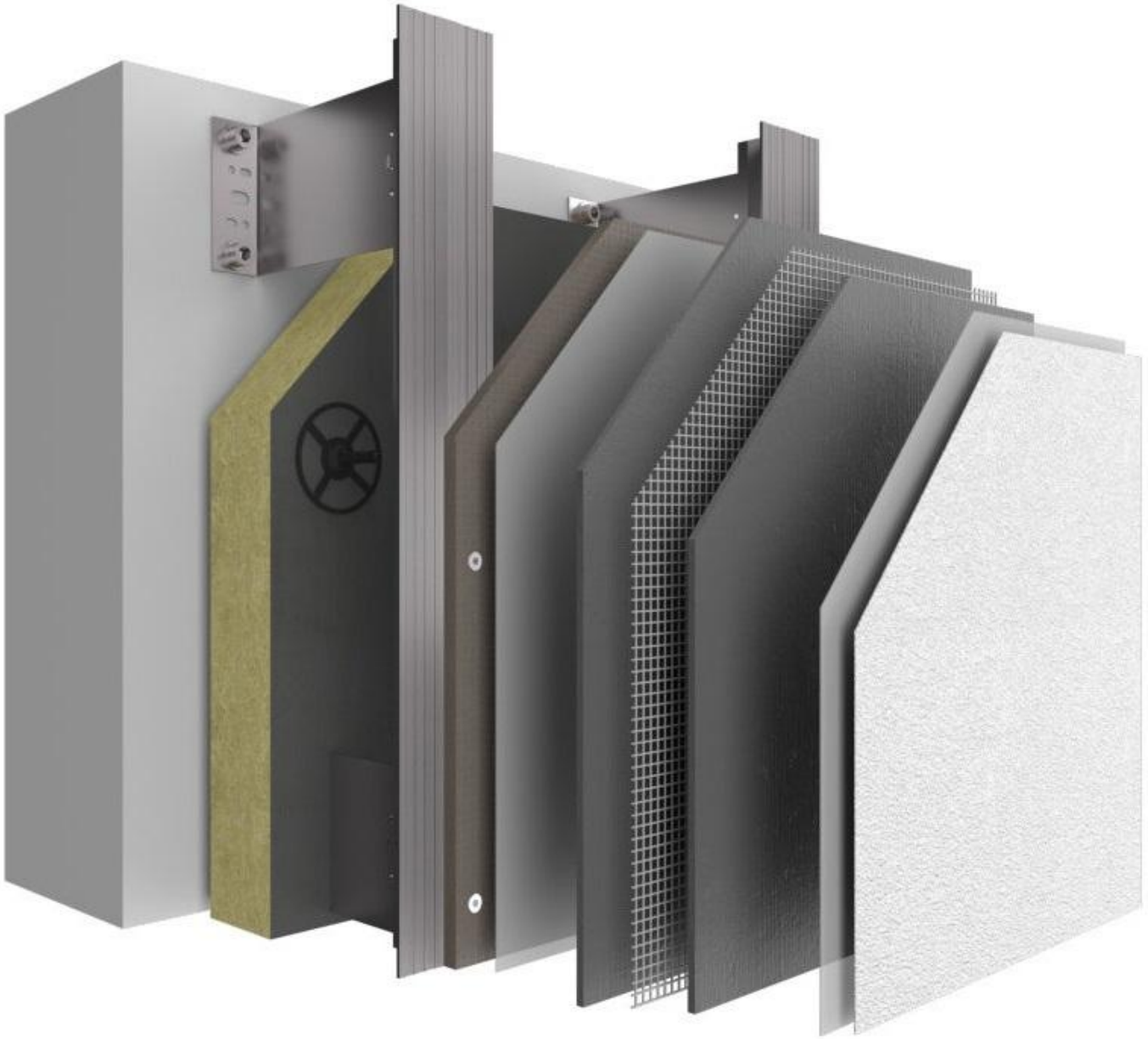
Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804+A2:2019

StoVentec R



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Issue date:	20-01-2026
Valid until:	20-01-2031
Declaration owner:	Sto SE & Co. KGaA
Publisher:	Kiwa-Ecobility Experts
Programme operator:	Kiwa-Ecobility Experts
Status:	verified

1 General information

1.1 PRODUCT

StoVentec R

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-221249-EN

1.3 VALIDITY

Issue date: 20-01-2026

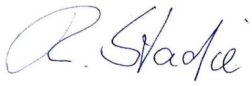
Valid until: 20-01-2031

1.4 PROGRAMME OPERATOR

Kiwa-Ecobility Experts
Wattstraße 11-13
13355 Berlin
DE

Raoul Mancke

(Head of programme operations, Kiwa-Ecobility Experts)



Dr. Ronny Stadie

(Verification body, Kiwa-Ecobility Experts)

1.5 OWNER OF THE DECLARATION

Declaration owner: Sto SE & Co. KGaA

Address: Ehrenbachstraße 1, D-79780 Stühlingen, Germany

E-mail: infoservice@sto.com

Website: https://www.sto.com

Production location: Sto SE & Co. KGaA

Address production location: Hanns-Martin-Schleyer-Str. 1, 89415 Lauingen, Germany

1.6 VERIFICATION OF THE DECLARATION

The independent verification is in accordance with the ISO 14025:2011. The LCA is in compliance with ISO 14040:2006 and ISO 14044:2006. The EN 15804+A2:2019 serves as the core PCR.

☐ Internal ☒ External

Lucas Pedro Berman, Senda

1.7 STATEMENTS

The owner of this EPD shall be liable for the underlying information and evidence. The programme operator Kiwa-Ecobility Experts shall not be liable with respect to manufacturer data, life cycle assessment data and evidence.

1.8 PRODUCT CATEGORY RULES

Kiwa-Ecobility Experts (Kiwa-EE) – General Programme Instructions “Product Level” R.3.0 (2025)

Kiwa-Ecobility Experts (Kiwa-EE) – General Programme Instructions R.3.0 Annex B1 (2025)

Part A: Kiwa-Ecobility Experts (Kiwa-EE) – General Product Category Rules (2022-02-14)

Part B: Requirements on the EPD for Curtain walling, v 7 Berlin: Institut Bauen und Umwelt e.V. (Ed.), 11.07.2023.

1 General information

1.9 COMPARABILITY

In principle, a comparison or assessment of the environmental impacts of different products is only possible if they have been prepared in accordance with EN 15804+A2:2019. For the evaluation of the comparability, the following aspects have to be considered in particular: PCR used, functional or declared unit, geographical reference, the definition of the system boundary, declared modules, data selection (primary or secondary data, background database, data quality), scenarios used for use and disposal phases, and the life cycle inventory (data collection, calculation methods, allocations, validity period). PCRs and general program instructions of different EPD program operators may differ. Comparability needs to be evaluated. For further guidance, see EN 15804+A2:2019 and ISO 14025.

1.10 CALCULATION BASIS

LCA method R<THINK: Ecobility Experts | EN15804+A2

LCA software*: Simapro 9.6

Characterization method: RETHINK characterization method (see references for more details)

LCA database profiles: ecoinvent (for version see references)

Version database: v3.20b (2025-11-18)

** Simapro is used for calculating the characterized results of the Environmental profiles within R<THINK.*

1.11 LCA BACKGROUND REPORT

This EPD is generated on the basis of the LCA background report 'StoVentec R' with the calculation identifier ReTHiNK-121249.

2 Product

2.1 PRODUCT DESCRIPTION

StoVentec R is a ventilated rainscreen cladding system with a seamless render finish applied on carrier boards, that are mounted on a subconstruction.

This EPD calculates a representative product based on the most sold and therefore considered the most important composition. The specific (Sto-)products for the basecoat and finish can vary while the rest of the composition remains the same. A list of alternative components valid for use in this EPD can be found on the system specific product page on www.sto.de/s/c/a0K2p00001KqS3GEAV/stoventec-r. This life cycle analysis calculates the manufacturing of the individual components, their transport and the assembly of StoVentec R at the construction site.

The calculation includes the following components:

StoCarrier Aero : Carrier Board made of expanded glass granulate and reactive polymer resin	6.2 kg/m²
Fixing screws (13 pc/m²) : Stainless steel screws	0.052 kg/m²
Basecoat (StoArmat Classic plus G)	5 kg/m²
Compressed sealing tape (StoVentec Waterproofing Joint 10/3-7): Impregnated flexible foam	0.005 kg/m²
Protective profile for the outer edges of the render carrier board (StoProfile Edge G): PVC with integrated glass fibre mesh	0.058 kg/m²
Profile with drip edge (StoProfile Drip G): PVC with integrated glass fibre mesh	0.063 kg/m²
Edge profile with integrated glass fibre mesh (Sto-Mesh Angle Bead Standard 11/3 cm):	0.040 kg/m²
Sto-Glass fibre mesh: Alkali-resistant reinforcing mesh	0.165 kg/m²
Finish (Stolit® K):	4 kg/m²

Subconstruction and insulation are not considered.

This product or its components do not contain substances listed in the candidate list (date: 23.10.2025) exceeding 0.1 percentage by mass.

This product or its components do not contain other carcinogenic, mutagenic, reprotoxic (CMR) substances in categories 1A or 1B which are on the candidate list, exceeding 0.1 percentage by mass.

The individual chemical products might contain hazardous substances and might be classified hazardous according to the CLP regulation (Classification, Labelling and Packaging). See chapter 2 and 3 in the individual product safety data sheets on the website www.sto.de for details.

This product or its components do contain biocide products or have been treated with biocide products (this then concerns a treated product as defined by the (EU) Ordinance on Biocide Products No. 528/2012).

The chemical products may contain in-can preservatives such as 5-chloro-2-methyl-4-isothiazolin 3-one and 2-methyl-2H-isothiazol-3-one (3:1), and/or film-preservatives such as 2-octyl-2H-isothiazol-3-one.

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

StoVentec R is a ventilated rainscreen cladding system consisting of different products which get transported individually and is put together on the construction site. The application process should be done in accordance with the Technical Data Sheets of the individual products as well as the application guideline of the system.

2 Product

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

The length of the service life highly depends on the installation quality. Here, the planning and execution of rainproof connections to other buildings or building parts is of special importance. If installed correctly, the system can reach the life span of the building. The Sustainable Building Assessment System BNB specifies the service life of a ventilated façade system as 50 years, which is the best available approximation for StoVentec R.

A reference service life according to ISO 15686 is not reported.

USED RSL (YR) IN THIS LCA CALCULATION:

50

2.4 TECHNICAL DATA

Constructional data according to ETA

Performance data of the product in accordance with the Declaration of Performance with respect to its essential characteristics according to ETA no. ETA-17/0406, date 24/07/2022, title StoVentec R. The technical data declared in the DoP is relevant for the use of the product and can be checked on:

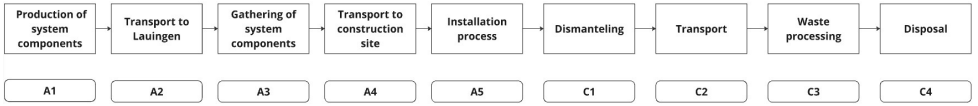
https://datamaster.sto-net.com/externalData/dop-ce.jsp

2.5 SUBSTANCES OF VERY HIGH CONCERN

The product does not contain substances of very high concern (SVHC) on the REACH Candidate List published by the European Chemicals Agency in a concentration more than 0,1 % (by unit weight).

2.6 DESCRIPTION PRODUCTION PROCESS

The individual components of StoVentec R are produced by and transported from manufacturers in Europe. Information about the production process can be found in the respective EPD or by contacting Sto.



2.7 CONSTRUCTION DESCRIPTION

StoVentec R is put together on the construction site. Electricity consumption for drilling and mortar application is considered. Installation losses have not been accounted for, since such losses highly depend on the specific building geometry and other site-specific factors. Installation losses may be estimated based on the LCA results for manufacturing and End-Of-Life (EoL), e.g. via scaling.

3 Calculation rules

3.1 DECLARED UNIT

m2 (square metre)

The declared unit is 1 m² of StoVentec R with a service life of 50 years. The scope of this LCA is cradle to gate with options A4 and A5, modules C1-C4 and module D.

Reference unit: square meter (m2)

3.2 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	m2
Weight per reference unit	15.583	kg
Conversion factor to 1 kg	0.064172	m2

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

This is a Cradle to gate with options, modules C1-C4 and module D EPD. The life cycle stages included are as shown below:

(X = module included, ND = module not declared)

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

The modules of the EN 15804 contain the following:

Module A1 = Raw material supply	Module B5 = Refurbishment
Module A2 = Transport	Module B6 = Operational energy use
Module A3 = Manufacturing	Module B7 = Operational water use
Module A4 = Transport	Module C1 = De-construction / Demolition
Module A5 = Construction - Installation process	Module C2 = Transport
Module B1 = Use	Module C3 = Waste Processing
Module B2 = Maintenance	Module C4 = Disposal
Module B3 = Repair	Module D = Benefits and loads beyond the product system boundaries
Module B4 = Replacement	

3.4 REPRESENTATIVENESS

This EPD is representative for StoVentec R, a product of Sto SE & Co. KGaA. The geographic reference area of this EPD is Europe. The scenarios included are currently in use and representative for one of the most likely scenario alternatives.

3.5 CUT-OFF CRITERIA

Product stage (A1-A3)
This module considers the manufacturing of system components (e.g. carrier board, fastening, plaster etc.), the transport to the site in Lauingen and the manufacturing/

3 Calculation rules

compiling of the façade system components. The impact for producing packaging materials is included as well.

Construction process stage (A4-A5)
Module A4: This module considers 500 km transport to the construction site. The transport distance can be modified for specific projects.

Modul A5: Treatment and disposal of packaging material. Credits for potential avoided burdens on electricity and thermal energy generation are declared in module D and affects only the rate of virgin material.

Electricity consumption for drilling and mortar application is considered. Installation losses have not been accounted for, since such losses highly depend on the specific building geometry and other site-specific factors. Installation losses may be estimated based on the LCA results for manufacturing and End-Of-Life (EoL), e.g. via scaling

End of life stage (C1-C4)
C1: Electricity for the deconstruction process has been applied.

C2: 100 km transport to waste treatment by truck (may be adapted on building level).

C3: No additional waste processing, no environmental burdens.

C4: European scenario for average landfill emissions is declared.

Benefits and loads beyond the system boundary (Module D)
All benefits and loads beyond the system boundary resulting from reusable products, recyclable materials and/or useful energy carriers leaving the product system are considered in this LCA.

Excluded processes

The following processes have been excluded:

- Manufacture of equipment used in production, in buildings, or any other capital good
- Transportation of personnel to the plant
- Transportation of personnel within the plant
- Research and development activities
- Long term emissions

3.6 ALLOCATION

No allocation has been taken place since the product does not need a traditional manufacturing process. Allocation does not take place in the prefabricated products which are accounted for in A1.

This LCA complies with the principle of modularity. There are no co-products that have to be taken into account.

The producer of StoVentec R is under regulation from national authorities and follows the polluter pays principle.

3.7 DATA COLLECTION & REFERENCE PERIOD

This EPD project has been performed from July to October 2025. The year of study is from January to December 2024.

3.8 ESTIMATES AND ASSUMPTIONS

As a rainscreen cladding system, it can be assumed that StoVentec R is dismantled after use. The individual product parts are categorized under the European Waste Catalogue (EWC). The only exception are the screws, which are more likely to be reused or recycled sine they can be separated from the system. Therefore, a material specific end-of-life scenario has been used.

1% cut off criteria has been applied for formulation and production data when applicable according to EN 15804+A2.

- A payload factor of 50 % was used for all truck transports, which in fact corresponds to a full delivery and empty return trip. A data set for a non-specific truck was used.
- 0.067 kWh/m² has been assumed for the construction/deconstruction process.

3.9 DATA QUALITY

Datasets from ecoinvent 3.9.1 from 2022, as well as third party verified EPDs, have been used for calculation with R<think. The ecoinvent data complies with the requirements of EN 15804 (background data not older than 4 years) and is therefore considered very good quality. For this reason, the time representativeness can also be regarded as good. The used EPDs are from the manufacturer of the respective product, made in the last two years and are therefore considered very good quality since they are based on specific

3 Calculation rules

production data of the stated time period. The quality level of geographical representativeness as well as the quality level of technical representativeness can be considered good since it is based on either input from the specific manufacturer or ecoinvent data with a stated geographic location of Europe.

3.10 POWER MIX

A residual mix for electricity low voltage (geograhical reference: Germany, ecoinvent (ei3.9.1)) has been chosen for the construction/deconstruction process. This includes electricity for preparation and application of the mortar as well as the use of a drilling machine and the mechanical dismantling of the system.

4 Scenarios and additional technical information

4.1 TRANSPORT TO CONSTRUCTION SITE (A4)

For the transport from production place to assembly/user, the following scenario is assumed for module A4 of this EPD.

	Value and unit
Vehicle type used for transport	(ei3.9.1) Lorry (Truck) 16-32t, EURO6 | market for (EU)
Fuel type and consumption of vehicle	not available
Distance	500 km
Capacity utilisation (including empty returns)	50 % (loaded up and return empty)
Bulk density of transported products	inapplicable
Volume capacity utilisation factor	1

4.2 ASSEMBLY (A5)

The following information describes the scenarios for flows entering the system and flows leaving the system at module A5.

FLOWS ENTERING THE SYSTEM

For flows entering the system at A5 the following scenario is assumed for module A5.

	Value	Unit
Energy consumption for installation/assembly		
(ei3.9.1) Electricity (DE) - low voltage (max 1kV), residual mix	0.067	kWh

FLOWS LEAVING THE SYSTEM

The following output flows leaving the system at module A5 are assumed.

Description	Value	Unit
Output materials as result of loss during construction	0	%
Output materials as result of waste processing of materials used for installation/assembly at the building site	0.000	kg
Output materials as result of waste processing of used packaging	0.004	kg

4.3 DE-CONSTRUCTION, DEMOLITION (C1)

The following information describes the scenario for demolition at end of life.

4 Scenarios and additional technical information

Description	Amount	Unit
(ei3.9.1) Electricity (DE) - low voltage (max 1kV), residual mix	0.067	kWh

4.4 TRANSPORT END-OF-LIFE (C2)

The following distances and transport conveyance are assumed for transportation during end of life for the different types of waste processing.

Waste Scenario	Transport conveyance	Not removed (stays in work) [km]	Landfill [km]	Incineration [km]	Recycling [km]	Re-use [km]
(ei3.9.1) Debris - STO mixed with 100% landfill	(ei3.9.1) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0

The transport conveyance(s) used in the scenario(s) for transport during end of life has the following characteristics.

	Value and unit
Vehicle type used for transport	(ei3.9.1) Lorry (Truck), unspecified (default) | market group for (GLO)
Fuel type and consumption of vehicle	not available
Capacity utilisation (including empty returns)	50 % (loaded up and return empty)
Bulk density of transported products	inapplicable
Volume capacity utilisation factor	1

4.5 END OF LIFE (C3, C4)

The scenario(s) assumed for end of life of the product are given in the following tables.
First the assumed percentages per type of waste processing are displayed, followed by the assumed amounts.

Waste Scenario	Region	Not removed (stays in work) [%]	Landfill [%]	Incineration [%]	Recycling [%]	Re-use [%]
(ei3.9.1) Debris - STO mixed with 100% landfill	EU	0	100	0	0	0

4 Scenarios and additional technical information

Waste Scenario	Not removed (stays in work) [kg]	Landfill [kg]	Incineration [kg]	Recycling [kg]	Re-use [kg]
(ei3.9.1) Debris - STO mixed with 100% landfill	0.000	15.583	0.000	0.000	0.000
Total	**0.000**	**15.583**	**0.000**	**0.000**	**0.000**

4.6 BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY (D)

The presented Benefits and loads beyond the system boundary in this EPD are based on the following calculated Net output flows in kilograms and Energy recovery displayed in MJ Lower Heating Value.

Waste Scenario	Net output flow [kg]	Energy recovery [MJ]
(ei3.9.1) Debris - STO mixed with 100% landfill	-0.016	0.000
Total	**-0.016**	**0.000**

5 Results

For the impact assessment long-term emissions (>100 years) are not considered. The results of the impact assessment are only relative statements that do not make any statements about end-points of the impact categories, exceedance of threshold values, safety margins or risks. The following tables show the results of the indicators of the impact assessment, of the use of resources as well as of waste and other output flows.

5.1 ENVIRONMENTAL IMPACT INDICATORS PER SQUARE METER

CORE ENVIRONMENTAL IMPACT INDICATORS EN 15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	1.05E+1	4.68E-1	8.04E-3	1.09E+1	1.44E+0	5.69E-2	4.86E-2	2.32E-1	0.00E+0	1.26E+0	8.23E-3
GWP-f	kg CO_2 eq.	1.16E+1	4.68E-1	9.31E-3	1.21E+1	1.44E+0	5.56E-2	4.86E-2	2.31E-1	0.00E+0	9.47E-2	8.27E-3
GWP-b	kg CO_2 eq.	-1.17E+0	1.51E-4	-1.27E-3	-1.17E+0	4.64E-4	1.33E-3	1.05E-5	7.53E-5	0.00E+0	1.17E+0	-3.26E-5
GWP-luluc	kg CO_2 eq.	5.09E-2	2.31E-4	1.21E-5	5.11E-2	7.11E-4	6.99E-6	5.99E-6	8.24E-4	0.00E+0	5.72E-5	-6.14E-6
ODP	kg CFC 11 eq.	1.10E-6	1.02E-8	7.61E-11	1.11E-6	3.13E-8	7.37E-10	5.48E-10	4.12E-9	0.00E+0	2.74E-9	2.51E-10
AP	mol H+ eq.	5.53E-2	1.02E-3	4.10E-5	5.63E-2	3.15E-3	1.34E-4	1.30E-4	1.11E-3	0.00E+0	7.14E-4	3.29E-5
EP-fw	kg P eq.	6.37E-4	3.80E-6	3.27E-7	6.41E-4	1.17E-5	2.43E-6	2.41E-6	2.30E-6	0.00E+0	9.24E-7	-1.16E-6
EP-m	kg N eq.	1.11E-2	2.52E-4	8.14E-6	1.13E-2	7.75E-4	2.65E-5	2.54E-5	4.21E-4	0.00E+0	2.72E-4	5.12E-6
EP-T	mol N eq.	1.14E-1	2.62E-3	8.80E-5	1.17E-1	8.07E-3	3.06E-4	2.94E-4	4.49E-3	0.00E+0	2.94E-3	1.10E-4
POCP	kg NMVOC eq.	3.52E-2	1.59E-3	4.09E-5	3.69E-2	4.89E-3	9.30E-5	8.94E-5	1.53E-3	0.00E+0	1.02E-3	8.45E-5
ADP-mm	kg Sb-eq.	1.76E-4	1.53E-6	3.36E-8	1.78E-4	4.71E-6	2.62E-7	2.58E-7	7.24E-7	0.00E+0	1.31E-7	-4.12E-8
ADP-f	MJ	1.56E+2	6.64E+0	2.62E-1	1.63E+2	2.05E+1	7.48E-1	7.41E-1	3.31E+0	0.00E+0	2.36E+0	3.17E-2
WDP	m3 world eq.	2.12E+2	2.74E-2	3.73E-3	2.12E+2	8.43E-2	1.63E-3	1.30E-3	1.81E-2	0.00E+0	1.04E-1	1.82E-2

GWP-total=Global Warming Potential total (GWP-total) | **GWP-f**=Global Warming Potential fossil fuels (GWP-fossil) | **GWP-b**=Global Warming Potential biogenic (GWP-biogenic) | **GWP-luluc**=Global Warming Potential land use and land use change (GWP-luluc) | **ODP**=Depletion potential of the stratosperic ozon layer (ODP) | **AP**=Acidification potential, Accumulated Exceedance (AP) | **EP-fw**=Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-freshwater) | **EP-m**=Eutrophication potential, fraction of nutrients reaching marine end compartment (EP-marine) | **EP-T**=Eutrophication potential, Accumulated Exceedance (EP-terrestrial) | **POCP**=Formation potential of tropospheric ozone (POCP) | **ADP-mm**=Abiotic depletion potential for non fossil resources (ADP mm) | **ADP-f**=Abiotic depletion for fossil resources potential (ADP fossil) | **WDP**=Water (user) deprication potential, deprivation-weighted water consumption (WDP)

5 Results

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN 15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	disease incidence	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
IR	kBq U235 eq.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
ETP-fw	CTUe	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
HTP-c	CTUh	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
HTP-nc	CTUh	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SQP	Pt	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

PM=Potential incidence of disease due to PM emissions (PM) | **IR**=Potential Human exposure efficiency relative to U235 (IRP) | **ETP-fw**=Potential Comparative Toxic Unit for ecosystems (ETP-fw) | **HTP-c**=Potential Comparative Toxic Unit for humans (HTP-c) | **HTP-nc**=Potential Comparative Toxic Unit for humans (HTP-nc) | **SQP**=Potential soil quality index (SQP)

CLASSIFICATION OF DISCLAIMERS TO THE DECLARATION OF CORE AND ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS

ILCD classification	Indicator	Disclaimer
ILCD type / level 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD type / level 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD type / level 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2

5 Results

ILCD classification	Indicator	Disclaimer
	Potential Soil quality index (SQP)	2

Disclaimer 1 – 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.

Disclaimer 2 – 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.

5.2 INDICATORS DESCRIBING RESOURCE USE AND ENVIRONMENTAL INFORMATION BASED ON LIFE CYCLE INVENTORY (LCI)

PARAMETERS DESCRIBING RESOURCE USE

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	2.75E+1	1.04E-1	1.72E-2	2.77E+1	3.21E-1	6.53E-3	5.80E-3	4.68E-2	0.00E+0	2.00E-2	-1.51E-2
PERM	MJ	7.91E+0	0.00E+0	1.25E-2	7.93E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ	3.55E+1	1.04E-1	2.97E-2	3.56E+1	3.21E-1	6.53E-3	5.80E-3	4.68E-2	0.00E+0	2.00E-2	-1.51E-2
PENRE	MJ	1.84E+2	6.64E+0	1.35E-1	1.91E+2	2.05E+1	7.48E-1	7.41E-1	3.32E+0	0.00E+0	2.36E+0	3.59E-2
PENRM	MJ	2.08E+1	0.00E+0	1.28E-1	2.10E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-4.27E-3
PENRT	MJ	2.05E+2	6.64E+0	2.62E-1	2.12E+2	2.05E+1	7.48E-1	7.41E-1	3.32E+0	0.00E+0	2.36E+0	3.17E-2
SM	Kg	5.73E+0	0.00E+0	0.00E+0	5.73E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	MJ	6.38E-2	0.00E+0	0.00E+0	6.38E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	MJ	2.44E-2	0.00E+0	0.00E+0	2.44E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	m^3	1.83E+0	9.56E-4	8.76E-5	1.83E+0	2.94E-3	4.60E-4	4.50E-4	8.01E-4	0.00E+0	2.51E-3	3.63E-4

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

5 Results

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	Kg	4.16E-2	4.22E-5	1.71E-7	4.16E-2	1.30E-4	9.60E-7	9.31E-7	2.11E-5	0.00E+0	1.25E-5	2.13E-6
NHWD	Kg	1.13E+1	3.30E-1	9.46E-4	1.16E+1	1.02E+0	5.38E-3	2.12E-3	2.19E-1	0.00E+0	1.56E+1	-3.18E-3
RWD	Kg	1.26E-3	2.18E-6	2.24E-7	1.27E-3	6.72E-6	2.86E-6	2.84E-6	7.58E-7	0.00E+0	3.49E-7	-1.65E-7

HWD=Hazardous waste disposed | **NHWD**=Non-hazardous waste disposed | **RWD**=Radioactive waste disposed

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
CRU	Kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	Kg	5.57E-3	0.00E+0	0.00E+0	5.57E-3	0.00E+0	7.50E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MER	Kg	4.33E-2	0.00E+0	0.00E+0	4.33E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	MJ	3.99E-1	0.00E+0	0.00E+0	3.99E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.46E-2
EEE	MJ	2.64E-2	0.00E+0	0.00E+0	2.64E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.01E-2

CRU=Components for re-use | **MFR**=Materials for recycling | **MER**=Materials for energy recovery | **EET**=Exported Energy, Thermic | **EEE**=Exported Energy, Electric

5 Results

5.3 INFORMATION ON BIOGENIC CARBON CONTENT PER SQUARE METER

BIOGENIC CARBON CONTENT

The following Information describes the biogenic carbon content in (the main parts of) the product at the factory gate per square meter:

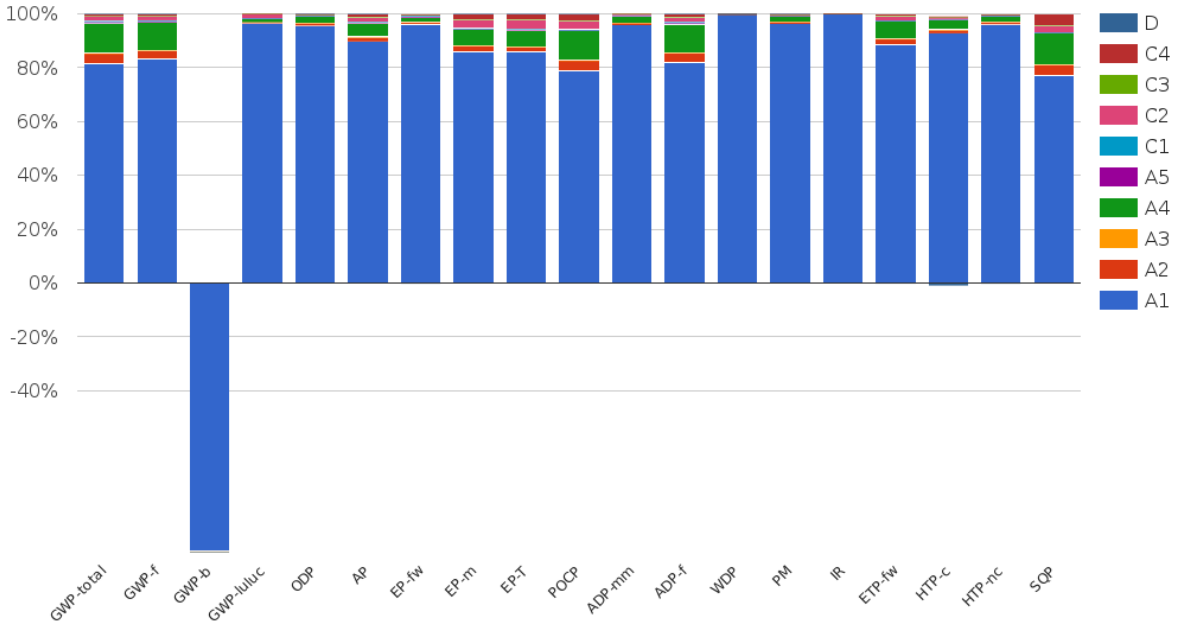
Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	0	kg C
Biogenic carbon content in accompanying packaging	0.0003564	kg C

UPTAKE OF BIOGENIC CARBON DIOXIDE

The following amount of carbon dioxide uptake is taken into account. Related uptake and release of carbon dioxide in downstream processes are not taken into account in this number although they do appear in the presented results. One kilogram of biogenic Carbon content is equivalent to 44/12 kg of biogenic carbon dioxide uptake.

Uptake Biogenic Carbon dioxide	Amount	Unit
Packaging	0.001307	kg CO2 (biogenic)

6 Interpretation of results



The impact of different life stages on the LCA results in accordance to their respective environmental impact indicator can be seen in the graph above. Module A1 dominates all indicators due to the production of the individual system components. The impact of modul A3 is rather small, due to the lack of a traditional production process. The transport module A2 is the second biggest contributor overall and especially noteable for the environmental indicators SQP and GWP-total. This is due to the total weight of the individual system components. For the same reason, it can be noted that Module A4 will take a bigger share, depending on the exact transport distance to the construction site.

7 References

ISO 14040
ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework; EN ISO 14040:2006

ISO 14044
ISO 14044:2006-10, Environmental management - Life cycle assessment - Requirements and guidelines; EN ISO 14044:2006

ISO 14025
ISO 14025:2011-10, Environmental labels and declarations — Type III environmental declarations — Principles and procedures

EN 15804+A2
EN 15804:2012+A2:2019/AC:2021, Sustainability of Buildings - Environmental Product Declarations - Framework Development Rules by Product Category

Kiwa-EE GPI R.3.0 (2025) Kiwa-Ecobility Experts, General Programme Instructions "Product Level", SOP EE 1201_R.3.0 (03.06.2025)

Kiwa-EE GPI R.3.0 Annex B1 (2025) Kiwa-Ecobility Experts, General Programme Instructions "Product Level" – Annex B1 Environmental Information Programme according to EN 15804 / ISO 21930 , SOP EE 1203_R.3.0 (03.06.2025)

PCR Part A: Product Category Rules for Building Related Products and Services. Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report. Version 1.8. Berlin: Institut Bauen und Umwelt e.V. (Ed.), 04.07.2019.

PCR Part B: Requirements on the EPD for Curtain walling, v 7 Berlin: Institut Bauen und Umwelt e.V. (Ed.), 11.07.2023.

Ecoinvent
ecoinvent Version 3.9.1 (December 2022)

R<THINK characterization method
ecoinvent 3.9.1: EN 15804+A1 indicators (CML-IA Baseline v3.09), EN 15804+A2 indicators (EF 3.1)

DIN EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

ISO 15686-1:2011-05: Buildings and constructed assets - Service life planning - Part 1: General principles and framework. EAD 090019-00-0404 Kits for ventilated external wall claddings of lightweight boards on subframe with rendering applied in situ with or without thermal insulation.

Candidate List Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Regulation; No. 1907/2006.

7 References

CLP regulation Classification, labelling and packaging of substances and mixtures (CLP); No. 1272/2008.

OBP Ordinance on Biocide Products (BPR); Regulation (EU) No. 528/2012.

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