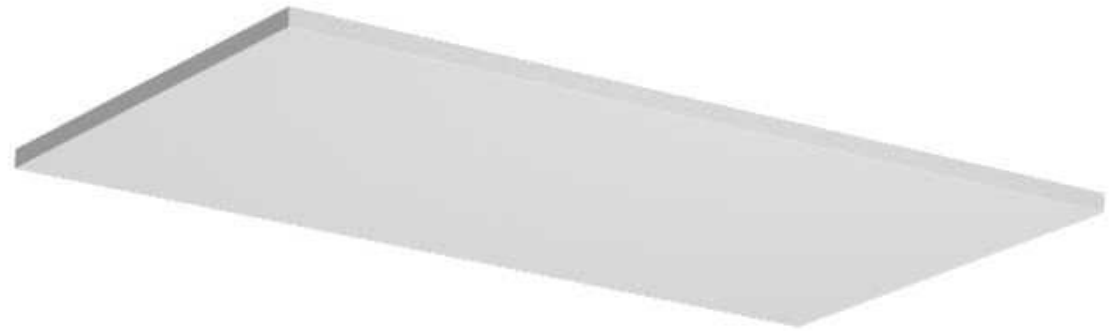


Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804

StoSilent Board 100 S; 105 C; 110 S

Registration number:	EPD-Kiwa-EE-140610-EN
Issue date:	18-06-2024
Valid until:	18-06-2029
Declaration owner:	Sto SE & Co. KGaA
Publisher:	Kiwa-Ecobility Experts
Program operator:	Kiwa-Ecobility Experts
Status:	verified



1 General information

1.1 PRODUCT

StoSilent Board 100 S; 105 C; 110 S

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-140610-EN

1.3 VALIDITY

Issue date: 18-06-2024

Valid until: 18-06-2029


1.4 PROGRAM 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: Verotec GmbH

Address production location: Hanns-Martin-Schleyer-Str. 1, D-89415 Lauingen/Donau

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)

c-PCR Kiwa GmbH, Ecobility Experts

Kiwa-Ecobility Experts (Kiwa-EE) – Product Category Rules (PCR B) for acoustical ceiling and wall solutions (Draft, 2023-03-29, v1)

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

1 General information

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 (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: EcolInvent 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 'StoSilent Board 100 S; 105 C; 110 S' with the calculation identifier ReTHiNK-40610.

2 Product

2.1 PRODUCT DESCRIPTION

This EPD is representative for StoSilent Board 100 S, StoSilent Board 105 C and StoSilent Board 110 S. The input data used is based on StoSilent Board 110 S which demonstrates the highest environmental impact of the group due to its mass per m².

Acoustic panel made of expanded glass granulate for suspended ceiling and wall structures.

Area of application

- interior
- for suspended ceiling and wall structures

Name	Value	Unit
Expanded glass granulate	80 - 90	Mass [%]
Fleece	1,5 - 3,0	Mass [%]
Glass fiber, nonwoven	6,0 - 9,0	Mass [%]

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

For suspended ceiling and wall coverings on level surfaces, Rooms with high visual standards, for balanced acoustics and good noise reduction

Application:

- StoSilent Board 105 C: adhesive fixed
- StoSilent Board 110 S: screw fixed, bonded board joints
- StoSilent Board 100 S: screw fixed, bonded board joints

Area of application

- Building interiors
- In buildings designed for people to reside in
- In buildings with the usual interior climatic conditions
- Examples: high-quality offices, living spaces, hotel rooms

Properties

- up to 200 m² possible without expansion joint (max. side length: 20 m)
- reduction in the reverberation time
- reduction of noise level
- improved ability to concentrate

- improvement in speech intelligibility
- low weight
- high degree of stiffness
- low moisture-induced and thermal expansion

Format

- board edge: sharp-edged/coated
- length x width x thickness
- 1200 x 625 x 25 mm

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

Product Service Life according to BMB for Interior (Nutzungsdauern von Bauteilen für Lebenszyklusanalysen nach Bewertungssystem Nachhaltiges Bauen (BNB) from Bundesamt für Bau, Stadt- und Raumforschung)

stress class B in accordance with EN 13964,

- Fluctuating relative humidity: maximum 90 %
- Fluctuating temperature: maximum 30 °C
- No corrosive contamination
- No condensate formation
- No splash water
- Swimming pool, fully climate-controlled, maximum 30 °C, and maximum 70 % relative humidity

If compliance with the stress conditions is maintained, then the system will fulfill the expected economic service life for easily replaceable products.

USED RSL (YR) IN THIS LCA CALCULATION:

50

2.4 TECHNICAL DATA

StoSilent Board 100 S

- diffusion-equivalent air layer thickness: EN ISO 7783 0.12 m with coating
- reaction to fire: EN 13501-1 A2-s1, d0 with coating
- rated value of thermal conductivity : TIAP-655 based on EN 12667 0.09 W/(m*K) with coating
- mass per unit area: 6.8 kg/m²

2 Product

- Bulk density: 270 kg/m³
- sound absorption coefficient: EN ISO 11654 0.80 with coating: varies with suspension height and damping

StoSilent Board 105 C

- diffusion-equivalent air layer thickness: EN ISO 7783 0.13 m with coating
- reaction to fire: EN 13501-1 A2-s1, d0 with coating
- rated value of thermal conductivity : TIAP-655 based on EN 12667 0.08 W/(m*K) with coating
- mass per unit area: 6.6 kg/m²
- raw density: 265 kg/m³
- sound absorption coefficient: EN ISO 11654 0.95 with coating varies with suspension height and damping

StoSilent Board 110 S

- diffusion-equivalent air layer thickness: EN ISO 7783 0.13 m with coating
- reaction to fire: EN 13501-1 A2-s1, d0 with coating
- rated value of thermal conductivity : TIAP-655 based on EN 12667 0.09 W/(m*K) with coating
- mass per unit area: 6.9 kg/m²
- raw density: 275 kg/m³
- sound absorption coefficient: EN ISO 11654 0.80 with coating varies with suspension height and damping

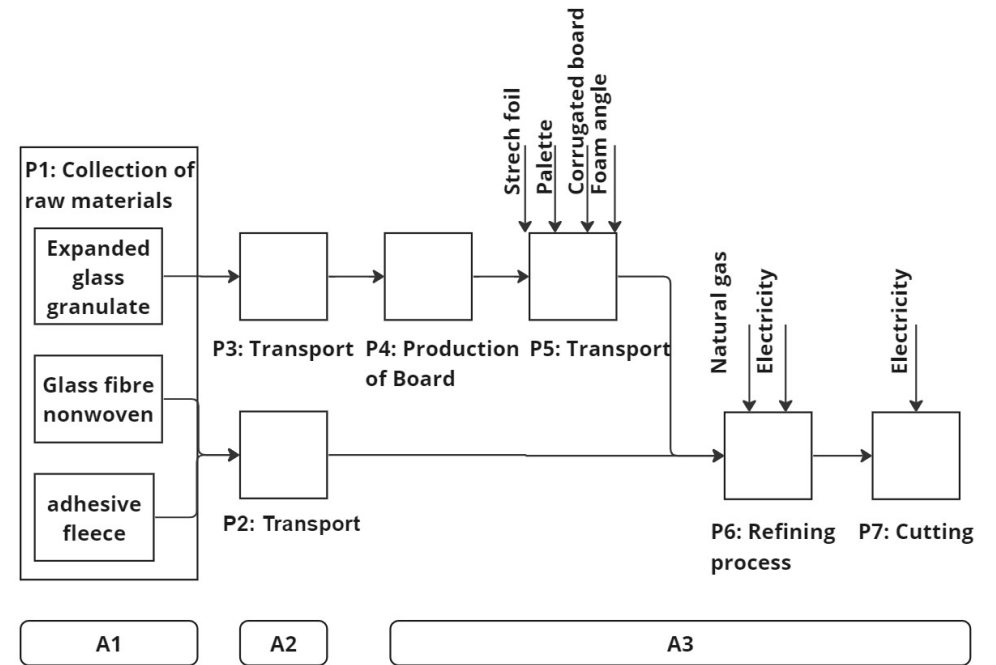
2.5 SUBSTANCES OF VERY HIGH CONCERN

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).

The product is categorized as non-hazardous waste with code AVV 17 09 04 (mixed construction waste).

2.6 DESCRIPTION PRODUCTION PROCESS

The boards, StoSilent Board 100 S and 105 C and 110 S, are manufactured at production sites in Ilmenau and Lauingen. In Ilmenau, all raw materials are getting mixed, formed into shape, dried, tempered, cut and sanded to format, packaged on pallets and forwarded to Lauingen for further processing. At Lauingen, lamination of non-woven fleece on front and rear under pressure, cut to format, application of edge coating and packaging.



2.7 CONSTRUCTION DESCRIPTION

The system build-up comprises a suspended sub-construction, StoSilent Board 105 C acoustic boards, and a force-transmitting adhesive bond. StoSilent Board 100 S and 110 S acoustic boards need to be screw-fixed onto the sub-construction. The StoSilent Board 105 C acoustic boards are fixed with an adhesive compound with high initial adhesion.

The highest substrate and application temperature for all system products is 30 °C. The maximum permitted relative humidity is 70 %. Only install the acoustic boards after the room has reached the suitable temperature and equilibrium humidity.

Processing StoSilent Board 100 S and 110 S:

1. Install the first acoustic panel
2. Align the board
3. Screw the acoustic panel
4. Apply the adhesive

2 Product

5. Install the second acoustic panel
6. Screw fixing the acoustic panel by the mean of screws
7. Bond the edges
8. Installing the boards
9. Install in the wall area
10. Filling and leveling coat
11. Knock off the adhesive

Equipment:

- Drywall screwdriver with a bit stop
- Phosphated drywall screws with needle point (TN). - Board thickness: 25 mm, screw: TN 3.5 x 35
- Level, Sto-Spatula

Construction for StoSilent Board 105 C

1. Metal sub-construction in accordance with EN 13964 with compression-proof vernier hangers

2. carrier and transverse profiles at the same level, made from CD profiles and level connectors
3. StoColl HT Bonding
4. StoSilent Board 105 C
5. intermediate coat
6. Finish coat

Process of installation

1. apply the adhesive onto the subconstruction profile
2. Position the acoustic board in the adhesive, gently press all the way around until the adhesive bears the weight of the acoustic board.
3. Apply the adhesive for further acoustic panels, Position further acoustic panels at the edge of an acoustic board that has already been stuck down.
4. Align the acoustic board. Press all board joints so they are at the same level.
5. Cut off the excess dry adhesive along the board edge.

3 Calculation rules

3.1 DECLARED UNIT

Acoustic Board

The declared unit is 1 m² acoustical system with specification of the acoustical performance class (A, B, C, D or E).

Reference unit: square meter (m²)

3.2 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	m ²
Weight per reference unit	6.938	kg
Conversion factor to 1 kg	0.144134	m ²

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

This is a Cradle to gate with options LCA. 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

The input data are representative for StoSilent Board 100 S; 105 C; 110 S, a product of Sto SE & Co. KGaA. The data is representative for the European Union. The scenarios included in this life cycle analysis are currently in use and are representative for one of the most likely scenario alternatives. This EPD is representative for StoSilent Board 100 S, StoSilent Board 105 C and StoSilent Board 110 S. The input data used is based on StoSilent Board 110 S which demonstrates the highest environmental impact of the group due to its mass per m².

3.5 CUT-OFF CRITERIA

Product stage (Module A1-A3)

3 Calculation rules

All input flows (e.g. raw materials, transportation, energy use, packaging, etc.) and output flows (e.g. production waste) are considered in this LCA. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.

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. The distance from the production site to the construction site was chosen in such a way that markets relevant to the product are covered. The amount of steel and electricity used during the construction process are equal to the amount needed to fix 1 m2 of StoSilent Board 110 S.

End of life stage (Module 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. StoSilent Board 100 S, 105 C and 110 S are categorized as mixed construction waste and non-hazardous waste. It can therefore be used in landfills. The degree of landfill is assumed to be 100%.

Benefits and Loads beyond the system boundary (Modul 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 at the production site for StoSilent Board 110 S comes from figures concerning the total amount of electricity being used at the site (for all products produced) and then recalculated into the amount only used for producing StoSilent Board 110 S at the site. The amount of electricity is then shown per m2 produced product.

The amount of energy used for heating at the production site for StoSilent Board 110 S comes from figures concerning the total amount of district heating used at the site (for all products produced) and then recalculated into the amount only used to produce StoSilent Board 110 S at the site. The amount of district heating is then shown per m2 produced product.

The producer of StoSilent Board 100 S, StoSilent Board 105 C and StoSilent Board 110 S is under regulation from national authorities and follows the polluter pays principle.

3.7 DATA COLLECTION & REFERENCE TIME PERIOD

Formulation and production information based on year 2023

3.8 ESTIMATES AND ASSUMPTIONS

1% cut off criteria have been applied for formulation and production data when applicable according to DIN EN 15804+A2. No machines are needed for the product at the de-construction / demolition phase

3.9 DATA QUALITY

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

3.10 GUARANTEES OF ORIGIN

Data has been collected at production site in Lauingen and Ilmenau. The energy used consists of 100% hydropower (market based approach) and covers the foreground processes in Lauingen and Ilmenau. The electricity supplier is bound by state regulations in Germany for electricity labelling. The electricity labelling indicates 100 % renewable energy from hydropower.

For the montage process (A5), a residual mix, low voltage is assumed.

3 Calculation rules

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), unspecified (default) market group for (GLO)
Fuel type and consumption of vehicle	not available
Distance	636 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
<i>Energy consumption for installation/assembly</i>		
Electricity (DE) - low voltage (max 1kV)	0.0057	kWh
<i>Materials used for installation/assembly</i>		
Steel, low-alloyed market for (GLO)	0.08	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	0.080	kg
Output materials as result of waste processing of used packaging	1.172	kg

4 Scenarios and additional technical information

4.3 DE-CONSTRUCTION, DEMOLITION (C1)

No inputs are needed for the product at the de-construction / demolition phase

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	6.938	0.000	0.000	0.000
Total	0.000	6.938	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
AP	mol H+ eqv.	1.12E-2	1.72E-3	5.15E-3	1.81E-2	4.04E-3	1.92E-3	0.00E+0	5.43E-4	0.00E+0	3.47E-4	-2.10E-3
GWP-total	kg CO2 eqv.	3.22E+0	2.96E-1	3.67E-1	3.88E+0	6.97E-1	2.35E+0	0.00E+0	9.37E-2	0.00E+0	3.66E-2	-1.43E-1
GWP-b	kg CO2 eqv.	-3.94E-1	1.37E-4	-1.94E+0	-2.33E+0	3.21E-4	1.93E+0	0.00E+0	4.32E-5	0.00E+0	7.22E-5	-5.21E-3
GWP-f	kg CO2 eqv.	3.61E+0	2.96E-1	2.30E+0	6.21E+0	6.96E-1	4.22E-1	0.00E+0	9.36E-2	0.00E+0	3.65E-2	-1.37E-1
GWP-luluc	kg CO2 eqv.	2.83E-3	1.08E-4	2.69E-3	5.63E-3	2.55E-4	2.92E-4	0.00E+0	3.43E-5	0.00E+0	1.02E-5	-6.67E-4
EP-m	kg N eqv.	3.06E-3	6.05E-4	1.31E-3	4.98E-3	1.42E-3	5.69E-4	0.00E+0	1.91E-4	0.00E+0	1.19E-4	-5.90E-4
EP-fw	kg P eqv.	7.65E-5	2.99E-6	4.22E-5	1.22E-4	7.02E-6	1.33E-5	0.00E+0	9.45E-7	0.00E+0	4.09E-7	-8.41E-6
EP-T	mol N eqv.	3.19E-2	6.67E-3	1.47E-2	5.32E-2	1.57E-2	6.21E-3	0.00E+0	2.11E-3	0.00E+0	1.32E-3	-9.42E-3
ODP	kg CFC 11 eqv.	6.46E-8	6.53E-8	2.89E-7	4.19E-7	1.54E-7	3.58E-8	0.00E+0	2.07E-8	0.00E+0	1.51E-8	-2.11E-8
POCP	kg NMVOC eqv.	7.85E-3	1.90E-3	5.18E-3	1.49E-2	4.48E-3	1.93E-3	0.00E+0	6.02E-4	0.00E+0	3.82E-4	-1.92E-3
ADP-f	MJ	6.63E+1	4.46E+0	3.76E+1	1.08E+2	1.05E+1	5.79E+0	0.00E+0	1.41E+0	0.00E+0	1.02E+0	-1.50E+0
ADP-mm	kg Sb-eqv.	3.52E-5	7.50E-6	1.27E-5	5.54E-5	1.76E-5	5.57E-6	0.00E+0	2.37E-6	0.00E+0	3.34E-7	-9.58E-7
WDP		8.53E-1	1.60E-2	2.26E-1	1.09E+0	3.76E-2	6.61E-2	0.00E+0	5.05E-3	0.00E+0	4.58E-2	-1.87E-2

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

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
	m ³ world eqv.											

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)

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
ETP-fw	CTUe	2.15E+1	3.98E+0	2.01E+1	4.56E+1	9.36E+0	8.99E+0	0.00E+0	1.26E+0	0.00E+0	6.63E-1	-1.98E+1
PM	disease incidence	5.35E-8	2.66E-8	7.18E-8	1.52E-7	6.26E-8	2.56E-8	0.00E+0	8.42E-9	0.00E+0	6.74E-9	-2.91E-8
HTP-c	CTUh	6.67E-10	1.29E-10	1.51E-9	2.31E-9	3.04E-10	1.58E-9	0.00E+0	4.08E-11	0.00E+0	1.53E-11	-2.60E-10
HTP-nc	CTUh	2.47E-8	4.35E-9	1.58E-8	4.49E-8	1.02E-8	1.79E-8	0.00E+0	1.38E-9	0.00E+0	4.71E-10	1.99E-9
IR	kBq U235 eqv.	3.85E-2	1.87E-2	4.03E-2	9.75E-2	4.40E-2	1.08E-2	0.00E+0	5.92E-3	0.00E+0	4.19E-3	-2.57E-3
SQP	Pt	4.40E+0	3.87E+0	2.32E+2	2.40E+2	9.10E+0	8.62E+0	0.00E+0	1.22E+0	0.00E+0	2.14E+0	-7.77E+1

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	AAcidification potential, Accumulated Exceedance (AP)	None
		None

5 Results

ILCD classification	Indicator	Disclaimer
ILCD type / level 3	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	
	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
	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.

5.2 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	1.09E+1	5.59E-2	2.57E+1	3.67E+1	1.31E-1	1.27E+0	0.00E+0	1.77E-2	0.00E+0	8.26E-3	-1.58E+1
PERM	MJ	0.00E+0	0.00E+0	1.64E+1	1.64E+1	0.00E+0	4.91E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

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

Abbr.	Unit	A1	A2	A3	A1- A3	A4	A5	C1	C2	C3	C4	D
PERT	MJ	1.09E+1	5.59E-2	4.21E+1	5.31E+1	1.31E-1	1.76E+0	0.00E+0	1.77E-2	0.00E+0	8.26E-3	-1.58E+1
PENRE	MJ	5.44E+1	4.74E+0	4.04E+1	9.95E+1	1.11E+1	5.68E+0	0.00E+0	1.50E+0	0.00E+0	1.08E+0	-1.58E+0
PENRM	MJ	1.44E+1	0.00E+0	7.59E-1	1.52E+1	0.00E+0	4.56E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-1.17E-2
PENRT	MJ	6.88E+1	4.74E+0	4.12E+1	1.15E+2	1.11E+1	6.14E+0	0.00E+0	1.50E+0	0.00E+0	1.08E+0	-1.60E+0
SM	Kg	8.11E+0	0.00E+0	2.43E-1	8.36E+0	0.00E+0	2.90E-1	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	2.68E-2	5.44E-4	7.23E-3	3.46E-2	1.28E-3	2.61E-3	0.00E+0	1.72E-4	0.00E+0	1.09E-3	-4.36E-4

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

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbr.	Unit	A1	A2	A3	A1- A3	A4	A5	C1	C2	C3	C4	D
HWD	Kg	1.27E-5	1.13E-5	5.32E-5	7.72E-5	2.66E-5	1.27E-5	0.00E+0	3.58E-6	0.00E+0	1.53E-6	-9.86E-6
NHWD	Kg	1.77E-1	2.83E-1	3.66E-1	8.26E-1	6.66E-1	4.60E-1	0.00E+0	8.96E-2	0.00E+0	6.94E+0	-3.31E-2
RWD	Kg	4.49E-4	2.93E-5	6.20E-5	5.40E-4	6.89E-5	2.61E-5	0.00E+0	9.27E-6	0.00E+0	6.71E-6	-4.76E-6

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	9.60E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

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

5 Results

Abbr.	Unit	A1	A2	A3	A1- A3	A4	A5	C1	C2	C3	C4	D
MFR	Kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.01E-1	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	4.28E+0
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	2.49E+0

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:

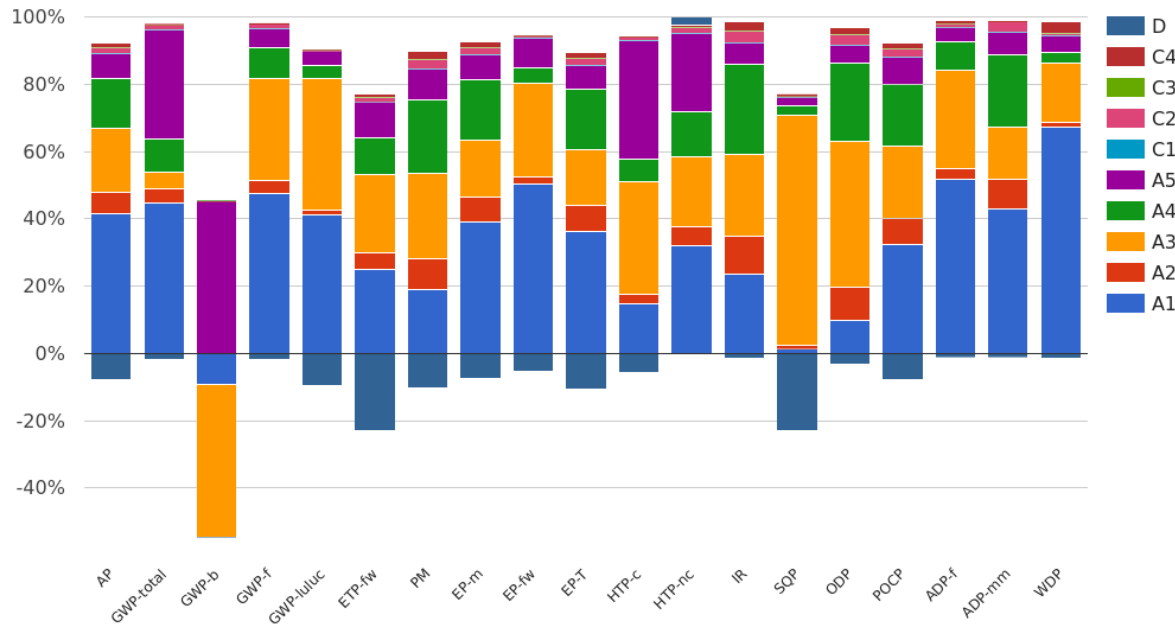
Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	0	kg C
Biogenic carbon content in accompanying packaging	0.5259	kg C

UPTAKE OF BIOGENIC CARBON DIOXIDE

The following amount 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.

Uptake Biogenic Carbon dioxide	Amount	Unit
Packaging	1.928	kg CO2 (biogenic)

6 Interpretation of results



The figure above shows the influence of the different life stages on the LCA results. The raw materials for StoSilent Board 100 Series (A1) contribute the most to the total GWP values, followed by packaging, energy use during production (A3). The main environmental impacts of the product's life cycle come from the product stage A1-A3. The main impact to all environmental indicators has the extraction from raw material (A1) followed by Manufacturing (A3)

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 14040:2006

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)

c-PCR Kiwa GmbH, Ecobility Experts

Kiwa-Ecobility Experts (Kiwa-EE) – Product Category Rules (PCR B) for acoustical ceiling and wall solutions (Draft, 2023-03-29, v1)

DIN EN ISO 7783

DIN EN ISO 7783, Bestimmung der Wasserdampfdurchlässigkeit – Schalenverfahren (ISO 7783: 2018)2019-02;

DIN EN 13501-1

DIN EN 13501-1, 2018-Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests: 2019-05;

DIN EN 12667

DIN EN 12667, Bestimmung des Wärmedurchlasswiderstandes nach dem Verfahren mit dem Plattengerät und dem Wärmestrommessplatten-Gerät: 2001-05;

DIN EN 11654

DIN EN 11654, Akustik– Schallabsorber für die Anwendung in Gebäuden: 1997-07;

7 References

8 Contact information

Publisher	Operator	Owner of declaration
 <p>Kiwa-Ecobility Experts Wattstraße 11-13 13355 Berlin, DE</p>	 <p>Kiwa-Ecobility Experts Wattstraße 11-13 13355 Berlin, DE</p>	 <p>Sto SE & Co. KGaA Ehrenbachstraße 1 D-79780 Stühlingen, DE</p>
<p>E-mail: DE.Ecobility.Experts@kiwa.com</p> <p>Website: https://www.kiwa.com/de/en/themes/ecobility-experts/ecobility-experts-epd-program/</p>	<p>E-mail: DE.Ecobility.Experts@kiwa.com</p> <p>Website: https://www.kiwa.com/de/en/themes/ecobility-experts/ecobility-experts-epd-program/</p>	<p>E-mail: infoservice@sto.com</p> <p>Website: https://www.sto.com</p>

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