ Recycling Potential
<b>Environmental impacts per declared/functional unit</b>										
GWP	kg CO <sub>2</sub> eq.	0.00	0.00	0.00	0.00	0.00	0.0176	0.00	0.0195	-0.2
ODP	kg CFC 11 eq.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.12E-13	-1.42E-09
AP	kg SO <sub>2</sub> eq.	0.00	0.00	0.00	0.00	0.00	7.80E-05	0.00	0.000118	-7.89E-04
EP	kg (PO <sub>4</sub> ) <sup>3-</sup> eq.	0.00	0.00	0.00	0.00	0.00	2.01E-05	0.00	1.63E-05	-6.17E-04
POCP	kg C <sub>2</sub> H <sub>4</sub> eq.	0.00	0.00	0.00	0.00	0.00	7.94E-06	0.00	1.11E-05	-7.84E-05
ADPE	kg Sb eq.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.25E-09	-7.78E-08
ADPF	MJ eq.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.255	-3.94
GWP = Global Warming Potential (Climate Change); ODP = Ozone Depletion Potential; AP = Acidification Potential for Soil and Water; EP = Eutrophication Potential; POCP = Photochemical Ozone Creation; ADPE = Abiotic Depletion Potential – Elements; ADPF = Abiotic Depletion Potential – Fossil Fuels										
<b>Resource use</b>										
PERE	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERM	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERT	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0261	-1.92
PENRE	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PENRM	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PENRT	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.265	-4.79
SM	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RSF	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRSF	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	m <sup>3</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.02E-05	-0.037
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 = Net use of fresh water										
<b>Waste to disposal</b>										
HWD	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.24E-08	-1.32E-06
NHWD	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.21	-0.00137
TRWD	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.22E-06	-0.00033
RWDHL	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.44E-09	-5.01E-07
HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; TRWD = Total Radioactive waste disposed; RWDHL = Radioactive waste disposed (high-level nuclear waste)										
<b>Other output flows</b>										
CRU	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MER	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EE	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRU = Components for reuse; MFR = Materials for recycling; MER = Materials for energy recovery; EE = Export energy										



## Scenarios and Additional Technical Information

Module A4 – Transport to the building site				
Vehicle Type	Fuel Consumption (L/km)	Distance (km)	Capacity Utilisation (%)	Density Of Product (kg/m <sup>3</sup> )
Truck	0.000034	915	85	851.8

Module A5 - Installation in the building			
Parameter	Description	Unit	Value
Ancillary materials for installation	Overlap	%	7.5
Waste materials from installation wastage	Losses	%	1

Module B2 - Maintenance			
Parameter	Description	Unit	Value
Maintenance process description or source of information	None necessary		

Module B3 - Repair			
Parameter	Description	Unit	Value
Repair process description or source of information	None necessary		

Module B4 – Replacement			
Parameter	Description	Unit	Value
Replacement cycle	None necessary		

Module B5 - Refurbishment			
Parameter	Description	Unit	Value
Refurbishment process description or source of information	None necessary		

End-of-life modules – C1, C3, and C4			
Parameter	Description	Unit	Value
Waste for final disposal	Landfill	%	100

Module C2 – Transport to waste processing				
Vehicle Type	Fuel Consumption (L/km)	Distance (km)	Capacity Utilisation (%)	Density Of Product (kg/m <sup>3</sup> )
Truck	0.000034	250	85	851.8

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 displayed results apply to SikaProof A-08. To calculate results for other thicknesses, please use this formula:

$$I_x = ((x+0.34)/1.14)*10.8$$

[I<sub>x</sub> = the unknown parameter value for SikaProof A systems with a membrane thickness of "x" mm (e.g. 1.2 mm)]

The following chart 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, especially for GWP (Global Warming Potential), due to waste disposal and due to the impacts from the losses and overlap. For this reason, the Product Stage is examined more closely in the following interpretation.

More than 60% of the impacts come from the membrane formulation, except for the total of the use of renewable primary energy resources - PERT- (where 54% is from packaging due to the use of carton and wood), EP (Eutrophication Potential) where both membrane and packaging contribute with 40% and ODP (Ozone Depletion Potential), where 58% comes from packaging.

The hotmelt sealants' highest contribution is to ADPF (Abiotic Depletion Potential - Fossil Fuels), with 18% and the total use of non-renewable primary energy resources - PENRT - (17%), from their polymers and resins.

The production processes (mainly the Swiss energy inputs) contribute mostly to GWP (8%), and PERT (17%).

Within the membrane's formulation, the main contributor to the impacts is the polymer, which also represents the greatest part of the raw materials, with at least 70%. The highest contribution of the felt is to PERT with 19%. The impacts from the other raw materials (fillers, pigments and stabilizers) are much lower.

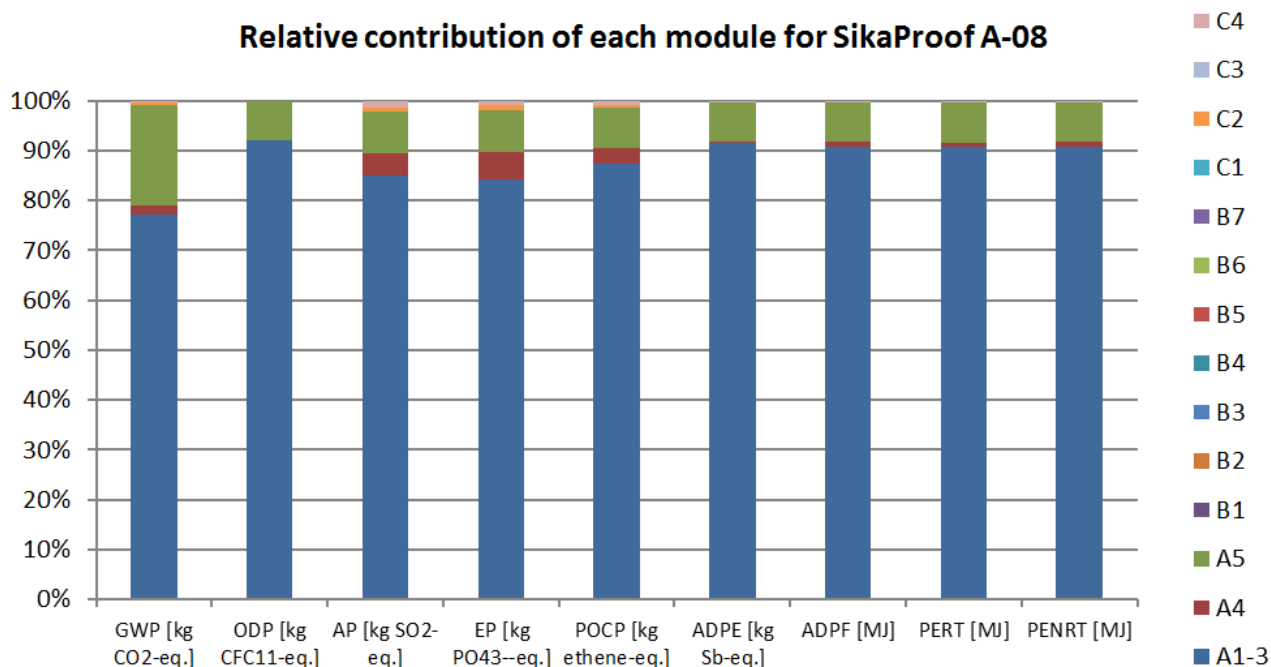


Figure 1

## Sources of additional information

BRE Global. BRE Environmental Profiles 2013: Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013. PN 514. Watford, BRE, 2014.

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.



thinkstep; GaBi 7: Software-System and Databases for Life Cycle Engineering. Copyright, TM. Stuttgart, Echterdingen, 1992-2015

ecoinvent Version 3.1: Database for Life Cycle Assessment. Swiss Centre for Life Cycle Inventories (ecoinvent Centre), 2014

BBA (British Board of Agrément). Agrément Certificate 13/5075 Product Sheet 1. Sika Tanking Membranes: SikaProof A Membranes, December 2013