epddanmark

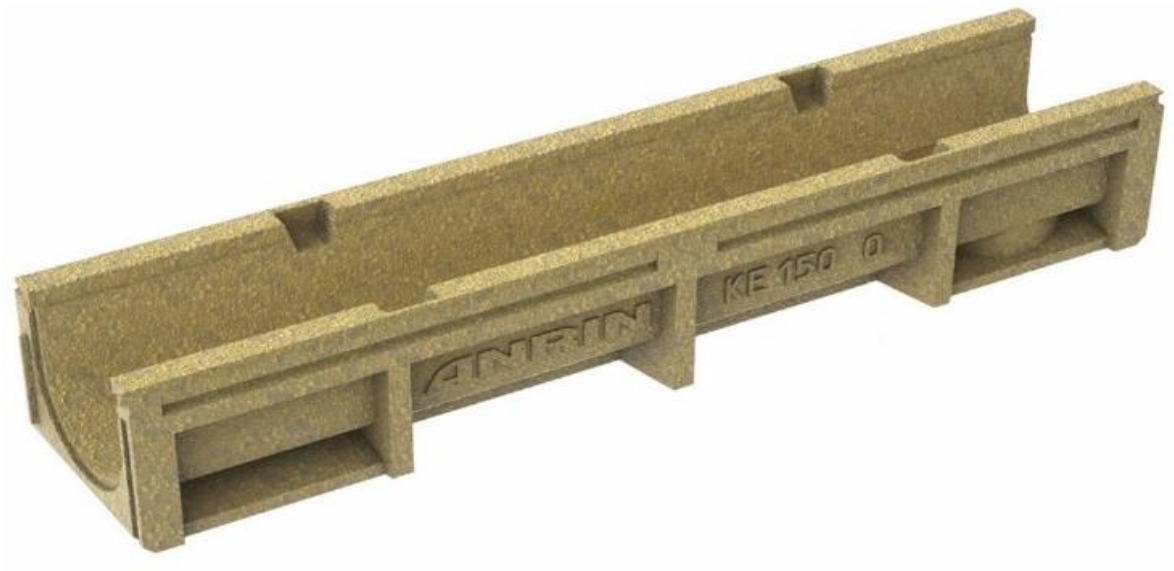
ECO PLATFORM EPD VERIFIED

Owner: ANRIN GmbH
No.: MD-25092-EN
Issued: 08-08-2025
Valid to: 08-08-2030

3rd PARTY **VERIFIED**

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | **ISO 14025 & EN 15804**



Owner of declaration
ANRIN GmbH
Siemensstr. 1, D-59609 Anröchte
VAT no. DE811843623
www.anrin.com

Programme
EPD Danmark
www.epddanmark.dk

☐ Industry EPD
☒ Product EPD

☒ Product specific
☐ Average
☐ Worst Case

Declared product(s)
Within this EPD, only the polymer concrete channel produced by ANRIN GmbH is considered.

Number of declared datasets/product variations: 1

Production site
ANRIN GmbH
Siemensstr. 1
D-59609 Anröchte, Germany

Use of Guarantees of Origin
☐ No certificates used
☒ Electricity covered by GoO
☐ Biogas covered by GoO

Declared/ functional unit
1 kg Polymer concrete channel

Year of production site data (A3)
2023

EPD version
This EPD is the original version.

Issued: 08-08-2025
Valid to: 08-08-2030

Basis of calculation
This EPD is developed and verified in accordance with the European standard EN 15804+A2.

Comparability
EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity
This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use
The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

EPD type
☐Cradle-to-gate with modules C1-C4 and D
☒Cradle-to-gate with options, modules C1-C4 and D
☐Cradle-to-grave and module D
☐Cradle-to-gate
☐Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR

Product Category Rules (PCR): Construction products, 2019:14, version 1.3.4

Independent verification of the declaration and data, according to EN ISO 14025

☐ internal ☒ external

Third party verifier:
Stefan Emil Danielsson

Stefan Emil Danielsson

Martha Katrine Sørensen
EPD Danmark

Life cycle stages and modules (ND = module not declared)

Product			Construction process		Use							End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery and recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

Product information

Product description

The polymer concrete channel from ANRIN is a drainage system made of polymer concrete. This is significantly more robust than other materials and the increased compressive strength means that the channel can be used in different areas.

The possible applications range from the private sector to the industrial sector and the construction of sports facilities wherever the controlled flow of water is required.

The channel is installed in the ground and fixed in place with concrete, for example.

The main product components are shown in the table below.

Material	Weight of components (kg)	Weight-% of declared product
Resin	0.12711	12.7
Accelerator	0.0006	0.1
Hardening agent	0.00138	0.1
Chemical bonding agent	0.00055	0.1
Release agent	0.00052	0.1
Gravel	0.49236	49.2
Sand	0.23116	23.1
Quartz flour	0.14632	14.6
Total	**1.0**	**100**

Product packaging:

The composition of the sales- and transport packaging of the product is shown in the table below.

Material	Weight of packaging material (kg)	Weight-% of packaging
Single-use pallets	0.00416	67
Wood strips	0.00149	24
Steel strip	0.000035	0.5
PET strapping band	0.00030	4.8
PE stretch film	0.0002	3.2
Total	**0.00621**	**100**

Representativity

The product is sold on the European market. The data related to production at the ANRIN GmbH site in Anröchte, Germany. The product is available in various sizes. Scaling is possible as the declared unit here is 1 kg.

The product-specific data is based on annual values from the calendar year 2023.

The background data is based on data sets from the LCA for Experts (GaBi) software in version 2024.2.

The foreground data used is less than 2 years old. The background data used is less than 6 years old, both technically and geographically, which indicates very good data quality in accordance with EN15804:2012+A2:2019.

Hazardous substances

The product Polymer concrete channel does not contain substances listed on the ”Candidate List of Substances of Very High Concern for authorisation”

http://echa.europa.eu/candidate-list-table

Product use

The possible applications range from the private sector to the industrial sector and the construction of sports facilities wherever the controlled flow of water is required.

The channel is installed in the ground and fixed in place with concrete, for example.

Further information on the product and the areas of application can be found under the following link:

https://www.anrin.com/en/products/overview/

Essential characteristics

Technical information can be requested from the manufacturer or can be found on the manufacturer's website:

https://www.anrin.com/de/downloads/

Reference Service Life (RSL)

The reference service life of this polymer concrete channel is 50 years when installed and used professionally in outdoor areas.

This RSL represents the expected minimum service life of the minimum expected average service life.

Picture of product

LCA background

Declared unit

The LCI and LCIA results in this EPD refer to 1 kg of a polymer concrete channel, including the components and energy required for installation.

Name	Value	Unit
Declared unit	1	kg
Gross density	2.2	g/cm^3

Functional unit

The functional unit is not defined, therefore a declared unit is used.

Material properties

The addition of the resin during the manufacture of the gutter makes it more resistant to the effects of the weather and gives it a smooth surface, preventing particles from settling in pores.

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804, and PCR 2019:14 Construction products (EN 15804+A2) (version 1.3.4).

Energy modelling principles

Foreground system:

Certified green electricity from 100% renewable (wind) energy sources is demonstrably used to produce the polymer concrete channel. Electricity is required for production machines. A dataset that represents German electricity from wind was used for the modeling.

Information about the energy mix in the foreground system:

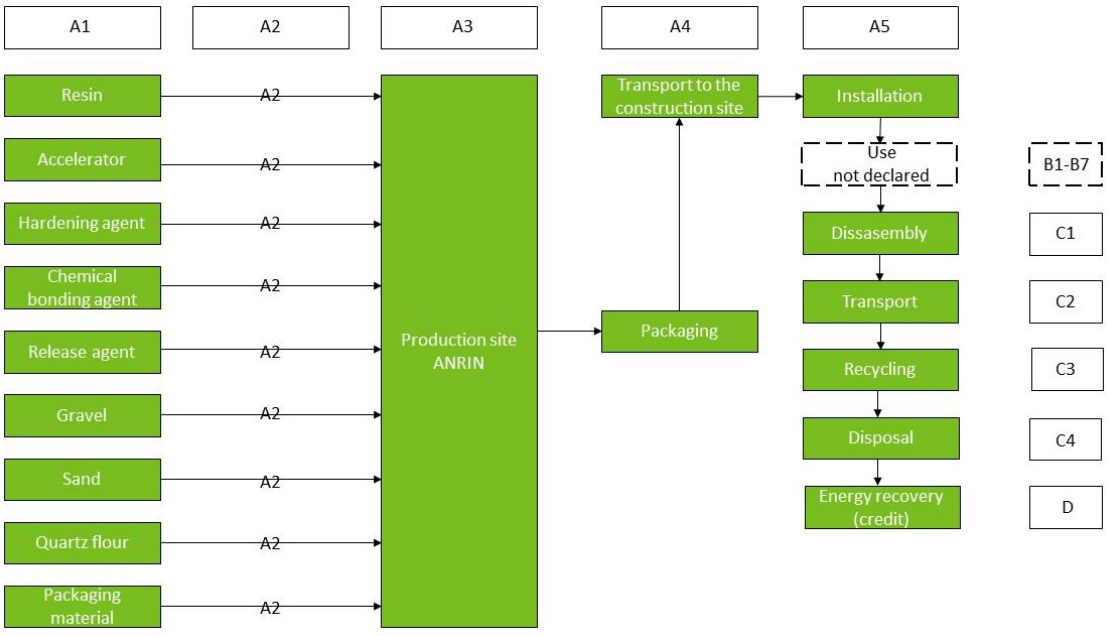
Energy mix	EF	Unit
Electricity from wind	0.0137	kg CO_2e/kWh
Liquefied Petroleum Gas	0.089	kg CO_2e/MJ
Light fuel oil	0.094	kg CO_2e/MJ

Background system:

Other processes upstream and downstream of production are modeled with processes from the LCA for Experts (GaBi) background database, which is based on average data.

Flowdiagram

The process diagram below shows the life cycle of the product under consideration.



System boundary

This EPD is based on a cradle-to-gate with options LCA, in which 99,8 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

The product stage includes the procurement of all raw materials, products and energy and transportation to the production site. The LCA results are given in aggregated form for the product stage, which means that the sub-modules A1, A2 and A3 are given as one module A1-A3.

To produce the channel, the raw materials mentioned are mixed together and then poured into a mold. After hardening, the mold is removed and the product is finished.

The channels are then packed and prepared for transportation.

Construction process stage (A4-A5) includes:

Transportation to the construction site is by truck, 40t articulated lorry, Euro 6 and an assumed distance of 900 km, based on the product under consideration. The distance takes into account the distance from the ANRIN GmbH production site to the northernmost point in Denmark. The scenario takes into account the impacts caused by the operation of the truck (including diesel) depending on the mass to be transported (declared unit).

During the installation phase on the construction site, the product is unpacked, and the packaging materials are sent for material recycling via a certified disposal company. In addition to disposal, the energy and material consumption for installation is also taken into account in this phase. Concrete is needed to install the channel. To do this, a concrete powder mixture is mixed using an electric tool and water. As a worst-case scenario, the use of a mini excavator and its diesel consumption for excavating the soil was taken into account. The corresponding quantities for the declared unit were taken into account here. Datasets from the *LCA for Experts* database were used for the modeling.

End of Life (C1-C4) includes:

In all cases, the polymer concrete channel is dismantled using an electric tool to loosen the concrete for installation. In stage C1, the corresponding electricity consumption was considered with the Danish electricity mix for the tool.

The transportation of the dismantled material is carried out with a truck/semitrailer 40t, Euro 6. The transport distance is assumed to be 100 km. The dismantled polymer concrete channel is sent to landfill.

LCA results

The values in the following tables are shown in scientific notation, e.g. 1.04E+02. This value can also be displayed as $1.04*10^2$ or 104. This also applies for numbers with a negative superscript.

ENVIRONMENTAL IMPACTS PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	4.29E-01	7.02E-02	5.10E-01	3.95E-03	7.80E-03	0.00E+00	1.50E-02	0.00E+00
GWP-fossil	[kg CO_2 eq.]	4.36E-01	7.09E-02	5.13E-01	3.92E-03	7.87E-03	0.00E+00	1.50E-02	0.00E+00
GWP-biogenic	[kg CO_2 eq.]	-7.48E-03	-2.02E-03	-1.04E-02	2.85E-05	-1.97E-04	0.00E+00	-1.03E-04	0.00E+00
GWP-luluc	[kg CO_2 eq.]	3.97E-04	1.32E-03	6.98E-03	1.44E-06	1.29E-04	0.00E+00	8.98E-05	0.00E+00
ODP	[kg CFC 11 eq.]	1.61E-12	2.16E-14	3.63E-13	1.22E-13	1.13E-15	0.00E+00	4.08E-14	0.00E+00
AP	[mol H^+ eq.]	5.69E-04	8.91E-05	2.25E-03	7.80E-06	1.08E-05	0.00E+00	1.06E-04	0.00E+00
EP-freshwater	[kg P eq.]	7.62E-07	1.86E-07	1.84E-06	3.61E-08	3.27E-08	0.00E+00	3.41E-08	0.00E+00
EP-marine	[kg N eq.]	1.60E-04	3.20E-05	1.06E-03	2.52E-06	3.97E-06	0.00E+00	2.74E-05	0.00E+00
EP-terrestrial	[mol N eq.]	1.74E-03	3.89E-04	1.18E-02	2.36E-05	4.71E-05	0.00E+00	3.01E-04	0.00E+00
POCP	[kg NMVOC eq.]	9.12E-04	8.77E-05	3.06E-03	5.81E-06	1.08E-05	0.00E+00	8.37E-05	0.00E+00
ADPm[1]	[kg Sb eq.]	5.54E-08	1.17E-08	3.90E-08	2.11E-09	6.67E-10	0.00E+00	9.72E-10	0.00E+00
ADPf[1]	[MJ]	1.01E+01	8.99E-01	5.84E+00	4.99E-02	1.01E-01	0.00E+00	1.97E-01	0.00E+00
WDP[1]	[m^3 world eq. deprived]	1.13E-02	4.91E-04	1.83E-02	5.91E-04	1.19E-04	0.00E+00	1.71E-03	0.00E+00
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential								
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								

ADDITIONAL ENVIRONMENTAL IMPACTS PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	5.57E-09	8.46E-10	4.62E-08	6.66E-11	1.06E-10	0.00E+00	1.33E-09	0.00E+00
IRP[2]	[kBq U235 eq.]	8.17E-03	1.51E-04	4.64E-03	6.02E-04	2.67E-05	0.00E+00	2.33E-04	0.00E+00
ETP-fw[1]	[CTUe]	5.29E+00	6.98E-01	4.22E+00	1.42E-02	7.49E-02	0.00E+00	1.14E-01	0.00E+00
HTP-c[1]	[CTUh]	3.35E-10	1.39E-11	9.37E-11	3.38E-12	1.51E-12	0.00E+00	2.69E-12	0.00E+00
HTP-nc[1]	[CTUh]	4.62E-09	5.86E-10	4.48E-09	2.11E-11	6.79E-11	0.00E+00	1.04E-10	0.00E+00
SQP[1]	-	1.03E+00	5.98E-01	2.82E+00	1.10E-01	4.96E-02	0.00E+00	5.62E-02	0.00E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)								
Disclaimers	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								
	[2] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.								

RESOURCE USE PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	1.43E+00	9.95E-02	6.86E-01	1.87E-01	8.69E-03	0.00E+00	3.46E-02	0.00E+00
PERM	[MJ]	8.32E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.51E+00	9.95E-02	6.86E-01	1.87E-01	8.69E-03	0.00E+00	3.46E-02	0.00E+00
PENRE	[MJ]	1.01E+01	8.99E-01	5.84E+00	4.99E-02	1.01E-01	0.00E+00	1.97E-01	0.00E+00
PENRM	[MJ]	1.04E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	2.05E+01	8.99E-01	5.84E+00	4.99E-02	1.01E-01	0.00E+00	1.97E-01	0.00E+00
SM	[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
RSF	[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
NRSF	[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
FW	[m^3]	1.30E-03	9.29E-05	8.66E-04	6.81E-05	9.68E-06	0.00E+00	5.22E-05	0.00E+00
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 = Net use of fresh water								

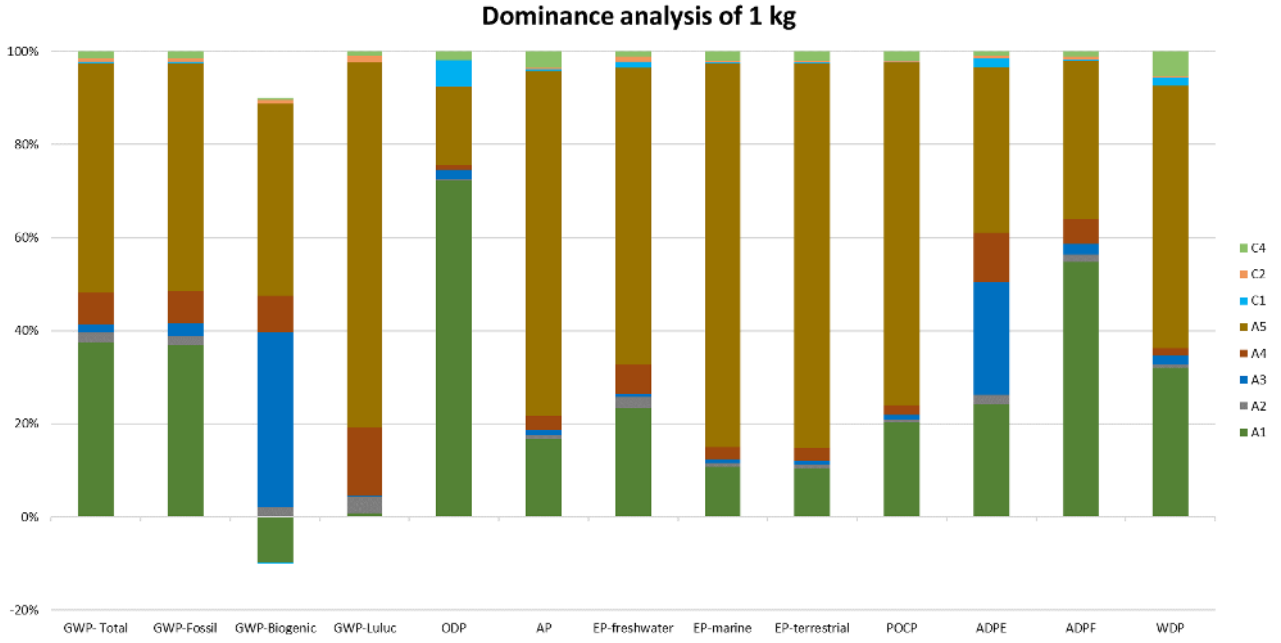
WASTE CATEGORIES AND OUTPUT FLOWS PER [1 kg]									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	5.57E-09	4.38E-11	6.84E-10	4.54E-10	3.86E-12	0.00E+00	4.95E-11	0.00E+00
NHWD	[kg]	2.88E-02	1.52E-04	3.48E-02	2.61E-04	1.65E-05	0.00E+00	1.00E+00	0.00E+00
RWD	[kg]	7.47E-05	1.43E-06	3.09E-05	5.19E-06	1.84E-07	0.00E+00	2.04E-06	0.00E+00
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]	0.00E+00	0.00E+00	0.00E+00	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	0.00E+00	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]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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; EET = Exported thermal energy								

BIOGENIC CARBON CONTENT PER [1 kg]		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	[kg C]	0
Biogenic carbon centent in accompanying packagaing	[kg C]	2.75E-03
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2	

Additional information

LCA interpretation

Most of the environmental impact of module A1 is caused by the production of the raw materials and the installation in A5 of the product. This is partly due to the fact that the manufacturing process for the resin used is based on crude oil. Due to the diesel consumption Installation of the gutter and the need for concrete, electricity and water, this has a strong impact in certain impact categories. The consumption of diesel for transportation in A4 is clearly reflected in the GWP categories. Production is hardly significant, as the electricity requirement is covered by renewable energies and the demand for heating oil and propane gas for packaging is very low. The other indicators largely follow the same pattern. A graphical representation can be found in the following diagrams with the percentage shares of the individual life cycle phases in the overall result.



Technical information on scenarios

Transport to the building site (A4)

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	LKW Euro 6, 34-40 t Total weight	-
Transport distance	900	km
Capacity utilisation (including empty runs)	61	%
Gross density of product transported	2.2	g/cm^3

Installation of the product in the building (A5)

Scenario information	Value	Unit
Concrete (Ancillary material)	1	kg
Water use	0.00012	m^3
Electricity consumption	0.0204	kWh
Diesel consumption	0.113	kg
Single-use pallets (waste)	0.00416	kg
Wood strips (waste)	0.00149	kg

Steel strip (waste)	0.000035	kg
PET strapping band (waste)	0.00030	kg
PE stretch film (waste)	0.0002	kg
Soil excavation	40.5	kg

Reference service life

RSL information		Unit
Reference service Life	50	Years
Declared product properties	It is assumed that the installation is carried out in accordance with the manufacturer's recommendations. Technical specifications and instructions can be requested directly from ANRIN. https://www.anrin.com/de/kontakt/	
Design application parameters		
Assumed quality of work		
Outdoor environment		
Indoor environment		
Usage conditions		
Maintenance		

End of life (C1-C4)

Scenario information	Value	Unit
Collected separately	1	kg
Amount of electricity consumed for dismantling	0.025	kWh
For final disposal (landfill)	1	kg
Type of fuel	Diesel	
Vehicle type	LKW Euro 6, 34-40 t Total weight	
Transportation distance	100	km

Indoor air

This information is not relevant for the product under consideration here, as the product described here is installed outdoors and therefore has no influence on indoor air.

Soil and water

The EPD does not contain any information on the release of hazardous substances into soil and water, as the horizontal standards for the corresponding measurements are not available.

References

Publisher	www.epddanmark.dk Template version 2024.2
Programme operator	Danish Technological Institute Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	WESSLING Consulting Engineering GmbH & Co. KG Oststraße 6, 48341 Altenberge www.wessling-consulting-engineering.de
LCA software / background data	Sphera LCA for Experts (GaBi) Database Version 2024.2 www.sphera.com
3rd party verifier	Stefan Emil Danielsson SDG Consulting

General programme instructions
General Programme Instructions, version 2.0, spring 2020
www.epddanmark.dk

EN 15804
DS/EN 15804 + A2:2019 - "Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products"

EN 15941
DS/EN 15941:2024 – "Sustainability of construction works - Data quality for environmental assessment of products and construction work - Selection and use of data".

EN 15942
DS/EN 15942:2011 – " Sustainability of construction works – Environmental product declarations – Communication format business-to-business"

ISO 14025
DS/EN ISO 14025:2010 – " Environmental labels and declarations – Type III environmental declarations – Principles and procedures"

ISO 14040
DS/EN ISO 14040:2020 – " Environmental management – Life cycle assessment – Principles and framework"

ISO 14044
DS/EN ISO 14044:2020 – " Environmental management – Life cycle assessment – Requirements and guidelines"