Statement of Verification

BREG EN EPD No.: 000410 Issue 02

This is to verify that the

Environmental Product Declaration

provided by:

Sika Services AG

is in accordance with the requirements of:

EN 15804:2012+A2:2019

and

BRE Global Scheme Document SD207

This declaration is for:

SikaProof®-808 and SikaProof®-810

Company Address

Tüffenwies 16
Zurich
8048
Switzerland

BUILDING TRUST

Signed for BRE Global Ltd	Emma Baker Operator	26 July 2022 Date of this Issue
10 March 2022 Date of First Issue		09 March 2027 Expiry Date

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Environmental Product Declaration

EPD Number: 000410

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+A2 PN 514 Rev 3.0
Commissioner of LCA study	**LCA consultant/Tool**
Sika Services AG Tüffenwies 16 Zurich 8048 Switzerland	Sika Technology AG Tüffenwies 16 Zurich 8048 Switzerland www.sika.com/sustainability
Functional Unit	**Applicability/Coverage**
1 m^2 waterproofing system for a reference service life of 60 years.	Product Average.
EPD Type	**Background database**
Cradle to Grave	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: Nigel Jones
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+A2:2019. 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+A2:2019 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)

This environmental product declaration is for 1 m^2 of SikaProof®-808 produced by Sika Services AG at following manufacturing facility. A formula to calculate results for SikaProof®-810 is provided. All further explanations that refer to SikaProof®-808 apply to both thicknesses.

Sika Manufacturing AG
Industriestrasse 26
Sarnen
6060
Switzerland

Construction Product

Product Description

SikaProof®-808 and SikaProof®-810 are TPO-based sheet membranes for below ground waterproofing of reinforced concrete structures. It is loosely laid onto prepared substrates below the base slab before fixing reinforcement and casting concrete. A special hybrid bonding layer on the membrane forms a permanent bond with the fresh concrete and prevents lateral water migration between the membrane and the concrete structure. Overlap joints are sealed using cold-applied tapes or by thermal jointing

Technical Information

Property	Value, Unit
Tensile Strength (machine direction) as per EN 12311-2 Method A	≥ 500 N/50 mm
Tensile Strength (cross direction) as per EN 12311-2 Method A	≥ 500 N/50 mm
Modulus of Elasticity in Tension as per EN 12311-2 Method B	≤ 65 N/mm
Elongation (machine direction) as per EN 12311-2 Method A	≥ 500%
Elongation (cross direction) as per EN 12311-2 Method A	≥ 500%
Peel Adhesion to concrete as per ASTM D903	≥ 1200 N/m
Joint Shear Resistance as per EN 12317-2	≥ 50 N/50 mm
Reaction to Fire as per EN 13501-1	Class E
Accelerated Ageing in Alkaline Environment as per EN 1847 and EN 1928	Pass (28 d/+23°C) Pass (Method B, 24 h/60 kPa)

Property	Value, Unit
Watertightness as per EN 1928	Pass (Method B, 24 h/60 kPa)
Resistance to lateral water migration as per ASTM D5385 Modified	Pass, 71 m – No Leakage
Durability of Watertightness against Chemicals as per EN 1847 and EN 1928	Pass (28 d/+23°C) Pass (Method B, 24 h/60 kPa)

Further information about the product including product data sheets can be accessed via www.sika.com.

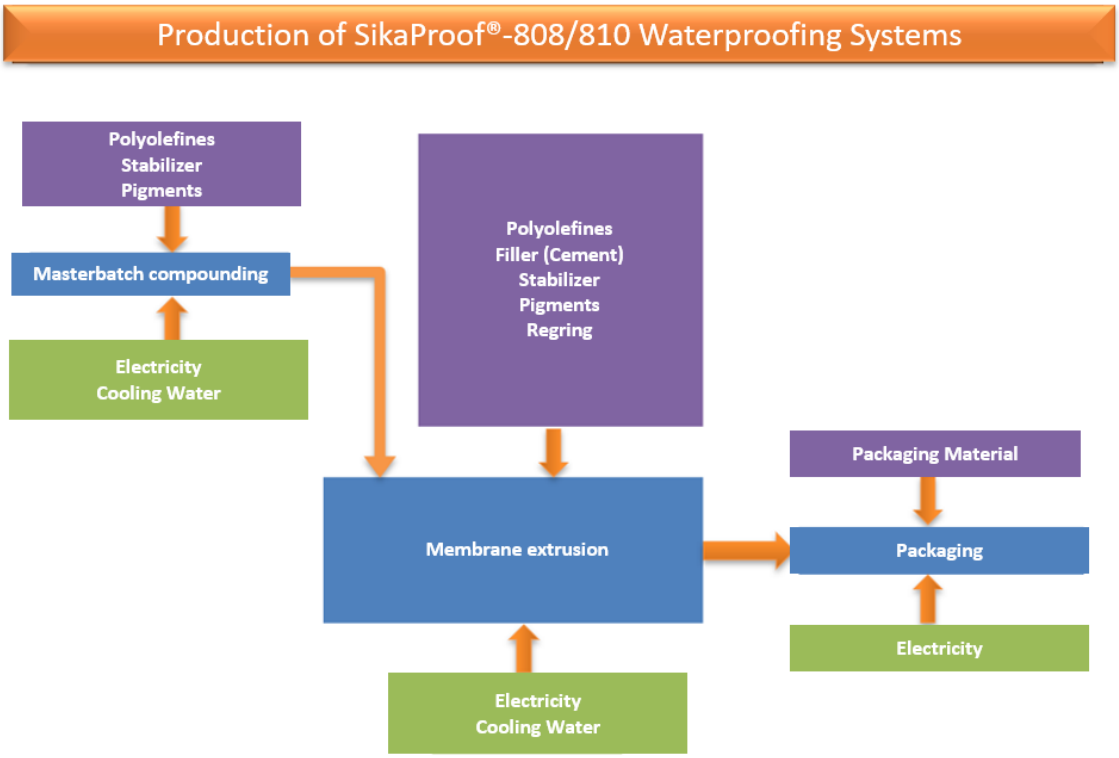
Main Product Contents

Material/Chemical Input	%
Thermoplastic polyolefins	50 – 70
Fillers	20 – 30
Pigments	0 – 1
Stabilizers	0 – 1

Manufacturing Process

The SikaProof®-808 membrane is manufactured by a state-of-the-art extrusion process in Sarnen, Switzerland.

The polymer and additives are compounded into a masterbatch and then blended with the other material inputs by means of automatic dosing units and extruded into the membrane. Line start-up waste and edge trim are processed and fed back into the production process. The membrane is cooled on large rolls and the final thickness of the extruded membrane is automatically monitored and adjusted.



Construction Installation

SikaProof®-808 is loose laid onto prepared substrates or formwork before fixing reinforcement and casting concrete. The overlaps of the sheets are either sealed with self-adhesive tapes or thermally jointed with hot air heating equipment. Due to the overlaps the average consumption of membrane per 1 m^2 is approx. 3.33%. Please refer to the product data sheet and method statement for detailed instructions.

Use Information

During the service life of the building no ordinary maintenance, repair/refurbishment or replacement is required if the SikaProof®-808 membrane system is correctly and properly applied.

The high durability and reliability of the fully bonded waterproofing membranes system SikaProof®-808 will limit any repair work to a minimum if a membrane damage occurs.

A basement waterproofing solution lasts the lifetime of the building as it remains incorporated within the foundation. A 60-year building service life for SikaProof®-808 has been assumed for the purpose of this EPD. Under normal service conditions the products will provide an effective barrier to the transmission of moisture and will resist the ingress of radon for the life of the structure in which they have been incorporated. The service life of SikaProof-808 is therefore assumed to be equal as that of SikaProof A or SikaProof A+, as certified by the BBA for Sika Tanking Membranes (SikaProof A® Membranes).

End of Life

At the end of its service life the building is demolished and as the SikaProof®-808 system is attached to the concrete it is assumed to be landfilled together with the substrate. The demolition process concerns mainly the concrete structure of which the SikaProof®-808 system is a minor part. Therefore, no other steps are considered necessary for this stage except for the transportation to landfill and landfilling.

Life Cycle Assessment Calculation Rules

Functional unit description

1 m^2 of SikaProof®-808 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), end-of-life stage (C1-C4) and the benefits beyond the system boundaries.

Data sources, quality and allocation

The primary data provided by Sika derive from the plant at Sarnen, Switzerland for 2021. Mass allocation was applied to generate data per declared unit of product Background LCI datasets are taken from the databases of Sphera Version 2021.2 and ecoinvent Version 3.7.1. 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 considered in the LCA.

LCA Results

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
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	2.52E+00	2.66E+00	-1.41E-01	1.14E-03	2.06E-09	5.43E-03	9.78E-06
Construction process stage	Transport	A4	5.28E-02	5.25E-02	-6.69E-05	4.29E-04	6.70E-18	1.64E-04	1.56E-07
	Construction	A5	4.31E-01	3.94E-01	3.86E-02	7.58E-05	8.92E-11	2.83E-04	4.36E-07
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.54E-02	1.53E-02	-1.96E-05	1.26E-04	1.96E-18	4.47E-05	4.55E-08
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	1.55E-02	1.59E-02	-4.63E-04	4.69E-05	6.26E-17	1.13E-04	2.68E-08
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-6.21E-02	-1.69E-01	1.07E-01	-1.05E-04	-2.05E-09	-3.24E-04	-5.59E-06

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			EP-marine	EP-terrestrial	POCP	ADP-mineral& metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
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	1.72E-03	1.86E-02	5.62E-03	7.32E+01	2.94E-06	5.90E-01	5.07E-08
Construction process stage	Transport	A4	7.54E-05	8.43E-04	1.48E-04	6.99E-01	4.00E-09	4.55E-04	9.01E-10
	Construction	A5	8.83E-05	1.03E-03	2.79E-04	3.26E+00	1.28E-07	5.63E-02	2.24E-10
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.03E-05	2.27E-04	4.02E-05	2.04E-01	1.17E-09	1.33E-04	2.51E-10
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	2.95E-05	3.24E-04	8.93E-05	2.11E-01	1.51E-09	1.71E-03	1.41E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.77E-03	-9.12E-04	-2.81E-04	-2.98E+00	-9.38E-08	-2.43E-02	-6.35E-09

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	2.38E-01	2.18E+01	1.82E-09	1.71E-07	1.42E+01
Construction process stage	Transport	A4	1.21E-04	5.05E-01	1.02E-11	5.97E-10	2.40E-01
	Construction	A5	3.95E-04	2.68E-02	2.15E-12	7.49E-11	1.54E-02
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.51E-10	3.54E-05	1.48E-01	2.98E-12	1.74E-10
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	1.41E-09	2.25E-04	1.20E-01	1.78E-11	1.96E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-6.35E-09	-3.40E-02	-9.83E-01	-9.01E-11	-1.32E-09

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.

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	4.39E+00	1.35E+00	5.74E+00	3.72E+01	3.70E+01	7.43E+01
Construction process stage	Transport	A4	3.90E-02	0.00E+00	3.90E-02	7.00E-01	0.00E+00	7.00E-01
	Construction	A5	7.84E-02	-5.86E-02	1.98E-02	1.98E+00	1.32E+00	3.30E+00
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.14E-02	0.00E+00	1.14E-02	2.04E-01	0.00E+00	2.04E-01
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	2.86E-02	0.00E+00	2.86E-02	2.11E-01	0.00E+00	2.11E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.92E+00	0.00E+00	-8.92E+00	-8.50E+01	0.00E+00	-8.50E+01

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	0.00E+00	0.00E+00	0.00E+00	2.12E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	4.47E-05
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	1.64E-03
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	1.30E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	5.21E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-1.36E-02

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	5.02E-05	1.04E-01	1.44E-03
Construction process stage	Transport	A4	3.53E-11	1.04E-04	8.46E-07
	Construction	A5	2.17E-06	6.76E-03	6.49E-05
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.03E-11	3.04E-05	2.47E-07
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	2.25E-11	1.05E+00	2.18E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.87E-10	-1.23E-03	-1.91E-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	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	kg C	kg C
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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	4.51E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	3.18E-03	MNR	MNR
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR	MNR

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	Transport of the SikaProof® -808 membranes to the building site		
	Diesel / Euro 5 Truck	L/km	0.0045
	Distance	km	600
	Capacity utilisation (incl. empty returns)	%	85
	Bulk density of transported products	Kg/L	1.160
A5 – Installation in the building	Installation of the SikaProof®-808 membranes in the building		
	Ancillary materials for installation	%	3.33
	Waste materials from installation wastage	%	1
B2 – Maintenance	Maintenance of the SikaProof®-808 membranes		
	No maintenance necessary	N/A	N/A
B3 – Repair	Repair of the SikaProof®-808 membranes		
	No repair necessary	N/A	N/A
B4 – Replacement	Replacement of the SikaProof®-808 membranes		
	No replacements necessary	N/A	N/A
B5 – Refurbishment	Refurbishment of the SikaProof®-808 membranes		
	No refurbishment necessary	N/A	N/A
Reference service life	Reference service life of the SikaProof®-808 membranes		
	Reference service life	years	60
B6 – Use of energy; B7 – Use of water	Use of water and energy associated with the use of SikaProof®-808 membranes		
	None needed	N/A	N/A
C1 to C4 End of life,	Transport of the SikaProof®-808 membranes to the final disposal site		
	Diesel / Euro 5 Truck	L/km	0.0045
	Capacity utilisation (not incl. empty returns)	%	85
	Bulk density of transported product	Kg/L	1.160

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
	Waste for final disposal to Landfill	%	100
Module D	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.		

Summary, comments and additional information

Interpretation

The displayed results apply to SikaProof®-808. To calculate results SikaProof®-810, the following formula can be used:

Ix = ((x+0.18)/1.2)* I 1.02

[Ix = the unknown parameter value for SikaProof®-808 systems with a membrane thickness of "x" mm (e.g. 1.25 mm, applicable for Sikaproof®-810)]

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.

As can be seen from Figure 1, the majority of the impacts across all life cycle modules and impact categories arise from the product stage (Module A1-3) due to the raw materials used in the production of the SikaProof®-808 membranes, followed by the installation of the membranes (Module A5) due to waste disposal and the impacts from the losses and overlap.

Examining module A1-3 in more detail, it can be concluded that more than 87% of the impacts are attributable to the raw materials involved in the production of SikaProof®-808 membranes except for PERT (where 38% of the impacts arise from the packaging materials due to the use of carton and wood) and ODP (where 96% of the impacts arise from the packaging materials).

Within the raw materials, the polymers play an important role in terms of GWP total (90%), AP (78%), POCP (89%), ADPF (96%), ADPE (53%), PERT (76%) and PENRT (96%). The influence of the stabilisers can be seen in ODP (56%), while the influence of the pigments can be seen in ODP (44%), AP (20%), EP-freshwater (19%), EP-marine (9%), EP terrestrial (9%), POCP (9%), ADPE (47%), and PERT (18%). The influence of the fillers is generally lower than the other raw materials but can be seen in GWP (4%), AP (2%), EP-freshwater (3%), PENRT (3%) and PERT (6%).

The polymers, which make up the highest share of the membrane mass, have the greatest influence on the environmental impact categories. The greatest influence in the production process of the membranes is the power consumption. The production processes (mainly the Swiss energy inputs) contribute mostly to PERT (18%), EP (5.7%) and GWP total (2.0%).

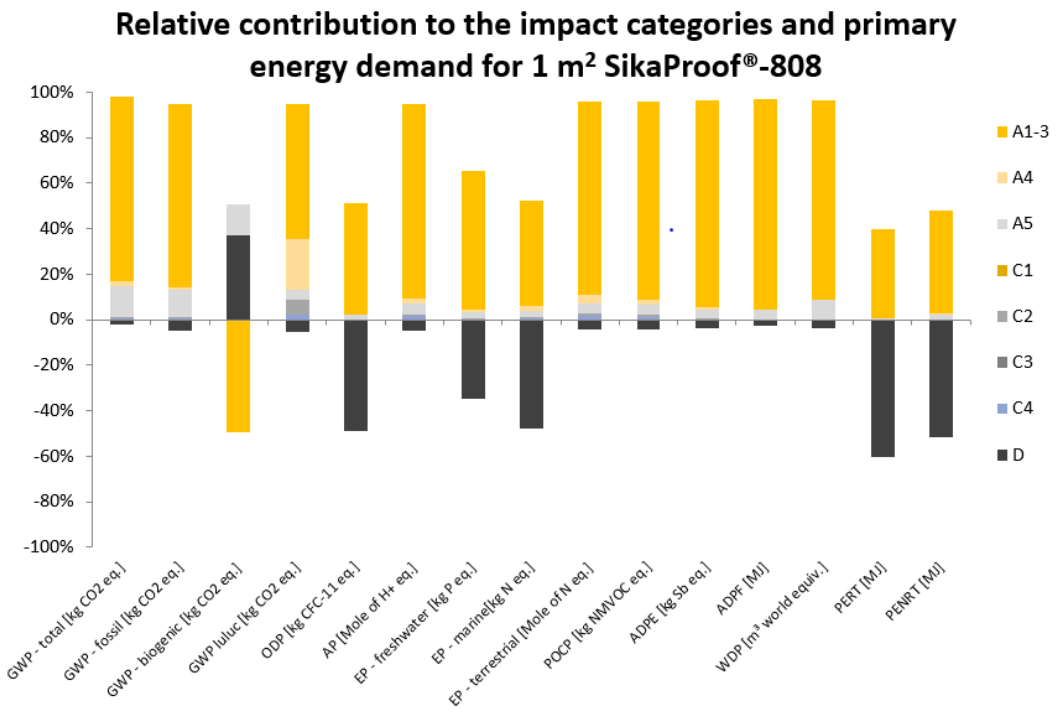


Figure 1

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