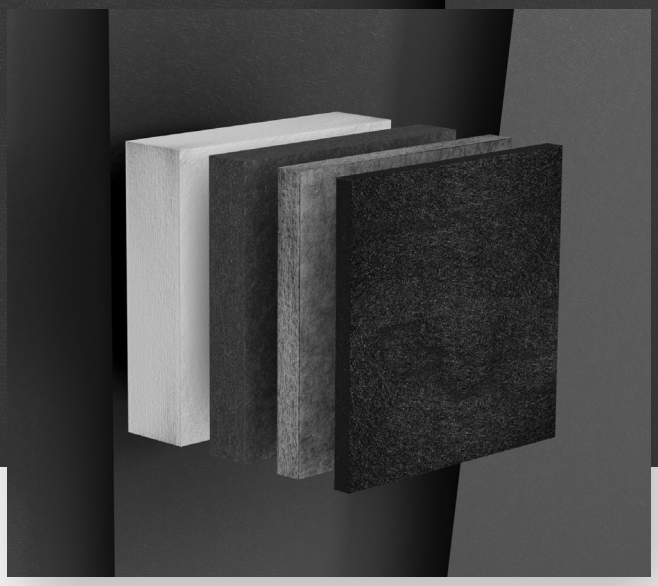
bluefiber

smart acoustic technology

smart acoustic products



Environmental Product Declaration

In accordance with ISO 14025:2006 and
EN 15804:2012+A2:2019/AC:2021 for:

bluefiber panels &
bluefiber pads

Sandler AG, Germany

Programme

The International EPD® System, www.environdec.com

Programme operator:	**EPD International AB**
EPD registration number:	**EPD-IES-0023981:001**
Version date:	**2025-10-30**
Validity date:	**2030-10-21**

EPD INTERNATIONAL EPD SYSTEM

ECO PLATFORM EPD VERIFIED

An EPD should provide current information and may be updated if conditions change.
The stated validity is therefore subject to the continued registration and publication at www.environdec.com.

EPD of multiple products, based on the average results of the product group.

Environmental product declaration

Programme information

Programme:	**The International EPD® System**
Address:	**EPD International AB**
	Box 210 60
	SE-100 31 Stockholm
	Sweden
Website:	**www.environdec.com**
E-mail:	**info@environdec.com**

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use, have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. In addition, comparability between EPDs is only achievable if the following performance characteristics are equivalent: declared unit, containment level, level of working width, assumed service life, geographic region and fulfilment of the same requirements of the applicable standard (EN 13964:2014).

For further information about comparability, see EN 15804 and ISO 14025.

Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product Category Rules (PCR): Construction products, PCR 2019:14, Version 2.0.1 and C-PCR Acoustical ceiling and wall solutions, C-PCR-014, Version 1.0.0

PCR review was conducted by: Paola Borla,
The Technical Committee of the International EPD System,
info@environdec.com.

Life Cycle Assessment (LCA)
LCA accountability: Jan Werner, SKZ – KFE gGmbH

Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

Individual EPD verification without a pre-verified LCA/EPD tool

Third-party verifier:
Nikolay Minkov
greentability Ltd.

Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier:

☐ Yes No

Company information



Owner of the EPD

Sandler AG
Lamitzmühle 1
95126 Schwarzenbach
Germany

About Sandler

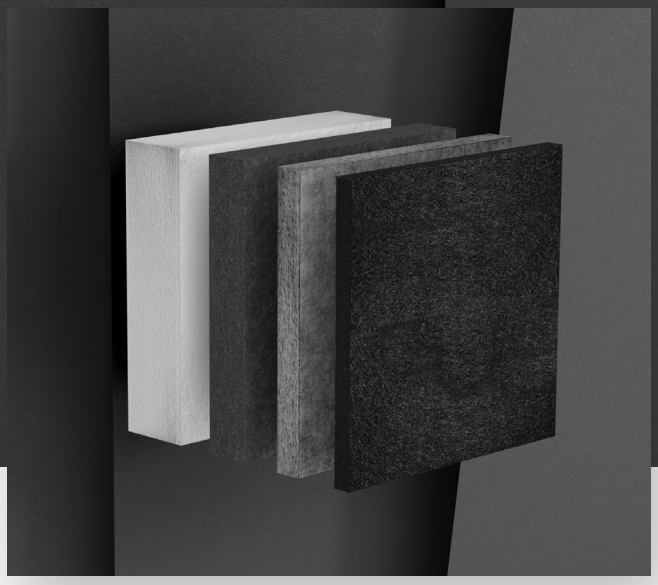
Contact
Ronny Schröder

Description of the organisation
Sandler AG is a global market leader in the field of non-woven products.

Product-related or management system-related certifications
Sandler AG has implemented a quality management system according to ISO 9001, an environmental management system according to ISO 14001 and an energy management system according to ISO 50001. In addition, products from Sandler AG are certified according to OEKO-TEX® STANDARD 100.

Name and location of production site
Lamitzmühle 1, 95126 Schwarzenbach, Germany

Product information



smart acoustic products

bluefiber panels &
bluefiber pads

Product name
bluefiber panels and bluefiber pads, EPD of multiple products based on the average results of the product group

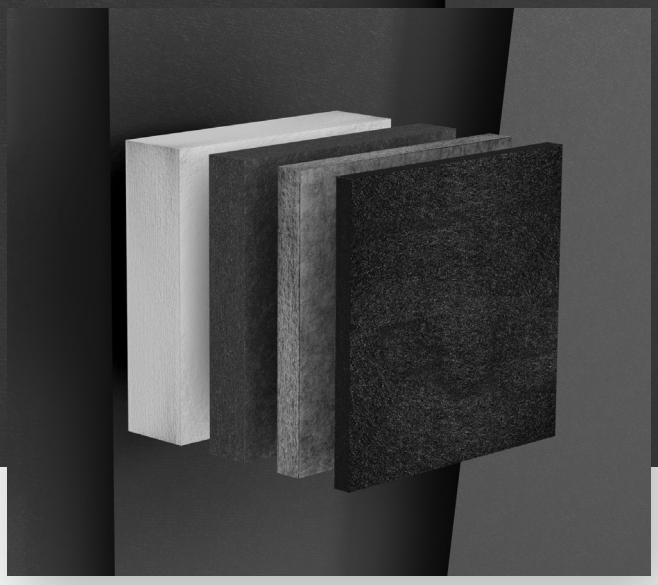
Product identification
bluefiber panels and bluefiber pads are acoustic products made from a bonded nonwoven fabric based on polyester fibers.

Product description
bluefiber panels and bluefiber pads are rigid acoustic panels used for sound absorption and insulation. bluefiber panels can be used for ceiling panel, wall absorber, office furniture (visual cover, partition, wall), etc., while bluefiber pads can be used for ceiling solutions, suspended ceilings, applications in frames etc. bluefiber panels and bluefiber pads are available in a range of product variants, as shown to the right.

smart acoustic properties

Property	bluefiber panel	bluefiber pad
Density (kg/m³)	55.5 – 334	
Length (m)	1.00 – 2.07	
Width (m)	0.80 – 3.07	
Grammage (g/m²)	1,000 – 5,500	
Thickness (mm)	12, 25, 40	50
Colours	warm white light grey, silver grey anthracite grey pure black desert taupe stone beige, cotton beige	white marble grey black
Delivery form	Sheets in film on pallet.	Sheets in carton on pallet.

Product information



In addition to the sound absorption property, bluefiber is heat-insulating, flame-resistant, moisture-resistant and gentle on the skin.

The EPD covers all product variants of bluefiber panels and bluefiber pads by declaring an average product. The product variants differ w. r. t. their dimensions and colour, which results from a different mixture of polyester staple fibers.

UN CPC code
CPC code 26430

Information on manufacturing

A fiber mixture with the desired properties is fed to a carding and crosslapping process. The fibers are then mechanically intertwined and thermally bonded. The edges of the intermediate non-woven are trimmed to the desired width. Subsequently, a two-step compression process is used to finish the products.

Further information about bluefiber products is available on
https://bluefiber.sandler-group.com/

Only the best properties combined



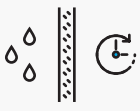
sound-absorbing



flame-resistant



recyclable



moisture-resistant



gentle on the skin



heat-insulating

Content declaration

Product components	Weight [kg / FU]	Post-consumer material [weight-%]	Biogenic material [weight-% & kg C/FU]
Polyester staple fibre	2.9	14.80 %	0
TOTAL	2.9	14.80 %	0
Packaging materials	**Weight [kg / FU]**	**[weight-%] versus product**	**Weight biogenic carbon [kg C/FU]**
Corrugated board	0.196	6.80 %	0.094
PE film	0.068	2.30 %	0
Wooden pallet	0.186	6.40 %	0.081
TOTAL	0.450	15.50 %	0.174

The product contains no substances from the candidate list of SVHC for Authorisation.
The product contains no CMR substances in categories 1A or 1B which are not on the candidate list.
No biocide products were added to this construction product as defined by the EU Regulation No. 528/2012).

LCA information

Functional unit
The functional unit (FU) is 1 m² of installed acoustic panel including a service life of 50 years and a declared acoustic performance class of A at wall distance 200 mm. For other thicknesses and densities as well as different wall distance, the acoustic performance class may be different.

Reference service life
A reference service life for bluefiber panels and bluefiber pads is not defined. A service life of 50 years can be expected (manufacturer information).

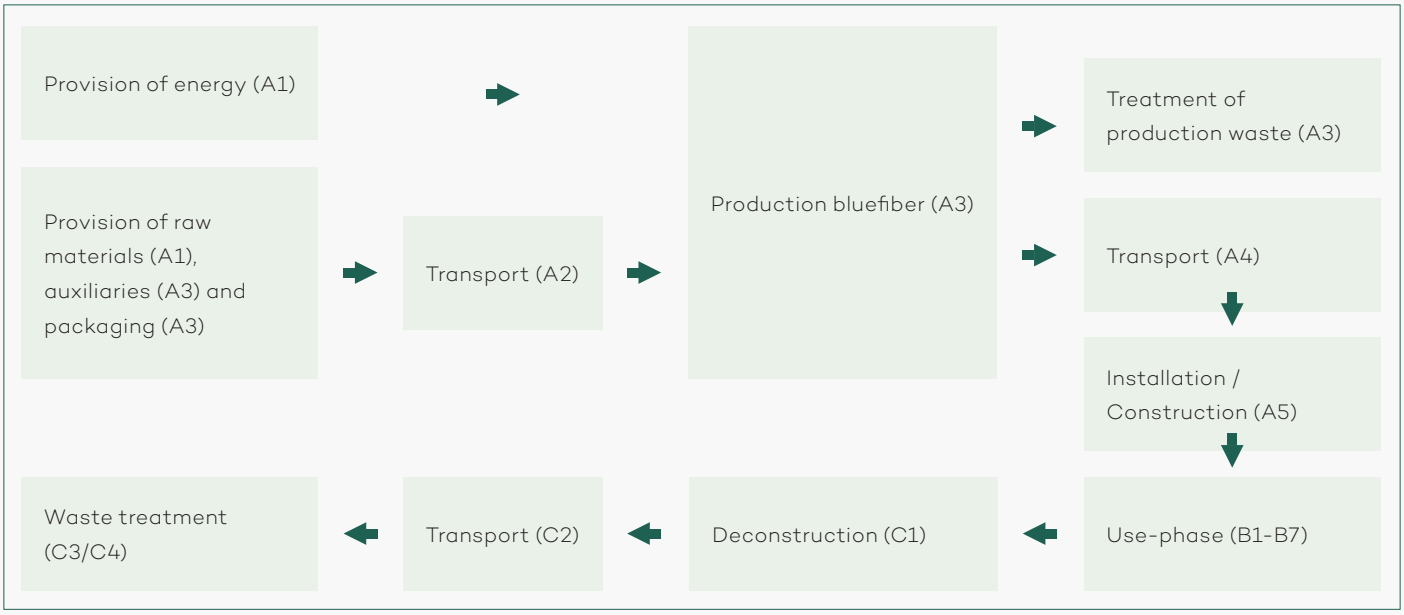
Time representativeness
Product and production data collected by Sandler AG cover the year 2024. The background data from the LCA database used for this EPD declare reference year of 2020 to 2023.

Geographical scope
The modelling in modules A1-A3 is representative of the production in Germany. Modules A4-A5 as well as C-modules (end-of-life) represent the European situation

Database(s) and LCA software used
The LCA database Managed LCA Content, version 2025.1 and the LCA software LCA for Experts, version 10.9, both from Sphera Solutions GmbH, Leinfelden-Echterdingen, were used for the LCA calculation.

Description of system boundaries
In this EPD, the system boundary is defined as: Cradle to grave and module D (A + B + C + D)

System boundary



LCA information

Product stage (A1-A3)

The necessary raw materials and intermediate products are supplied to the production plant, where the production of the product takes place by standard and customized manufacturing processes. The different product variants of bluefiber panels and bluefiber pads consist of different fibers with varying properties. An average composition was assumed for the EPD. Electricity from the power grid is used for the electrical energy required for production at the plant in Schwarzenbach/Germany. Hence, the residual electricity mix of Germany is used to model electricity consumption (GWP-GHG 0.855 kg CO_2e / kWh).

Construction process stage (modules A4-A5)

Module A4 covers the transport of the packed product to the construction site. For this, a transport distance of 500 km with a common truck with 32 t gross weight is assumed. Module A5 includes the manual, installation, transport of packaging material to waste treatment and waste treatment of packaging waste with energy and material recovery.

Use stage (modules B1-B7)

Bluefiber products are passive components of a wall or ceiling structure. Therefore, it is assumed that during the use stage no impacts arise.

End of life (modules C1-C4)

The end-of-life is modeled by a specific 100 %-scenario (100 % incineration with energy recovery). For de-construction (module C1), a manual removal of the product is assumed. A loss of 10 % during de-construction is assumed. For the transport to the waste processing (module C2), an average distance of 77 km and transport with a common truck is assumed. For waste processing, a sorting of mixed construction waste is assumed, with a loss of 3 %. After that, incineration with energy recovery is assumed for the sorted product waste.

Module D

Energy and material recovered from recycling and incineration processes can lead to benefits outside the system boundary. This is the case for the treatment of packaging waste in module A5 as well as the incineration of product waste in module C3. These recovery potentials resulting from the net-flows are included in module D.

Data quality

All relevant information and data for modeling are available. The data collection is based on annual production data from 2024. The data used is largely consistent. The input and output materials for production and data on packaging come directly from the manufacturing company. In addition, the specific transportation distance to the plant was taken into account for each individual raw material. Furthermore, approximate data with a lower degree of representativeness was used in some cases. The quality of the background data used can be rated as very good to good. The data quality information is provided according to the requirements of EN 15941

The following flows and processes were not considered (cut-off)

- Internal transport of the production site
- Packaging of packaging materials for the final products
- Packaging and transport for lubricants are not considered
- Production and end-of-life of multi-use packaging
- Small quantities of packaging material (adhesive tape, edge production, straps)
- Provision of cooling water

The following table shows data quality information for all processes contributing with more than 10% to the GWP-GHG results of the modules A1-A3 or A4-C.

Process	Module reference	Source	Reference year	Data category
PET fiber production	A1–A3	Database Sphera MLC 2025.1	2024	Secondary data
Flame-retardant production	A1–A3	Database Sphera MLC 2025.1	2024	Secondary data
Manufacturing electricity use	A1–A3	Collected data	2024	Primary data
Manufacturing heat use	A1–A3	Collected data	2024	Primary data
PET waste incineration	A4–C	Database Sphera MLC 2025.1	2024	Secondary data

More information

The LCA was conducted by SKZ – German Plastics Center. The calculation is based on average data and product information.

LCA information

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	UA5	B1	B2	B3	B4	B5	B6	B7					D
Modulares declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	DE	DE	DE	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27
Specific data used	17 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation products	-65 % to +90 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation sites	0 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

The LCA results scale linearly with the grammage. Hence, the variation of impact indicator results originates mainly from the variation of the grammage. All indicators exhibit a variation >10 % as all indicators and modules are affected by the variation of the grammage in the range shown above.

The impact assessment results for a specific product variant can be derived from the average values by rescaling with the specific grammage as a conversion factor.

Results of the environmental performance indicators

The results are shown for themodules A1-A3, A4, A5, B1, B2, B3, B4, B5, B6, B7, C1, C2, C3, C4 and D. Note that for the use stage it is assumed that no impacts arise.
The EN 15804+A2 method (based on EF 3.1.) was used to evaluate the environmental impacts, except for the indicator GWP-GHG. The results are written in scientific notation.

Mandatory impact category indicators according to EN 15804

Results per functional unit										
Indicator	**Unit**	**A1–A3**	**A4**	**A5**	**B1–B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	1.10E+01	1.52E-01	6.04E-01	0.00E+00	0.00E+00	2.02E-02	5.81E+00	4.44E-03	-1.54E+00
GWP-fossil	kg CO_2 eq.	1.13E+01	1.50E-01	2.18E-01	0.00E+00	0.00E+00	1.99E-02	5.81E+00	4.43E-03	-1.53E+00
GWP-biogenic	kg CO_2 eq.	-3.31E-01	7.64E-04	3.85E-01	0.00E+00	0.00E+00	1.01E-04	1.23E-04	-1.44E-05	-7.78E-03
GWP-luluc	kg CO_2 eq.	6.53E-03	1.58E-03	4.94E-05	0.00E+00	0.00E+00	2.10E-04	1.27E-04	1.82E-05	-2.06E-03
ODP	kg CFC 11 eq.	5.26E-11	2.55E-14	1.78E-14	0.00E+00	0.00E+00	3.39E-15	4.52E-13	1.23E-14	-1.40E-11
AP	mol H+ eq.	2.03E-02	3.53E-04	3.78E-05	0.00E+00	0.00E+00	4.69E-05	6.05E-04	3.13E-05	-1.78E-03
EP-freshwater	kg P eq.	9.73E-04	4.14E-07	1.49E-08	0.00E+00	0.00E+00	5.50E-08	7.11E-08	6.59E-09	-1.37E-06
EP-marine	kg N eq.	6.25E-03	1.58E-04	1.13E-05	0.00E+00	0.00E+00	2.09E-05	1.81E-04	8.20E-06	-5.19E-04
EP-terrestrial	mol N eq.	6.84E-02	1.69E-03	1.79E-04	0.00E+00	0.00E+00	2.25E-04	2.94E-03	8.94E-05	-5.79E-03
POCP	kg NMVOC eq.	2.88E-02	3.20E-04	2.84E-05	0.00E+00	0.00E+00	4.25E-05	5.04E-04	2.45E-05	-1.41E-03
ADP-minerals & metals*	kg Sb eq.	9.82E-07	1.02E-08	4.87E-10	0.00E+00	0.00E+00	1.36E-09	1.22E-08	2.74E-10	-1.48E-07
ADP-fossil*	MJ	240E+02	1.97E+00	9.04E-02	0.00E+00	0.00E+00	2.61E-01	1.06E+00	5.81E-02	-2.70E+01
WDP*	m^3	1.16E+00	7.02E-04	2.21E-02	0.00E+00	0.00E+00	9.33E-05	5.18E-01	4.79E-04	-1.53E-01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

***Disclaimer**

The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Results of the environmental performance indicators

The results are shown for the modules A1-A3, A4, A5, B1, B2, B3, B4, B5, B6, B7, C1, C2, C3, C4 and D.

Additional mandatory and voluntary impact category indicators

Results per functional unit										
Indicator	**Unit**	**A1–A3**	**A4**	**A5**	**B1–B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO2 eq.	1.10E+01	1.52E-01	6.04E-01	0.00E+00	0.00E+00	2.02E-02	5.81E+00	4.44E-03	-1.54E+00

[1] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

The results are shown for the modules A1-A3, A4, A5, B1, B2, B3, B4, B5, B6, B7, C1, C2, C3, C4 and D.

Resource use indicators

Results per functional unit										
Indicator	**Unit**	**A1–A3**	**A4**	**A5**	**B1–B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2.70E+01	1.48E-01	2.43E-01	0.00E+00	0.00E+00	1.97E-02	2.67E-01	1.12E-02	-8.59E+00
PERM	MJ	3.83E-01	0.00E+00	-3.83E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	2.74E+01	1.48E-01	-1.40E-01	0.00E+00	0.00E+00	1.97E-02	2.67E-01	1.12E-02	-8.59E+00
PENRE	MJ	2.42E+02	1.97E+00	3.05E+00	0.00E+00	0.00E+00	2.61E-01	4.89E+01	5.81E-02	-2.70E+01
PENRM	MJ	5.73E+01	0.00E+00	-2.96E+00	0.00E+00	0.00E+00	0,00E+00	-4.89E+01	0.00E+00	0.00E+00
PENRT	MJ	2.99E+02	1.97E+00	9.04E-02	0.00E+00	0.00E+00	2.61E-01	0,00E+00	5.81E-02	-2.70E+01
SM	kg	6.56E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	5.27E-02	7.33E-05	5.19E-04	0.00E+00	0.00E+00	9.74E-06	1.22E-02	1.40E-05	-6.66E-03
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

Results of the environmental performance indicators

The results are shown for the modules A1-A3, A4, A5, B1, B2, B3, B4, B5, B6, B7, C1, C2, C3, C4 and D.

Waste indicators

Results per functional unit										
Indicator	Unit	A1–A3	A4	A5	B1–B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1.91E-04	7.89E-11	2.11E-11	0.00E+00	0.00E+00	1.05E-11	5.22E-10	1.27E-11	-1.66E-08
Non-hazardous waste disposed	kg	2.15E-01	2.75E-04	1.43E-03	0.00E+00	0.00E+00	3.65E-05	2.75E-02	2.90E-01	-1.33E-02
Radioactive waste disposed	kg	3.76E-03	3.71E-06	1.78E-06	0.00E+00	0.00E+00	4.94E-07	5.49E-05	6.17E-07	-1.98E-03

The results are shown for the modules A1-A3, A4, A5, B1, B2, B3, B4, B5, B6, B7, C1, C2, C3, C4 and D.

Output flow indicators

Results per functional unit										
Indicator	Unit	A1–A3	A4	A5	B1–B7	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	1.86E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	1.41E-01	0.00E+00	1.96E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	4.25E-01	0.00E+00	4.72E-01	0.00E+00	0.00E+00	0.00E+00	8.32E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	9.86E-01	0.00E+00	8.51E-01	0.00E+00	0.00E+00	0.00E+00	1.49E+01	0.00E+00	0.00E+00

Additional information

The impact assessment results for a specific product variant can be derived from the average values by rescaling with the specific grammage as a conversion factor.



Environmental, Social and Economic

Sandler Group has implemented a quality management system according to ISO 9001, an environmental management system according to ISO 14001 and energy management system according to ISO 50001. In addition, Sandler has developed a sustainability strategy, which incorporates the 17 UN Sustainable Development Goals.

To ensure responsible behaviour along the value chain, Sandler has set up a Declaration of Principles and has created complaints channels for reporting misconduct.

More information is available at **www.sandler-group.com**.

References

ISO 14025:2006. Environmental labels and declarations — Type III environmental declarations — Principles and procedures

EN 15804:2012+A2:2019 + AC:2021. Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

General Programme Instructions of the International EPD® System. Version 5.0.1

PCR 2019:14. Construction Products. 2.0.1

C-PCR-014. Complementary Product Category Rules to PCR 2019:14. Acoustical ceiling and wall solutions. Version 2025-04-15, 1.0.0

Managed LCA Content. Sphera Solutions GmbH. Version 2025.1

LCA for Experts. Sphera Solutions GmbH. Version 10.9

Abbreviations

EPD	Environmental Product Declaration
FU	Functional Unit
GWP	Global Warming Potential
LCA	Life Cycle Assessment
PCR	Product Category Rules
UN CPC	United Nations Central Product Classification

Version history
Version date
1 2025-10-22
2 2025-10-30

EPD
INTERNATIONAL EPD SYSTEM