Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804

StoDeco Plan

Registration number:	EPD-Kiwa-EE-177454-EN
Issue date:	03-03-2025
Valid until:	03-03-2030
Declaration owner:	Sto SE & Co. KGaA
Publisher:	Kiwa-Ecobility Experts
Programme operator:	Kiwa-Ecobility Experts
Status:	verified

1 General information

1.1 PRODUCT

StoDeco Plan

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-177454-EN

1.3 VALIDITY

Issue date: 03-03-2025

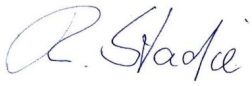
Valid until: 03-03-2030

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

Manufacturer: Sto SE & Co. KGaA

Address: Ehrenbachstraße 1, D-79780 Stühlingen, Germany

E-mail: infoservice@sto.com

Website: https://www.sto.com

Production location: Verotec GmbH

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 15804:2012+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 Product Category Rules (2022-02-14)

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. 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

1 General information

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 (5.3 Comparability of EPD for construction products) and ISO 14025 (6.7.2 Requirements for comparability).

1.10 CALCULATION BASIS

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

LCA software*: Simapro 9.1

Characterization method: EN 15804 +A2 Method v1.0

LCA database profiles: EcoInvent version 3.6

Version database: v3.17 (2024-05-22)

** 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 'StoDeco Plan' with the calculation identifier ReTHiNK-77454.

2 Product

2.1 PRODUCT DESCRIPTION

StoDeco Plan is a construction board, made of expanded perlite granulate (Verolith®). Verolith® consists of hollow mineral micro-beads which is the cause for StoDeco Plans versatility and low weight. Verolith® accounts for more than 90 % of StoDeco Plans composition. Epoxy resin is used as a binding agent.

StoDeco Plan is produced in a format of 2420 x 1210 mm and 2440 x 1080 mm. The thickness can vary between 15 mm and 100 mm. This EPD uses a format of 2420 x 1210 mm and a thickness of 15 mm to calculate the environmental impact of StoDeco Plan per m². This format has specifically been chosen for a representative calculation, since it covers the biggest market share and is therefore considered the most relevant variation of the product. StoDeco Plan can be used for individual three-dimensional facade design elements in exterior and interior application.

Materials	Weight (%)
Verolith®	> 90
Binding agent	5 - 10

1. This product does not contain substances listed in the candidate list (17 January 2023) exceeding 0.1 % by mass.

2. This product does not contain other CMR substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 % by mass.

3. There are no Biocide products added to this construction product nor has it been treated with biocide products (this then concerns a treated product as defined by the (EU) Ordinance on Biocide Products No. 528/2012.)

4. This product does not contain fire retardants.

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

StoDeco Plan can be applied on both, mineral and organic substrates. StoDeco Coll can be used to fix the individual panels to the load-bearing substrate. The substrate in general should be firm, dry and clean before application.

Material consumption depends on the application, substrate, and consistency, among other factors. The stated consumption values are only to be used as a guide. If required, determine precise consumption values on the basis of the specific project. Check the Technical Data Sheet for further information regarding the application process.

Type	Approximate consumption	
2420 x 1210 mm	0.34	pcs./m²
2440 x 1080 mm	0.38	pcs./m²

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

According to the Bewertungssystem Nachhaltiges Bauen (BNB) Sustainable Building assessment system of 24 February 2017, StoDeco Plan approximately corresponds to Code Nr. 335.511 (BNB) wall coverings with a service life of 40 years. The board structure of Verolith and epoxy resin is extremely stable and can therefore be synonymous with the service life of the structure/ building element which is equivalent to 50+ years.

USED RSL (YR) IN THIS LCA CALCULATION:

40

2.4 TECHNICAL DATA

Criterion	Standard/ test specification	Class
Reaction to fire	EN 13501-1	A2-s1, d0
Thermal conductivity	EN 12667	0.16 W/(m*K)
Bulk density		550 kg/m³

The characteristic values stated here are average values or approximate values.

Information regarding the technical properties of StoDeco Plan can be found on the Technical Data Sheet on www.sto.de.

For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) Regulation (EU) No. 305/2011 (CPR) applies. The product needs a declaration of performance taking into consideration EN 15286:2013 and the CE-marking. For the application and use the respective national provisions apply.

2 Product

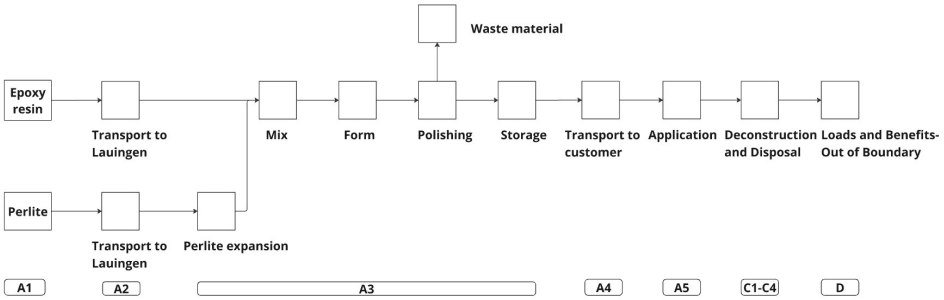
2.5 SUBSTANCES OF VERY HIGH CONCERN

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

StoDeco Plan is produced in a plant in Lauingen, Germany. The raw materials are produced by and transported from suppliers located in Europe.

Perlite is transported to Lauingen. A purely thermal expansion method is used to turn the raw material perlite into a granular form of Verolith®. The Verolith® is mixed with epoxy resin and placed into a mould. Pressure and heat are applied to bring the board into shape. The edges are polished to straighten uneven surfaces. The board is brought into form according to the customers wishes, loaded onto pallets and transported to the customer.



2.7 CONSTRUCTION DESCRIPTION

Specific information on the construction process for this product are described in detail on the Technical Data Sheet on www.sto.de.

3 Calculation rules

3.1 DECLARED UNIT

StoDeco Plan

The declared unit is 1 m2 of StoDeco Plan with a thickness of 15 mm and a RSL of 40 years in exterior application. The scope of this LCA is cradle to gate with options, modules C1-C4 and module D. The technical life span of the products raw materials is the same as for the whole product.

Reference unit: square meter (m2)

3.2 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	m2
Weight per reference unit	10.100	kg
Conversion factor to 1 kg	0.099010	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 EN15804 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 StoDeco Plan, a product of Sto SE & Co. KGaA. The data is representative for Germany. The scenarios included in this life cycle analysis are currently in use and are representative for the most likely scenario.

3.5 CUT-OFF CRITERIA

Product stage (A1-A3)

The production stage consists of the extraction of raw materials, transportation of the raw materials, processing the raw materials into materials and the production of the product. The required energy for production, ancillary materials, packaging materials and

3 Calculation rules

production emissions are included. All substantial raw materials and types of energy during production are included. Raw materials added to the product in very small amounts (less than 1%) are not included. These cut-off limits do not apply to hazardous materials or substances.

Construction process stage (A4-A5)

All input flows (e.g. transportation to the construction site, additional raw material use for construction, installation energy (use)of energy use for assembly , etc.) and output flows (e.g. construction waste, packaging waste, etc.) are considered in this LCA. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

End of life stage (C1-C4)

All input flows (e.g. energy use for demolition or disassembly, transport to waste processing, etc.) and output flows (e.g. end-of-life waste processing of the product, etc.) are considered in this LCA. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

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

Following processes has not been taken into account in this life cycle analysis:

- The manufacture of equipment used in production, buildings or any other capital goods;
- The transportation of personnel to the production plant;
- The transportation of personnel within the production plant;
- Research and development activities; Long-term emissions

3.6 ALLOCATION

The amount of electricity and gas at the production site for StoDeco Plan derives from figures concerning the total amount of electricity being used at the site (for all board elements produced) and then recalculated into the amount only used for producing StoDeco Plan at the site. The amount of electricity is then shown per m2 produced product. The amount of natural gas used at the production site for StoDeco Plan derives from figures concerning the total amount of district heating used at the site (for all board elements produced) and then recalculated into the amount only used to produce StoDeco Plan at the site. The amount of natural gas is then shown per m2 produced product.

Modularity principle has been taken into account. Since StoDeco Plan is a facade element, there are no co-products that have to be taken into account.

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

3.7 DATA COLLECTION & REFERENCE PERIOD

This EPD project has been performed during the year 2024. Production data is from January to December 2023.

3.8 ESTIMATES AND ASSUMPTIONS

StoDeco Plan is categorized under the European Waste Catalogue (EWC), category 17.09 "Other Construction and Demolition Waste" and is categorized as non-hazardous waste.

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

- A payload factor of 50 percent 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.
- 0.013 kWh/m² has been assumed for construction and deconstruction

3.9 DATA QUALITY

Datasets from Ecoinvent 3.6 from 2019, as well as third party verified EPDs, have been used for calculation with R<think. Data concerning production has been from the Production Management System used at the production site. The data and scenarios used are representative for the European Union. The figures shown in this report are from January to December 2023. The data from the production site as well as the used scenarios are chosen in accordance with EN 15804.

3.10 POWER MIX

Data has been collected at the production site in Lauingen. The energy used consists of 100% hydropower (market based approach) and covers the foreground process in

3 Calculation rules

Lauingen. The electricity supplier is bound by state regulations in Germany for electricity labelling. The electricity labelling indicates 100 % renewable energy from hydropower. Hydropower is calculated with an environmental impact of 0.042 kg CO2-eq/kWh.

For the construction and demolition process, a residual mix, low voltage is assumed.

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	Lorry (Truck) 16-32t, EURO6 | market for (EU)
Fuel type and consumption of vehicle	not available
Distance	100 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		
Electricity (DE) - low voltage (max 1kV)	0.013	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	3	%
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	0.087	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
Electricity (DE) - low voltage (max 1kV)	0.013	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]
Debris - STO mixed with 100% landfill	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	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 [%]
Debris - STO mixed with 100% landfill	NL	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]
Debris - STO mixed with 100% landfill	0.000	10.100	0.000	0.000	0.000
Total	**0.000**	**10.100**	**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]
Debris - STO mixed with 100% landfill	0.000	0.000
Total	**0.000**	**0.000**

5 Results

For the impact assessment, the characterization factors of the LCIA method EN 15804 +A2 Method v1.0 are used. Long-term emissions (>100 years) are not considered in the impact assessment. 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 EN15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	3.19E+0	4.69E-1	3.34E-1	3.99E+0	1.67E-1	2.92E-1	8.09E-3	1.36E-1	0.00E+0	2.29E-1	-7.38E-3
GWP-f	kg CO_2 eq.	3.30E+0	4.69E-1	4.73E-1	4.24E+0	1.66E-1	1.53E-1	7.48E-3	1.36E-1	0.00E+0	5.32E-2	-7.32E-3
GWP-b	kg CO_2 eq.	-1.76E-1	2.21E-4	-1.39E-1	-3.15E-1	8.95E-5	1.37E-1	6.03E-4	6.29E-5	0.00E+0	1.76E-1	-6.84E-7
GWP-luluc	kg CO_2 eq.	6.58E-2	1.71E-4	4.64E-4	6.65E-2	5.92E-5	2.01E-3	9.07E-6	4.99E-5	0.00E+0	1.48E-5	-5.16E-5
ODP	kg CFC 11 eq.	6.29E-8	1.04E-7	6.04E-8	2.27E-7	3.78E-8	1.05E-8	2.93E-10	3.01E-8	0.00E+0	2.19E-8	-1.57E-9
AP	mol H+ eq.	1.26E-2	2.67E-3	8.35E-4	1.61E-2	4.78E-4	5.95E-4	2.17E-5	7.91E-4	0.00E+0	5.05E-4	-1.28E-4
EP-fw	kg P eq.	1.69E-5	4.59E-6	8.45E-6	3.00E-5	1.33E-6	2.19E-6	1.13E-6	1.37E-6	0.00E+0	5.96E-7	-4.50E-7
EP-m	kg N eq.	3.41E-3	9.38E-4	1.86E-4	4.54E-3	9.46E-5	1.71E-4	3.36E-6	2.79E-4	0.00E+0	1.74E-4	-3.74E-5
EP-T	mol N eq.	3.92E-2	1.03E-2	2.16E-3	5.17E-2	1.06E-3	1.95E-3	5.32E-5	3.07E-3	0.00E+0	1.92E-3	-6.05E-4
POCP	kg NMVOC eq.	1.20E-2	2.95E-3	7.09E-4	1.56E-2	4.05E-4	5.81E-4	1.01E-5	8.77E-4	0.00E+0	5.57E-4	-1.10E-4
ADP-mm	kg Sb-eq.	4.06E-6	1.20E-5	2.71E-6	1.88E-5	4.59E-6	9.57E-7	6.22E-8	3.45E-6	0.00E+0	4.87E-7	-6.63E-8
ADP-f	MJ	6.71E+1	7.08E+0	7.49E+0	8.16E+1	2.52E+0	2.78E+0	1.02E-1	2.06E+0	0.00E+0	1.49E+0	-1.07E-1

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 minerals&metals) | **ADP-f**=Abiotic depletion for fossil resources potential (ADP fossil) | **WDP**=Water (user) deprication potential, deprivation-weighted water consumption (WDP)

5 Results

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
WDP	m3 world eq.	6.24E-2	2.46E-2	2.39E-2	1.11E-1	7.12E-3	6.84E-3	3.88E-4	7.35E-3	0.00E+0	6.66E-2	-8.00E-4

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 minerals&metals) | **ADP-f**=Abiotic depletion for fossil resources potential (ADP fossil) | **WDP**=Water (user) deprication potential, deprivation-weighted water consumption (WDP)

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN15804+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 idex (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

5 Results

ILCD classification	Indicator	Disclaimer
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
	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 Results

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	6.85E+0	9.02E-2	5.22E+0	1.22E+1	3.60E-2	3.87E-1	1.85E-2	2.57E-2	0.00E+0	1.20E-2	-1.16E+0
PERM	MJ	1.23E+0	0.00E+0	1.22E+0	2.45E+0	0.00E+0	7.35E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ	8.05E+0	9.02E-2	6.44E+0	1.46E+1	3.60E-2	4.59E-1	1.85E-2	2.57E-2	0.00E+0	1.20E-2	-1.16E+0
PENRE	MJ	4.92E+1	7.52E+0	8.12E+0	6.48E+1	2.67E+0	2.29E+0	1.09E-1	2.18E+0	0.00E+0	1.58E+0	-1.13E-1
PENRM	MJ	1.82E+1	0.00E+0	1.20E-1	1.83E+1	0.00E+0	5.50E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-2.78E-3
PENRT	MJ	6.74E+1	7.52E+0	8.24E+0	8.31E+1	2.67E+0	2.84E+0	1.09E-1	2.18E+0	0.00E+0	1.58E+0	-1.16E-1
SM	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
RSF	MJ	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
NRSF	MJ	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
FW	m^3	1.51E-2	8.46E-4	9.10E-4	1.69E-2	2.69E-4	6.61E-4	4.63E-5	2.50E-4	0.00E+0	1.59E-3	-1.95E-5

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

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	Kg	1.06E-5	1.80E-5	9.80E-6	3.85E-5	6.59E-6	1.81E-6	1.28E-7	5.21E-6	0.00E+0	2.22E-6	-2.51E-7
NHWD	Kg	2.73E-1	4.34E-1	4.12E-2	7.48E-1	1.22E-1	3.43E-1	4.28E-4	1.30E-1	0.00E+0	1.01E+1	-1.97E-3
RWD	Kg	1.20E-3	4.68E-5	1.05E-5	1.26E-3	1.71E-5	3.96E-5	4.11E-7	1.35E-5	0.00E+0	9.77E-6	-3.65E-7

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

5 Results

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	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.75E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MER	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
EET	MJ	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	-2.99E-1
EEE	MJ	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	-1.74E-1

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:

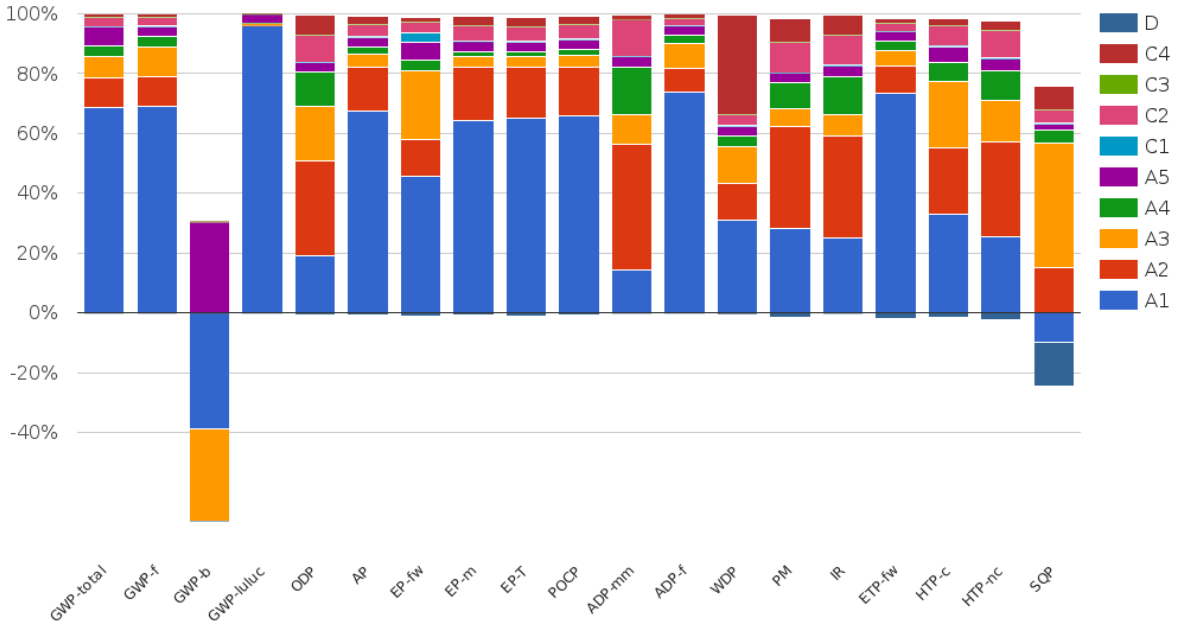
Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	0.03565	kg C
Biogenic carbon content in accompanying packaging	0.03847	kg C

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
Product	0.1302	kg CO2 (biogenic)
Packaging	0.1411	kg CO2 (biogenic)

6 Interpretation of results



The figure above shows the impact of different life stages on the LCA results in accordance to their respective environmental impact indicator. The impact of the raw materials (A1) for StoDeco Plan dominates every indicator but Soil quality potential (SQP) which is influenced to a higher degree by the transport of the raw materials (A2). The manufacturing modul (A3) is, in comparison to moduls A1 and A2, only responsible for a relatively small impact. This can be, at least partly, assigned to the use of hydropower during production. The four GWP indicators are dominated by the raw materials. The results vary from 70 % of GWP-total and GWP-fossil to almost 100 % of GWP-luluc. The negative value for GWP-biogenic is caused by the carbon intake of organic materials during their growth phase. The end-of-life stages are negligible in their impact on all indicators.

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+A2: 2019: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

General PCR Ecobility Experts
Kiwa-Ecobility Experts (Kiwa-EE) – General Product Category Rules (2022-02-14)

EPD-DBC-20220174-IBF1-EN
Owner of the declaration: DBC, EFCC, FEICA, IVK; published by IBU – Institut Bauen und Umwelt e.V. (29.08.2022)

Code Nr. 335.915
Code Nr. 335.915 (BNB); FederalOffice for Building and
Regional Planning (BBSR), 2017: Nutzungsdauern von
Bauteilen für Lebenszyklusanalysen nach Bewertungssystem Nachhaltige Bauen (BNB)

NMD
The NMD waste scenario is based on a waste scenario from the National Milieu Database (NMD); finishes (adhered to wood, plastic, metal)

DIN EN 13501-1
DIN EN 13501-1 Fire classification of construction products and building elements –
Part 1: Classification using data from reaction to fire tests; German version EN 13501-1:2007+A1:2009,2010-01

DIN EN 12667:2001-05
Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance;

8 Contact information

Publisher	Operator	Owner of declaration

Kiwa-Ecobility Experts
Wattstraße 11-13
13355 Berlin, DE

E-mail:
DE.Ecobility.Experts@kiwa.com
Website:
https://www.kiwa.com/de/en/themes/ecobility-experts/ecobility-experts-epd-program/

Kiwa-Ecobility Experts
Wattstraße 11-13
13355 Berlin, DE

E-mail:
DE.Ecobility.Experts@kiwa.com
Website:
https://www.kiwa.com/de/en/themes/ecobility-experts/ecobility-experts-epd-program/

Sto SE & Co. KGaA
Ehrenbachstraße 1
D-79780 Stühlingen, DE

E-mail:
infoservice@sto.com
Website:
https://www.sto.com

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