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

StoColor Lotusan AimS®

Registration number:	EPD-Kiwa-EE-175750-en
Issue date:	18-11-2024
Valid until:	18-11-2029
Declaration owner:	Sto SE & Co. KGaA
Publisher:	Kiwa-Ecobility Experts
Programme operator:	Kiwa-Ecobility Experts
Status:	verified

1 General information

1.1 PRODUCT

StoColor Lotusan AimS®

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-175750-en

1.3 VALIDITY

Issue date: 18-11-2024

Valid until: 18-11-2029

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

E-mail: infoservice@sto.com

Website: https://www.sto.com

Production location: Sto SE & Co. KGaA

Address production location: Ehrenbachstr. 1, 79780 Stühlingen, 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 'StoColor Lotusan AimS®' with the calculation identifier ReTHiNK-75750.

2 Product

2.1 PRODUCT DESCRIPTION

StoColor Lotusan AimS® is a facade paint consisting of an organic binder based on polymer dispersion and natural resins from regenerative sources and in compliance with EN 1062-1. Inorganic and organic pigments are used for coloring and adjusting the opacity. StoColor Lotusan AimS® uses mineral fillers such as chalk, water and small amounts of additives (thickeners, defoamers, wetting agents, preservatives, etc.). Drying takes place physically by evaporation of the contained water. The use of StoColor Lotusan AimS® extends the service life of buildings. It is produced in a plant in Weizen, Germany.

The use of the product is subject to the respective national regulations at the place of use, for example the building regulations of the federal states of Germany and their respective technical regulations.

StoColor Lotusan AimS® has the following properties:

- texture-retaining
- Lotus-Effect® Technology: reduced adhesion of dirt particles and self-cleaning when exposed to rain
- dirt runs off with the rain
- without biocide film protection
- very highly permeable to water vapour
- water based

Materials	Weight (%)
Binder	10 - 15
Filler	30 - 40
Additive	1-2
Water	25 - 35
Colorant	15 - 25

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

StoColor Lotusan AimS® is a façade paint for exterior usage which can be applied by paint brush, roller or by airless sprayer.

Type of application	Approx. consumption	
per paint coat	0.17 - 0.20	l/m²
for 2 coats	0.34 - 0.40	l/m²

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

The reference service life (RSL) is 15 years in exterior application (in accordance with BNB) and is declared in the Sustainability Data Sheet

USED RSL (YR) IN THIS LCA CALCULATION:

15

2.4 TECHNICAL DATA

Criterion	Standard/ test specification	Class
Density	EN ISO 2811	1.40 - 1.60 g/cm³
Diffusion-equivalent air layer thickness	EN 1062-3	V1 high
Water permeability rate w	EN 1062-1	W3 low
Gloss	EN 1062-1	G3
Dry layer thickness	EN 1062-1	E3 > 100; ≤ 200
Grain size	EN 1062-1	S1 fine

The technical data stated here is relevant for the use of the declared product. Farther information regarding the technical properties can be found on the Technical Data Sheet.

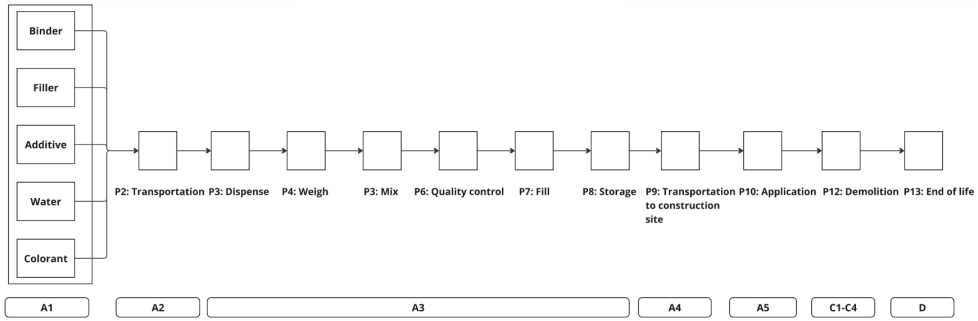
2.5 SUBSTANCES OF VERY HIGH CONCERN

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

StoColor Lotusan AimS® is produced in a mixing plant in Stühlingen-Weizen, Germany. The raw materials are produced by and transported from suppliers located in Europe. The raw materials are filled in weighting containers and thereafter mixed together. Quality control checks the consistency of the product and adjusts if necessary. The finished product is filled into pails and stored. The product is transported on pallets and delivered to customers in Europe with focus on Germany.

2 Product



2.7 CONSTRUCTION DESCRIPTION

A detailed description for the use of StoColor Lotusan AimS® can be found on the Technical Data sheet on www.sto.de.

3 Calculation rules

3.1 DECLARED UNIT

kg

The declared unit is 1 kg StoColor Lotusan AimS® with an RSL of 15 years
The scope of this LCA is cradle to gate with options, modules C1-C4 and module D.
Technical life span of the products raw materials is the same as for the whole product.

Reference unit: kilogram (kg)

3.2 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	kg
Conversion factor to 1 kg	1.000000	kg

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

This is a Cradle to gate with options 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 StoColor Lotusan AimS®, a product of Sto SE & Co. KGaA. The data is representative for European Union. 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.

3 Calculation rules

The required energy for production, ancillary materials, packaging materials and 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.

Use stage (B1)

Once installation is complete, no actions or technical operations are required during the use stage until the end of life stage. No additional environmental impact takes place during this phase. Therefore, the module is not considered.

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. The degree of landfill is assumed to be 100%.

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 natural gas at the production site for StoColor Lotusan AimS® derives from figures concerning the total amount of electricity being used at the site (for all products produced) and is then recalculated into the amount only used for the production of StoColor Lotusan AimS® . The amount of electricity and natural gas is then shown per declared unit.

Modularity principle has been taken into account. Since StoColor Lotusan AimS® is a facade paint, there are no co-products that have to be taken into account.

The producer of StoColor Lotusan AimS® 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 the year 2023.

3.8 ESTIMATES AND ASSUMPTIONS

1% cut off criteria has been applied for formulation and production data when applicable according to ISO 15604+A2.

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

- 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 16-32t, EURO4 | market for (EU) was used.
- An amount of 0,013 kWh/kg has been assumed for deconstruction.

3.9 DATA QUALITY

For LCA calculation datasets of Ecoinvent 3.6 from 2019 have been applied and calculated with R<Think.

Data concerning production has been collected from the Production Management System used at the production site and the figures shown in this report is for the year 2023.

3 Calculation rules

3.10 POWER MIX

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

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, EURO4 | 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
Materials used for installation/assembly		
Tap water - part of the product	0.0025	kg

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	0.003	kg
Output materials as result of waste processing of used packaging	0.050	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	1.000	0.000	0.000	0.000
Total	**0.000**	**1.000**	**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 KILOGRAM

CORE ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
AP	mol H+ eqv.	3.07E-2	2.72E-4	4.14E-4	3.14E-2	8.83E-5	9.81E-4	2.17E-5	7.83E-5	0.00E+0	5.00E-5	-7.65E-5
GWP-total	kg CO2 eqv.	1.25E+0	5.35E-2	1.71E-2	1.32E+0	1.74E-2	1.39E-1	8.09E-3	1.35E-2	0.00E+0	5.28E-3	-2.33E-2
GWP-b	kg CO2 eqv.	8.43E-3	2.87E-5	-5.47E-2	-4.63E-2	9.33E-6	5.56E-2	6.03E-4	6.23E-6	0.00E+0	1.04E-5	-6.12E-6
GWP-f	kg CO2 eqv.	1.24E+0	5.34E-2	7.18E-2	1.36E+0	1.74E-2	8.34E-2	7.48E-3	1.35E-2	0.00E+0	5.27E-3	-2.33E-2
GWP-luluc	kg CO2 eqv.	7.43E-4	1.88E-5	5.96E-5	8.22E-4	6.12E-6	2.87E-5	9.07E-6	4.95E-6	0.00E+0	1.47E-6	-2.09E-5
EP-m	kg N eqv.	1.54E-3	9.26E-5	6.01E-5	1.69E-3	3.01E-5	6.43E-5	3.36E-6	2.76E-5	0.00E+0	1.72E-5	-2.20E-5
EP-fw	kg P eq	6.45E-5	4.23E-7	1.86E-6	6.67E-5	1.37E-7	2.15E-6	1.13E-6	1.36E-7	0.00E+0	5.90E-8	-2.22E-7
EP-T	mol N eqv.	1.44E-2	1.02E-3	6.59E-4	1.61E-2	3.32E-4	6.35E-4	5.32E-5	3.04E-4	0.00E+0	1.90E-4	-3.30E-4
ODP	kg CFC 11 eqv.	1.45E-7	1.22E-8	3.70E-9	1.60E-7	3.97E-9	6.58E-9	2.93E-10	2.98E-9	0.00E+0	2.17E-9	-3.18E-9
POCP	kg NMVOC eqv.	5.59E-3	2.91E-4	2.61E-4	6.14E-3	9.46E-5	2.26E-4	1.01E-5	8.68E-5	0.00E+0	5.51E-5	-6.90E-5
ADP-f	MJ	1.64E+1	8.12E-1	1.66E+0	1.89E+1	2.64E-1	6.36E-1	1.02E-1	2.04E-1	0.00E+0	1.47E-1	-4.03E-1
ADP-mm	kg Sb-eqv.	2.08E-5	1.46E-6	7.72E-7	2.31E-5	4.74E-7	7.96E-7	6.22E-8	3.42E-7	0.00E+0	4.82E-8	-4.26E-8
WDP	m3 world eqv.	1.92E+0	2.26E-3	3.00E-2	1.95E+0	7.35E-4	6.12E-2	3.88E-4	7.28E-4	0.00E+0	6.60E-3	-2.62E-3

AP=Acidification (AP) | **GWP-total**=Global warming potential (GWP-total) | **GWP-b**=Global warming potential - Biogenic (GWP-b) | **GWP-f**=Global warming potential - Fossil (GWP-f) | **GWP-luluc**=Global warming potential - Land use and land use change (GWP-luluc) | **EP-m**=Eutrophication marine (EP-m) | **EP-fw**=Eutrophication, freshwater (EP-fw) | **EP-T**=Eutrophication, terrestrial (EP-T) | **ODP**=Ozone depletion (ODP) | **POCP**=Photochemical ozone formation - human health (POCP) | **ADP-f**=Resource use, fossils (ADP-f) | **ADP-mm**=Resource use, minerals and metals (ADP-mm) | **WDP**=Water use (WDP)

5 Results

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
ETP-fw	CTUe	4.03E+1	6.51E-1	9.95E-1	4.19E+1	2.11E-1	1.80E+0	8.46E-2	1.81E-1	0.00E+0	9.55E-2	-5.63E-1
PM	disease incidence	1.06E-7	3.87E-9	3.66E-9	1.14E-7	1.26E-9	3.83E-9	8.45E-11	1.21E-9	0.00E+0	9.72E-10	-8.48E-10
HTP-c	CTUh	4.44E-9	1.83E-11	8.00E-11	4.54E-9	5.93E-12	1.53E-10	1.95E-12	5.89E-12	0.00E+0	2.21E-12	-7.78E-12
HTP-nc	CTUh	2.09E-8	7.09E-10	7.47E-10	2.23E-8	2.30E-10	8.87E-10	7.68E-11	1.99E-10	0.00E+0	6.79E-11	-2.50E-10
IR	kBq U235 eqv.	5.06E-2	3.55E-3	1.43E-3	5.56E-2	1.15E-3	1.95E-3	3.20E-4	8.53E-4	0.00E+0	6.04E-4	-2.31E-4
SQP	Pt	1.00E+1	5.60E-1	6.85E+0	1.74E+1	1.82E-1	5.71E-1	2.45E-2	1.77E-1	0.00E+0	3.09E-1	-2.20E+0

ETP-fw=Ecotoxicity, freshwater (ETP-fw) | **PM**=Particulate Matter (PM) | **HTP-c**=Human toxicity, cancer (HTP-c) | **HTP-nc**=Human toxicity, non-cancer (HTP-nc) | **IR**=Ionising radiation, human health (IR) | **SQP**=Land use (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

5 Results

ILCD classification	Indicator	Disclaimer
	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.

5.2 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	1.77E+0	1.15E-2	6.23E-1	2.40E+0	3.72E-3	7.57E-2	1.85E-2	2.55E-3	0.00E+0	1.19E-3	-4.54E-1
PERM	MJ	1.41E-1	0.00E+0	4.62E-1	6.04E-1	0.00E+0	1.81E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ	1.91E+0	1.15E-2	1.09E+0	3.00E+0	3.72E-3	9.38E-2	1.85E-2	2.55E-3	0.00E+0	1.19E-3	-4.54E-1
PENRE	MJ	1.76E+1	8.63E-1	1.23E+0	1.97E+1	2.80E-1	6.64E-1	1.09E-1	2.16E-1	0.00E+0	1.56E-1	-4.20E-1
PENRM	MJ	0.00E+0	0.00E+0	5.57E-1	5.57E-1	0.00E+0	1.67E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-2.49E-2
PENRT	MJ	1.76E+1	8.63E-1	1.78E+0	2.03E+1	2.80E-1	6.81E-1	1.09E-1	2.16E-1	0.00E+0	1.56E-1	-4.45E-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	M3	4.74E-2	8.56E-5	7.23E-4	4.82E-2	2.78E-5	1.53E-3	4.63E-5	2.48E-5	0.00E+0	1.57E-4	-4.01E-5

PERE=renewable primary energy ex. raw materials | **PERM**=renewable primary energy used as raw materials | **PERT**=renewable primary energy total | **PENRE**=non-renewable primary energy ex. raw materials | **PENRM**=non-renewable primary energy used as raw materials | **PENRT**=non-renewable primary energy total | **SM**=use of secondary material | **RSF**=use of renewable secondary fuels | **NRSF**=use of non-renewable secondary fuels | **FW**=use of net 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	4.12E-5	2.13E-6	1.03E-6	4.43E-5	6.91E-7	1.48E-6	1.28E-7	5.16E-7	0.00E+0	2.20E-7	-5.12E-7
NHWD	Kg	1.11E+0	3.89E-2	1.31E-2	1.16E+0	1.26E-2	7.25E-2	4.28E-4	1.29E-2	0.00E+0	1.00E+0	-9.89E-4
RWD	Kg	5.24E-5	5.54E-6	1.57E-6	5.95E-5	1.80E-6	2.14E-6	4.11E-7	1.34E-6	0.00E+0	9.67E-7	-3.27E-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	0.00E+0	0.00E+0	5.69E-4	5.69E-4	0.00E+0	2.59E-3	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	-2.25E-4	-2.25E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-2.77E-1
EEE	MJ	0.00E+0	0.00E+0	-1.30E-4	-1.30E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-1.61E-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 KILOGRAM

BIOGENIC CARBON CONTENT

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

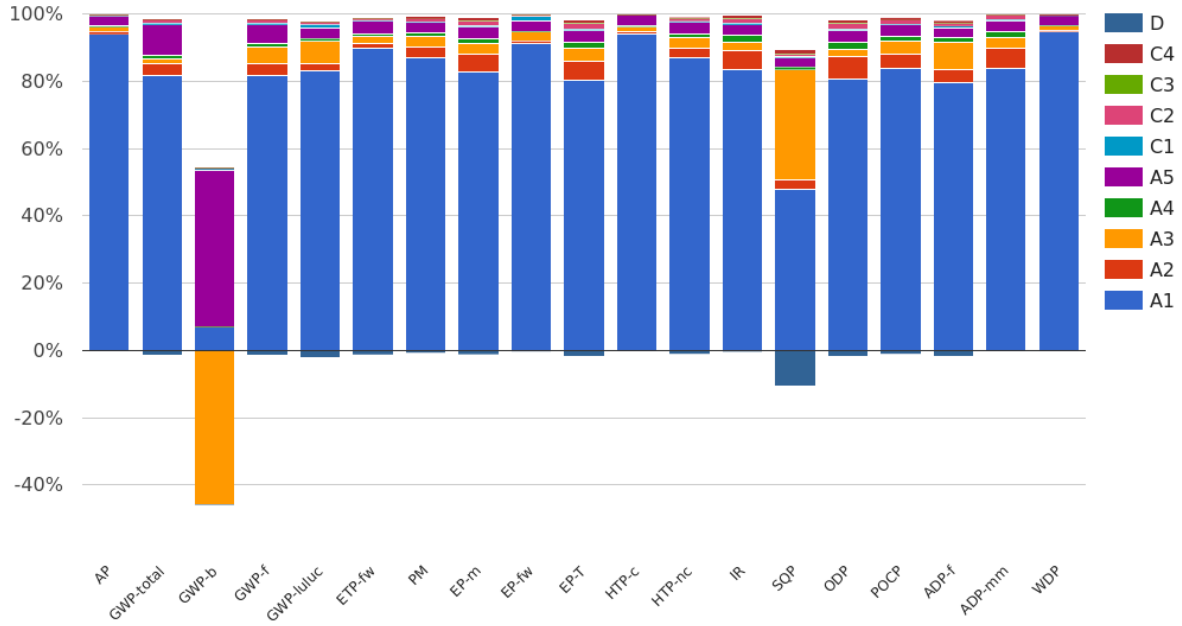
Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	0	kg C
Biogenic carbon content in accompanying packaging	0.015	kg C

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	0.055	kg CO2 (biogenic)

6 Interpretation of results



The figure above shows the influence of the different life stages on the LCA results of each environmental indicator. The raw materials for StoColor Lotusan AimS® (A1) contribute the most to the total GWP-total, as well as the other environmental indicators but GWP-b, which is dominated by the construction modul(A5) and the manufacturing stage (A3). The negative value for A3 derives from the carbon dioxide intake of the accompanying packaging (wooden pallet), the positive is due to the release of said carbon dioxide due to the disposal of the pallet during construction (A5). There are no additional environmental costs, since facade paint is assumed to be applied manually. The second biggest contributor is the End-of-life scenario (C), followed by the relatively small impact of the manufacturing process (A3). The relatively small impact of the manufacturing process (A3) can be attributed to the use of hydropower during production. The impact of the transport modules A4 and C2 is negligible for all environmental indicators, due to the short distance

6 Interpretation of results

assumed to the construction side and waste processing side. The same applies to deconstruction (C1) since the removal of facade paint does only need a small amount of energy.

7 References

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

ISO 14044
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ISO 14025
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EN 15804+A2
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Kiwa-Ecobility Experts (Kiwa-EE) – General Product Category Rules (2022-02-14)

EN 1062-1
Paints and varnishes - Coating materials and coating systems for exterior masonry and concrete (2004-08)

EN ISO 2811
Paints and varnishes - Determination of density - Part 1: Pycnometer method (2023-04)

EN ISO 1062-3
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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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