ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN 15804+A2:2019 for

SHF-Pro

From Schwihag AG

Programme:	The International EPD® System
Programme operator:	EPD International AB
EPD registration number:	EPD-IES-0027241:001
Type of EPD:	Single product from Schwihag AG
Version Date:	2026-01-12
Validity Date:	2031-01-11
Geographical Scope:	UK, EU, Global

An EPD may be updated or de-published if conditions change. To find the latest version of the EPD and confirm its validity, see www.environdec.com.

General Information

Programme Information	
Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	support@environdec.com

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): *PCR 2019:14 Version 2.0.1, Construction Products, EN 15804:2012 + A2:2019 Sustainability of Construction Works.*
PCR review was conducted by: The Technical Committee of the International EPD® System. **Review chair:** Rob Rouwette (chair), Professional Consultant, start2see, Australia. Noa Meron (co-chair), LCA Team Lead, thinkstep-anz, New Zealand. **The review panel may be contacted via** support@environdec.com**.**

LCA accountability
Valpak Sustainability Consulting

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ **Individual EPD verification without a pre-verified LCA/EPD tool** Third-party verifier: Dr Callum Hill, JCH Industrial Ecology Ltd. Approved by: International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.
For further information about comparability, see EN 15804 and ISO 14025.

Information about EPD owner

Owner of the EPD: Schwihag AG
Address: Konstanzerstrasse 70-72, CH-8274 Tägerwilen
Contact: David Eyre; email: david.eyre@schwihag.com
Description of the organisation: Supply of innovative products and system solutions in the fields of railway, switch and track technology.
Product-related or management system-related certifications: ISO 9001:2015, ISO 14001:2015 & ISO45001:2018

Product Information

Product name: SHF-Pro
Pack size in volume: 400 ml
UN CPC code: 35110. Paints and varnishes and related products
Manufacturing site: Yorkshire, England
Final process site: Yorkshire, England.

The declared product SHF-Pro is a solvent free two component epoxy resin-based wood & composite sleeper repair system. The resin and the hardener are in a 1:1 volume ratio. The mixing ratio between the resin component and the hardener component is set automatically as the product is pushed out of the cartridge. Curing begins immediately after the components are mixed. The product is dispensed from a plastic cartridge using a manual tool, engineered for high-impact railway timber and composite repairs. With rapid curing and exceptional bonding strength, it is ideal for both structural and hole maintenance across rail infrastructure applications.

Recognised as the next-generation user-friendly hole filler for the rail infrastructure, SHF-Pro provides a sustainable solution that prioritises operator safety and track performance in extending the life of railway components. Its non-shrinking formulation and VOC A+ rating make it a reliable choice for railway maintenance teams.

Key Features:

- Free from solvents, making its use safe for both outdoor and confined spaces
- Fast curing – ready to redrill in 20 minutes
- High strength and impact resistance
- Accurate mixing via cartridge system
- VOC A+ for low emissions

Applications:

- Railway timber and composite repairs
- Eco-conscious refurbishment of railway assets

The following technical data are relevant for the declared product SHF-Pro as delivered.

Storage:

- Storage temperatures should be between +5°C to +25°C.
- Avoid direct sunlight.

Shelf life:

- 24 months from the date of manufacture.

Further technical details are provided in the additional information section below.
More information available at: https://www.directtracksolutions.co.uk/SHF-Pro

Life Cycle Assessment Methodology

Declared unit

1 kg of SHF-Pro + packaging. SHF-Pro pack size (by volume): 400ml.

Reference service life

See additional information

Time representativeness

2023

Database and LCA software

GreenDelta's EN15804 Add-on version 2[1] and OpenLCA Version 2.2.0. CFs are EF 3.1 EN15804 method as implemented by Ecoinvent.

System boundaries

Cradle to gate with options, modules C1-C4 and module D. Included modules are A4 and A5. Excluded are modules B1-B7. Capital goods/infrastructure are excluded from the system boundary in line with the LCA report. Disclaimer: The results of A1-A3 shall not be used without considering the results of module C.

LCA modelling

There is no allocation of co-products in the LCA modelling underpinning this EPD. No cut-offs are applied to either the inventory data or the calculated environmental impacts. As per the requirements of the International EPD® system, the EPD results are shown in the results tables.

Audience

The intended application for this EPD is to provide comprehensive information on the environmental impacts of SHF-Pro. The intended audience is B2B.

Content declaration

The products in this EPD contains the following component volumes:

Product Components	Weight %	% post-consumer recycled material – weight % of product	Biogenic material weight - % of product	Biogenic material weight – kg C per product
Part A: Resin	50 - 60	0%	0%	0
Part A: Filler	30 - 50	0%	0%	0
Part A: Other	< 5	0%	0%	0
Part B: Hardener	55 - 65	0%	0%	0
Part B: Filler	25 - 45	0%	0%	0
Part B: Other	< 5	0%	0%	0

The product in this EPD includes the following amounts of packaging materials (400ml pack):

Packaging materials	Weight (kg)	Weight - % (versus the product)	Biogenic material weight – kg C per product
Paper	0.00717	0.7%	0.00251
Plastic	0.213	21.3%	0
TOTAL	0.220	22%	0.00251

[1] Contains LCI datasets from Ecoinvent 3.9.1.

Dangerous Substances

The products/articles, or any components **do not** contain:

1) Substances from the ECHA Candidate List of Substances of Very High Concern (SVHC) (as of June 10, 2022) in concentrations exceeding 0.1% by mass.

2) Biocidal products, nor has it been treated with biocidal products, as defined by the (EU) Regulation on Biocidal Products No. 528/2012.

3) The products/articles or any components **do contain** Category 1A or 1B CMR substances exceeding 0.1% by mass that are not on the candidate list as follows:

CMR substance category 1A or 1B, not on ECHA candidate list exceeding 0.1% mass	EC No.	CAS No.	Weight-% per declared unit
1,6-HEXANDIOLDIGLYCIDYLETHER	618-939-5	933999-84-9	3 - 10

Product Life Cycle Overview

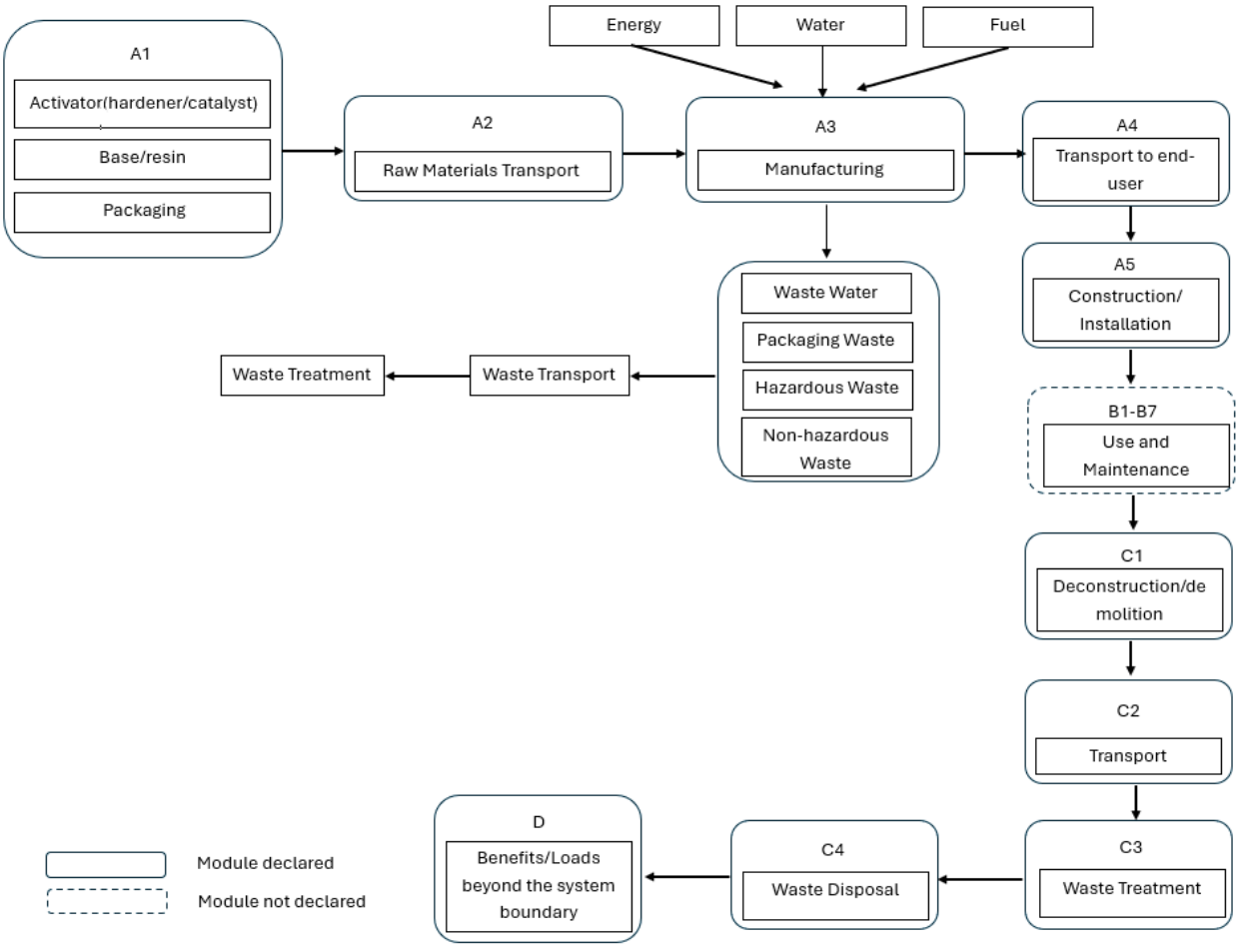
Modules declared in the EPD

	Product stage			Construction		Use stage							End of Life stage					Benefits / loads beyond the system boundary
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		D
Modules declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X		X
Geography	EU, GLO	EU, GLO	UK	UK	UK	-	-	-	-	-	-	-	UK	UK	UK	UK		UK
Specific data used	9%			-	-	-	-	-	-	-	-	-	-	-	-	-		-
Variation* – products	n/a			-	-	-	-	-	-	-	-	-	-	-	-	-		-
Variation* – sites	n/a			-	-	-	-	-	-	-	-	-	-	-	-	-		-

*GWP-GHG A1-A3 relative to average product.

A1 = Raw materials supply, A2 = Transport, A3 = Manufacturing, A4 = Transport, A5 = Construction/installation, B1 = Use, B2 = Maintenance, B3 = Repair, B4 = replacement,
B5 = Refurbishment, B6 = Operational energy use, B7 = Operational water use, C1 = De-construction/demolition, C2 = Transport, C3 = Waste treatment, C4 = Waste disposal
D = Benefits/loads beyond the system boundary
X = Module declared, ND = Module not declared

System diagram



Raw materials supply (A1)

The extraction and processing of raw materials used to manufacture the resin and hardener at the production site in the UK, and the product's packaging.

Transport (A2)

Transport of materials and packaging from supplier locations to the production site in the UK. Supplier locations and transport modes were provided and include the below.

Mode	Vehicle type	Fuel type
Road	Lorry, 16 – 32 tonnes, EURO6	Diesel
Sea	Container ship	Heavy fuel oil
	Ferry	Heavy fuel oil

Manufacturing (A3)

Usage amounts of energy, fuels and water etc are allocated according to 2023 production data supplied by the manufacturer. The climate change GWP impact of electricity used in manufacturing is 0.295 kg CO_2eq per kWh, based on the UK grid supply mix in 2020.

Transport to end-user (A4)

The transport of the product to the end-user in England. Distribution to end-user in England assumed to be 100 km.

Construction/Installation (A5)

The removal of packaging around product at end-user and its waste treatment.

De-construction/demolition (C1)

There are no environmental impacts associated with the removal of the chemical anchor products at EoL included in this EPD.

Waste transport (C2)

On average, the transport by road to local waste sites from the installation site is assumed to be a journey of 100 km by diesel lorry, 16-32 tonnes, EURO6.

Waste disposal (C4)

100% of EoL materials are sent to incineration (with energy recovery) in the UK.

Benefits (D)

The main benefit beyond the system boundary arises from the heat recovered from incineration of EoL materials (1 MJ heat is assumed to avoid 0.077 kgCO_2eq).

Excluded from the system boundary

The environmental impacts of buildings and infrastructure, plant, machinery and equipment, and repair/maintenance at the two production sites are excluded, as are impacts from business travel and staff commuting.

Data quality

Declaration of data sources, reference years, data categories, and share of primary data for this EPD.

Module	LCI process	Source type	Source	Reference year	Data category	Primary % of total GWP-GHG (A1-A3)
A1	Processes representing raw materials and packaging for SHF-Pro	Database	Ecoinvent 3.9.1	2023	Primary and representative generic data	0%
A2	transport, freight, lorry 16-32 metric ton, EURO6 | transport, freight, lorry 16-32 metric ton, EURO6 | EN15804, U - RER	Database	Ecoinvent 3.9.1	2023	Primary data	1%
A2	transport, freight, sea, container ship | transport, freight, sea, container ship | EN15804GD, U – GLO	Database	Ecoinvent 3.9.1	2023	Primary data	0%
A2	transport, freight, sea, ferry | transport, freight, sea, ferry | EN15804, U - GLO	Database	Ecoinvent 3.9.1	2023	Primary data	0%
A3	market for electricity, medium voltage | electricity, medium voltage | EN15804, U - GB	Database	Ecoinvent 3.9.1	2023	Primary data	3%
A3	market group for heat, central or small-scale, natural gas | heat, central or small-scale, natural gas | EN15804, U	Database	Ecoinvent 3.9.1	2023	Primary data	4%
A3	transport, freight, lorry 16-32 metric ton, EURO6 | transport, freight, lorry 16-32 metric ton, EURO6 | EN15804, U - RER	Database	Ecoinvent 3.9.1	2023	Primary data	1%
% specific data A1-A3 GWP-GHG						**9%**

Note The share of primary data for A1–A3 is calculated based on GWP-GHG results. It is a simplified indicator for data quality that does not capture all relevant aspects of data quality. The indicator is not comparable across product categories.

Module	Stage	Type of Data
A1	Materials acquisition	Supplier/site product specific, generic database
A2	Materials transport	Supplier/site product specific, generic database
A3	Manufacturing	Supplier/site product specific, generic database
A4	Transport to end-user	Scenario, site/product specific data, generic database
A5	Construction/Installation	Scenario, site/product specific data, generic database
C1	De-construction /demolition	Scenario
C2	EoL waste transport	Scenario, site/product specific data, generic database
C3	EoL waste treatment	Scenario, site/product specific data, generic database
C4	EoL waste disposal	Scenario, site/product specific data, generic database
D	Benefits	Scenario, product specific data, generic database

Comprehensive process specific input data of high quality, accuracy and granularity have been provided by the manufacturer regarding the manufacturing and supply chain processes for the assessed filler.

The product specific datasets are for 2023, therefore recent and representative of the geography and technology used. The quality levels for all are therefore Very Good.

Generic LCI datasets are from Ecoinvent 3.9.1, released in 2022, therefore the quality of time representativeness is Very Good (<3years). Specific European and UK datasets (supplier locations, materials/packaging and transport modes etc) have been selected from the LCI for the LCA and the quality level for geographical and technical representativeness is Very Good

Mandatory Impact Category Indicators According to EN 15804

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Environmental Indicators (per kg of SHF-Pro)

Environmental Indicators	Units	Raw Materials supply transport and production	Transport to end-user	Construction /Installation	End of life				Benefits/ loads beyond the system boundary
		A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-Total	**kg CO_2 eq.**	**3.29E+00**	**2.51E-02**	**2.85E-01**	**0.00E+00**	**2.25E-02**	**0.00E+00**	**6.43E-01**	**-7.59E-01**
GWP-fossil	kg CO_2 eq.	3.56E+00	2.51E-02	2.01E-02	0.00E+00	2.25E-02	0.00E+00	6.34E-01	-7.59E-01
GWP biogenic	kg CO_2 eq.	-2.74E-01	0.00E+00	2.65E-01	0.00E+00	0.00E+00	0.00E+00	9.20E-03	0.00E+00
GWP-LULUC	kg CO_2 eq.	2.87E-03	1.24E-05	2.04E-05	0.00E+00	1.11E-05	0.00E+00	1.22E-05	-1.15E-04
ODP	kg CFC11 eq.	2.64E-07	5.46E-10	2.49E-10	0.00E+00	4.91E-10	0.00E+00	1.82E-09	-3.33E-08
AP	molc H^+ eq.	1.42E-02	5.48E-05	6.62E-05	0.00E+00	4.93E-05	0.00E+00	3.57E-04	-6.22E-04
EP - freshwater	kg P eq.	8.80E-04	1.78E-06	2.72E-06	0.00E+00	1.60E-06	0.00E+00	4.64E-05	-2.71E-05
EP - marine	kg N eq.	2.73E-03	1.38E-05	2.49E-05	0.00E+00	1.24E-05	0.00E+00	1.94E-04	-1.91E-04
EP - terrestrial	molc N eq.	2.87E-02	1.41E-04	2.24E-04	0.00E+00	1.26E-04	0.00E+00	1.65E-03	-2.05E-03
POCP	kg NMVOC eq.	1.23E-02	8.51E-05	8.37E-05	0.00E+00	7.65E-05	0.00E+00	4.33E-04	-1.32E-03
ADP - minerals and metals*	kg Sb eq.	2.70E-05	8.39E-08	6.89E-08	0.00E+00	7.54E-08	0.00E+00	8.97E-08	-7.88E-07
ADP - fossil*	MJ	8.04E+01	3.59E-01	2.28E-01	0.00E+00	3.22E-01	0.00E+00	3.99E-01	-1.13E+01
WDP*	m^3	1.84E+00	1.78E-03	3.37E-03	0.00E+00	1.60E-03	0.00E+00	8.46E-02	-2.63E-02

* The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Biogenic carbon of outbound packaging cardboard and pallets enters in A1-A3 and exits the system in A5, and the biogenic carbon of product dispenser label enters in A1-A3 and exits in C4.

Additional Mandatory Indicators Results

GWP-GHG (per kg of SHF-Pro)

Environmental Indicators	Units	Raw Materials supply transport and production	Transport to end-user	Construction /Installation	End of life				Benefits/ loads beyond the system boundary
		A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG[1]	kg CO_2 eq.	3.57E+00	2.51E-02	2.05E-02	0.00E+00	2.26E-02	0.00E+00	6.34E-01	-7.59E-01

[1]This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Resource Use Indicators (per kg of SHF-Pro)

Environmental Indicators	Units	Raw Materials supply transport and production	Transport to end-user	Construction /Installation	End of life				Benefits/ loads beyond the system boundary
		A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	2.45E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.08E-01
PERM	MJ	1.97E+00	0.00E+00	-1.91E+00	0.00E+00	0.00E+00	0.00E+00	-5.85E-02	0.00E+00
PERT	MJ	4.42E+00	0.00E+00	-1.91E+00	0.00E+00	0.00E+00	0.00E+00	-5.85E-02	-1.08E-01
PENRE	MJ	7.59E+00	3.28E-01	3.34E-02	0.00E+00	2.95E-01	0.00E+00	3.76E-01	-1.08E+01
PENRM	MJ	6.29E+00	0.00E+00	-1.31E+00	0.00E+00	0.00E+00	0.00E+00	-4.97E+00	-5.39E-01
PENRT	MJ	1.39E+01	3.28E-01	-1.28E+00	0.00E+00	2.95E-01	0.00E+00	-4.59E+00	-1.13E+01
SM	kg	1.38E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	6.43E-02	1.06E-04	1.89E-04	0.00E+00	9.53E-05	0.00E+00	2.13E-04	-2.76E-03
NRSF	MJ	1.47E-01	2.09E-04	3.04E-04	0.00E+00	1.87E-04	0.00E+00	5.67E-04	-3.53E-03
FW	m^3	4.29E-02	4.34E-05	6.11E-05	0.00E+00	3.89E-05	0.00E+00	1.35E-03	-6.62E-04

Waste Indicators (per kg of SHF-Pro)

Environmental Indicators	Units	Raw Materials supply transport and production	Transport to end-user	Construction /Installation	End of life				Benefits/ loads beyond the system boundary
		A1-A3	A4	A5	C1	C2	C3	C4	D
HW	kg	1.77E-01	0.00E+00	8.02E-04	0.00E+00	3.03E-04	0.00E+00	5.68E-02	-4.76E-03
NHW	kg	2.89E-01	0.00E+00	9.84E-03	0.00E+00	1.56E-02	0.00E+00	2.79E-01	-1.35E-02
RW	kg	9.24E-05	0.00E+00	2.00E-07	0.00E+00	1.05E-07	0.00E+00	2.40E-07	-2.89E-06

Output Flow Indicators (per kg of SHF-Pro)

Environmental Indicators	Units	Raw Materials supply transport and production	Transport to end-user	Construction /Installation	End of life				Benefits/ loads beyond the system boundary
		A1-A3	A4	A5	C1	C2	C3	C4	D
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	3.98E-01	0.00E+00	1.38E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.22+-01	0.00E+00
EEE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	MJ	1.50E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.89E+00	0.00E+00

Additional voluntary indicator results

Environmental Indicators (per kg of SHF-Pro)

Environmental Indicators	Units	Raw Materials supply transport and production	Transport to end-user	Construction / Installation	End of life				Benefits/ loads beyond the system boundary
		A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease inc.	1.43E-07	1.87E-09	1.39E-09	0.00E+00	1.68E-09	0.00E+00	3.11E-09	-3.61E-09
IRP	kBq U-235eq	3.77E-01	4.82E-04	7.96E-04	0.00E+00	4.33E-04	0.00E+00	9.57E-04	-1.13E-02
ETP-fw	CTUe	6.97E+01	1.76E-01	1.07E-01	0.00E+00	1.58E-01	0.00E+00	2.59E+00	-5.69E-01
HTP-c	CTUh	3.05E-09	1.15E-11	1.69E-11	0.00E+00	1.03E-11	0.00E+00	1.73E-10	-1.77E-10
HTP-nc	CTUh	3.44E-08	2.55E-10	1.87E-10	0.00E+00	2.29E-10	0.00E+00	6.09E-09	-1.59E-09
SQP	Pt	2.15E+01	2.15E-01	1.47E-01	0.00E+00	1.93E-01	0.00E+00	1.96E-01	-2.60E-01

Additional LCA results – EoL Scenarios

The following tables show the results for '100% landfill' at EoL (Modules C1 – C4) of the representative product.

Environmental Indicators (per kg of SHF-Pro)

Environmental Indicators	Units	100% landfill			
		C1	C2	C3	C4
GWP-Total	**kg CO_2 eq.**	**0.00E+00**	**2.25E-02**	**0.00E+00**	**3.58E-02**
GWP-fossil	kg CO_2 eq.	0.00E+00	2.25E-02	0.00E+00	2.65E-02
GWP biogenic	kg CO_2 eq.	0.00E+00	0.00E+00	0.00E+00	9.20E-03
GWP-LULUC	kg CO_2 eq.	0.00E+00	1.11E-05	0.00E+00	9.70E-06
ODP	kg CFC11 eq.	0.00E+00	4.91E-10	0.00E+00	3.10E-10
AP	molc H^+ eq.	0.00E+00	4.93E-05	0.00E+00	9.42E-05
EP - freshwater	kg P eq.	0.00E+00	1.60E-06	0.00E+00	3.29E-06
EP - marine	kg N eq.	0.00E+00	1.24E-05	0.00E+00	9.61E-05
EP - terrestrial	molc N eq.	0.00E+00	1.26E-04	0.00E+00	3.75E-04
POCP	kg NMVOC eq.	0.00E+00	7.65E-05	0.00E+00	1.32E-04
ADP - minerals and metals*	kg Sb eq.	0.00E+00	7.54E-08	0.00E+00	2.80E-08
ADP - fossil*	MJ	0.00E+00	3.22E-01	0.00E+00	2.87E-01
WDP*	m^3	0.00E+00	1.60E-03	0.00E+00	1.60E-03

* The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Additional Mandatory Indicators Results

GWP-GHG (per kg of SHF-Pro)

Environmental Indicators	Units	100% landfill			
		C1	C2	C3	C4
GWP-GHG[1]	Kg CO_2 eq.	0.00E+00	2.26E-02	0.00E+00	3.10E-02

[1]This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Resource Use Indicators (per kg of SHF-Pro)

Environmental Indicators	Units	100% landfill			
		C1	C2	C3	C4
PERE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	-5.85E-02
PERT	MJ	0.00E+00	0.00E+00	0.00E+00	-5.85E-02
PENRE	MJ	0.00E+00	2.95E-01	0.00E+00	2.63E-01
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	-4.97E+00
PENRT	MJ	0.00E+00	2.95E-01	0.00E+00	-4.71E+00
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	9.53E-05	0.00E+00	5.28E-05
NRSF	MJ	0.00E+00	1.87E-04	0.00E+00	1.32E-04
FW	m^3	0.00E+00	3.89E-05	0.00E+00	2.88E-04

Waste Indicators (per kg of SHF-Pro)

Environmental Indicators	Units	100% landfill			
		C1	C2	C3	C4
HW	kg	0.00E+00	3.03E-04	0.00E+00	3.80E-04
NHW	kg	0.00E+00	1.56E-02	0.00E+00	1.12E+00
RW	kg	0.00E+00	1.05E-07	0.00E+00	9.24E-08

Output Flow Indicators (per kg of SHF-Pro)

Environmental Indicators	Units	100% landfill			
		C1	C2	C3	C4
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional voluntary indicator results

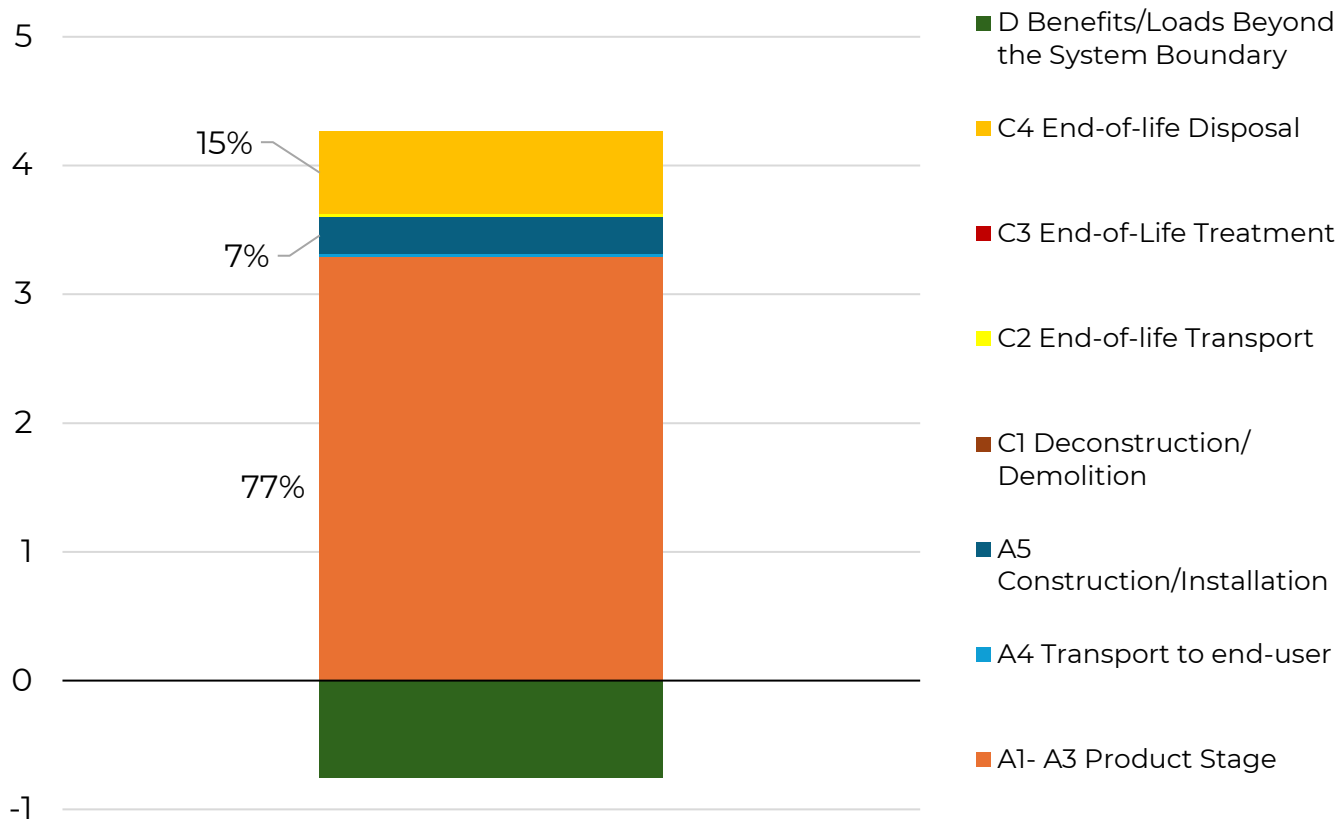
Environmental Indicators (per kg of SHF-Pro)

Environmental Indicators	Units	100% landfill			
		C1	C2	C3	C4
PM	Disease inc.	0.00E+00	1.68E-09	0.00E+00	2.02E-09
IRP	kBq U-235eq	0.00E+00	4.33E-04	0.00E+00	3.83E-04
ETP-fw	CTUe	0.00E+00	1.58E-01	0.00E+00	1.48E-01
HTP-c	CTUh	0.00E+00	1.03E-11	0.00E+00	7.46E-12
HTP-nc	CTUh	0.00E+00	2.29E-10	0.00E+00	1.17E-10
SQP	Pt	0.00E+00	1.93E-01	0.00E+00	6.49E-01

Interpretation

The carbon footprint of the SHF-Pro product included in this EPD is 4.27 kg CO2eq per kg. The chart below shows the contribution to the overall carbon footprint of each of the included stages of the life cycle.

SHF-Pro – Global Warming Potential (GWP Total) kg CO_2eq



The product stage (A1-A3) and end-of-life disposal (C4) are the biggest contributors to the SHF-Pro product carbon footprint, accounting for 77% and 15% respectively.

Additional information

Reference service life

The SHF-Pro product may encounter various environmental conditions throughout its use phase. Its anticipated service life depends on the specific installation context and the level of exposure it experiences. Key factors affecting its longevity include weather conditions, as well as mechanical and chemical stresses.

Approvals/Certifications/Testing

- Made In Britain Accredited
- LEED tested 2021 EQ c4.1 SCAQMD rule 1168 (2005).
- VOC A+ Rating (Volatile Organic Content).

Abbreviations

ADP-fossil – Abiotic depletion for fossil resources potential

ADP-mineral & metals – Abiotic depletion potential for non-fossil resources

AP – Acidification potential, accumulated exceedance

CRU – Components for reuse

EE – Exported Energy

EI – Environmental Impact

EP-freshwater – Eutrophication potential, fraction of nutrients reaching freshwater end compartment

EP-marine – Eutrophication potential, fraction of nutrients reaching marine end compartment

EP-terrestrial – Eutrophication potential terrestrial

FW – Net use of fresh water

GHG – Greenhouse Gases

GLO - Global

GWP – Global Warming Potential

GWP-biogenic – Global warming potential, biogenic

GWP-fossil – Global warming potential, fossil fuels

GWP-luluc – Global warming potential, land use and land use change

GWP-total – Global warming potential, total

HDPE – High density polyethylene

HH – Human Health

HWD – Hazardous waste disposed

kg – Kilogram

kg.km – Kilogram kilometre

LCA – Life Cycle Assessment

LDPE – Low-density polyethylene

MER – Materials for energy recovery

MFR – Materials for recycling

NHWD – Non-hazardous waste disposed

NRSF – Use of non-renewable secondary fuels

ODP – Ozone layer depletion potential

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 SM – Use of secondary material

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

POCP – Formation potential of tropospheric ozone

RSF – Use of renewable secondary fuels

RWD – Radioactive waste disposed

WDP – Water deprivation potential, deprivation-weighted water consumption

References

GPI International EPD® System (2024) General Programme Instructions for the International EPD® System. Version 5.0. www.environdec.com.

PCR 2019:14 Construction products (EN 15804:A2) (v1.3.4) prepared by IVL Swedish Environmental Research Institute, Secretariat of the International EPD® System, date 2024-04-30.

EN 15804:2012+A2:2019/ Sustainability of construction works - Environmental Product Declarations - Core rules for the product category of construction products.

ISO 14025 Environmental labels and declarations - Type III environmental declarations - Principles and procedures.

ISO 14040/44 Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006).

The International EPD® System - The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. www.environdec.com

EN15804 Add-on version 2, https://nexus.openlca.org/, https://nexus.openlca.org/ws/files/23889

GreenDelta GmbH, https://www.greendelta.com/

Schwihag AG, Konstanzerstrasse 70-72, CH-8274 Tägerwilen

Version History

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