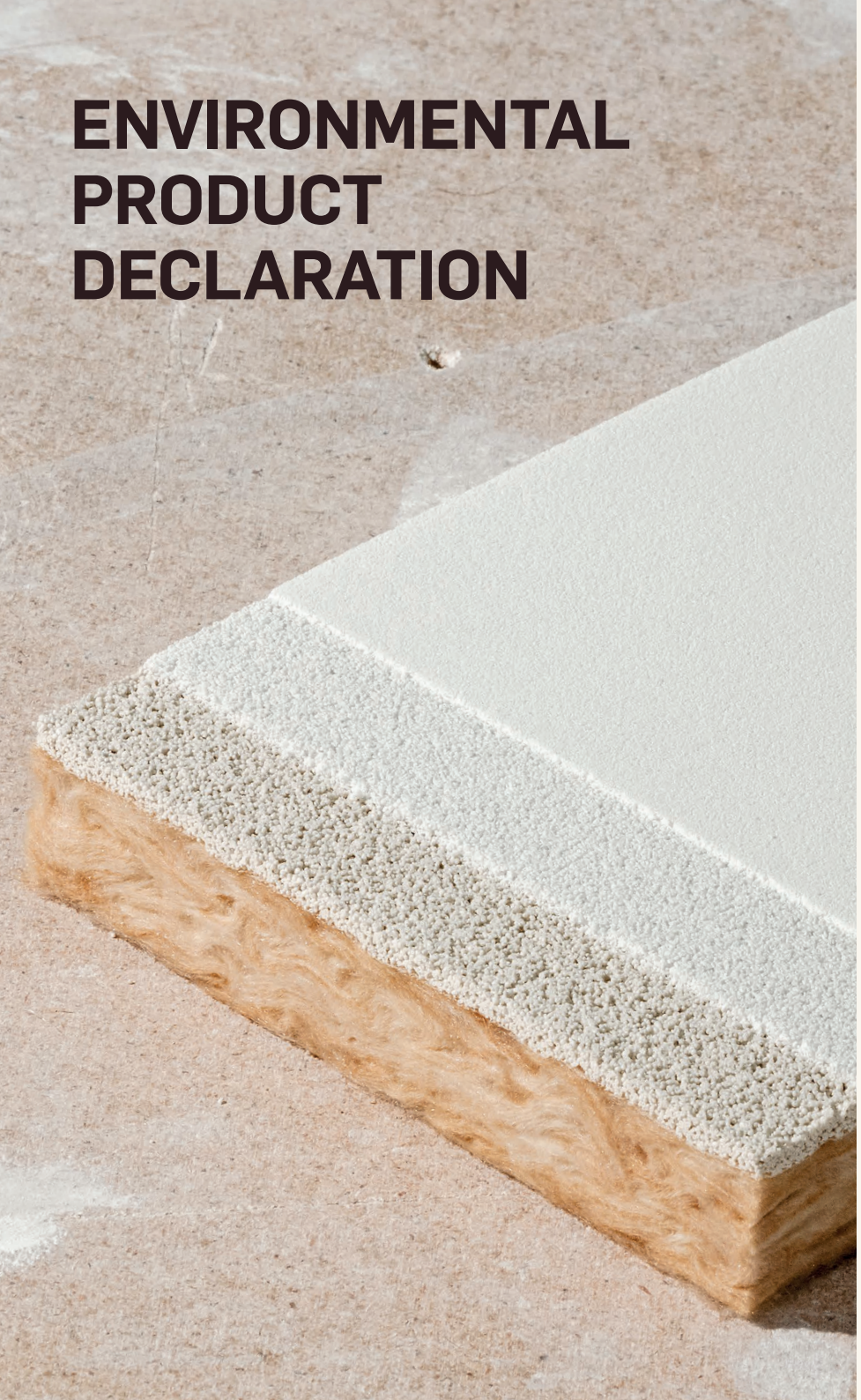
ENVIRONMENTAL PRODUCT DECLARATION



BASWA acoustic®

EPD®
THE INTERNATIONAL EPD® SYSTEM

ECO PLATFORM EPD VERIFIED

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

SEAMLESS ACOUSTIC SYSTEMS FOR REDUCTION AND CONTROL OF THE REVERBERATION TIME

EPD of multiple products, based on the average results of the product group:
BASWA Phon 30, BASWA Phon 40, BASWA Phon 50 and BASWA Phon 70

EPD Program	The International EPD® System
CPC Code	37129 - 37990
Based on	PCR 2019:14 VERSION 1.3.4. Construction products and Sub-PCR-C - Acoustical systems solutions
Registration number	EPD-IES-0018795
Pubhised	2019-12-11
Revision date	2025-06-11
Valid until	2030-06-11
Market coverage	Worldwide
Representativeness	Switzerland

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



SUMMARY

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PROGRAMME INFORMATION

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 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 (e.g. identical declared/functional units); 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. For further information about comparability, see ISO 14025.

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

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)

PCR 2019:14 VERSION 1.3.4 CONSTRUCTION PRODUCTS 2023-12-08. Based on CEN standard EN 15804. CEN standard EN 15804 serves as the core Product Category Rules (PCR). C-PCR -014 - Acoustical ceiling and wall solutions 2024-01-28

PCR review was conducted by:

The Technical Committee of the International EPD® System. A full list of members available on www.environdec.com. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via info@environdec.com.

Life Cycle Assessment (LCA)

LCA accountability: Diego Ruiz, Idnóvam

Third-party verification

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

[X] EPD verification by individual verifier

Third-party verifier: Ruben Carnerero. IK Ingeniría, www.ik-ingenieria.com

Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third-party verifier:

Yes [X] No

BASWA ACOUSTIC AG

BASWA acoustic is the world leader in high performance seamless acoustic ceilings. Our mission is simple: to increase wellbeing by combining effective sound absorption with complete architectural freedom. BASWA has always been known as the original innovator in sound absorbing plaster. All our products are developed and engineered in Switzerland, and installed on site using only highly skilled, certified installers. Careful selection of our raw materials is of utmost importance to us, and therefore we also aim for sustainability in manufacturing. Our acoustical solutions allow architects and owners to design spaces where acoustics and aesthetics combine to exceed everyday expectations.

BASWA acoustic AG is a young and dynamic company with an international profile. Hans "Jeannot" Sulzer, who was sixty at the time, established it in 1991. From the start, the company pursued the goal of manufacturing and distributing innovative acoustics products. As a tireless and ambitious entrepreneur and pioneer with a high affinity for technology, Hans Sulzer invented and developed the BASWA acoustics system. He knew from the beginning that as an enterprise, BASWA would take an unconventional path to success and would find innovative new solutions for familiar problems.





VAULT HOUSE



VILLA BRAS



HELVETIA WEST EXTENSION

RESTAURANT GALLUSPLATZ



THE SHARD

TRINITY COLLEGE OXFORD







BASWA PHON SYSTEMS

HEALTHY ACOUSTICS

Because noise is so ubiquitous in everyday life, it is time to think about sound absorption and the acoustic design of rooms. Especially because people in the northern hemisphere spend an average of 80% of their lives indoors. We have made this the purpose of our company and developed a series of excellent acoustic solutions. In classrooms, BASWA solutions make a significant contribution to a healthy acoustic room climate and thus to learning success. Even long meetings in conference rooms become more bearable and dinner with the family more relaxed, if the room acoustics are right.

REAL VALUES

At BASWA we believe that only carefully selected raw materials can provide high quality solutions. This means using white marble sand from selected quarries and regions of the world, as well as recycled mineral materials. In order to guarantee the best possible quality of materials, we have been constantly developing and finding ways to combine traditional craftsmanship and innovative technologies for the last 30 years. This is how we achieve the unique acoustic and visual properties of our systems. And this is how we ensure that our acoustic surfaces are leaders in sustainability, aesthetic compatibility, energy efficiency, health and wellbeing, and acoustic performance.



CLEVER SOLUTIONS

BASWA's seamless solutions integrate into the architecture without compromise. The variety of solutions and adaptability enable optimal coordination of the acoustic surfaces with the architectural concept, reinforcing their validity. BASWA acoustic finishes can be tinted to any colour, and manipulated to tactile, beautiful and durable textures. For us, the customer should determine the properties of the system, and never have to do without the functional basic properties of the surfaces. We have formulated the technology so that it can be incorporated into the planning process and thus become an integral part of the project.

BASWA solutions are modular - you decide according to your desire. The BASWA acoustic systems reduce and control the reverberation time in a space to create an ideal acoustic environment, positively affecting health and wellbeing. The BASWA acoustic systems consist of two elements; the BASWA Phon acoustic panels and the microporous coating compounds. The panels are adhered to a solid, closed substrate and then coated with the microporous coating compounds. This results in a jointless, smooth surface with high absorption values and gives the visual appearance of a smooth, painted plaster ceiling. The BASWA Phon technology provides architects and acousticians with unique design options.

Each system is available in the following four **system thicknesses: 30/40/50/70 mm**. All systems can be applied directly to concrete or conventional drywall systems (mineral substrates). The glued and grouted BASWA Phon acoustic panels can be coated with either one or two layers of a microporous acoustic plaster.

DESCRIPTION OF BASWA SYSTEMS

This Environmental Product Declaration (EPD®) describes the environmental impacts of 1 m^2 of acoustical systems solutions for ceiling to aim at the reduction and control of the reverberation times and sound pressure level in public and private spaces and the creation of a pleasant sound environment.

The address of the BASWA acoustic production site is Marmorweg 10, Baldegg (Switzerland).

The BASWA systems included in this declaration are as follows:

- Single layer systems:
  - BASWA Phon Base
  - BASWA Phon Fine
- Double layer systems:
  - BASWA Phon Classic Base
  - BASWA Phon Classic Fine
  - BASWA Phon Classic Top



BASWA SYSTEM INSTALLATION



BASWA PHON CLASSIC TOP



ELBPHILHARMONIE HAMBURG



All BASWA systems are presented in thicknesses of 30 mm, 40 mm 50 mm and 70 mm.

BASWA systems consist of glass wool panels with original thicknesses of 20 mm, 30 mm, 40 mm and 60 mm. On these panels, a covering is deposited that presents in its formulation expanded glass and other additives mixed with water. The expanded glass is produced with post-consumer recycled glass. Then, the panels are dried in a oven and subsequently a grinding is performed until the thickness of the covering is 6 mm. This makes BASWA Phon panels present final values of 26 mm, 36 mm, 46 mm and 66 mm respectively. Finally, panels are cut to a size of 80 cm x 60 cm, in this way are light and easy to handle and cut.

BASWA Phon panels are installed on ceilings using an adhesive applied on the not covered face. For concrete ceilings is used BASWA Fix C adhesive while for gypsum ceilings or drywall is used BASWA Fix K adhesive. Both products are marketed by BASWA but not manufactured in their facilities. The joints left between BASWA Phon panels are covered with the BASWA Fill.

On the covered face different plasters are applied: BASWA Base, BASWA Fine, or BASWA Top. Plasters are produced by BASWA and uniquely differs in the granulometry of marble aggregate (0.7 mm, 0.5 mm y 0.3 mm respectively). This aggregate is a secondary material obtained from the production of natural stone. The plasters themselves constitute the surface finish of the ceilings in which BASWA systems are installed.

This finish can be single layer or double layer. In the first case a single layer of plaster is applied (BASWA Base or BASWA Fine). In the second case, a first layer of BASWA Base plaster is applied. When it is completely dried, it is applied a second layer of plaster (BASWA Base, BASWA Fine or BASWA Top). In both cases, the application of plasters makes BASWA Phon systems present final thickness values of 30 mm, 40 mm, 50 mm and 70 mm.

These finishes can be delivered in an unlimited range of colors. Additionally, thousands of custom finish structures are possible.

APPLICATIONS

BASWA Phon systems are commonly used in public facilities where there is a need for noise, reverberation time and sound pressure level reduction to improve the working environment.

ACOUSTIC PERFORMANCE OF BASWA PHON SYSTEMS

	Thickness mm	ISO 11654 WSAC (α_w)	SAC	ASTM C423 NRC	EN ISO 354 SAC (α_s)
BASWA Phon Base	30	0.60 / 0.70	C	0.80	1.05 / 1.01
	40	0.85	B	0.90	1.06 / 1.04
	50	1.00	A	1.00	1.11 / 1.13
	70	1.00	A	1.00 / 1.05	0.98 / 1.05
BASWA Phon Fine	30	0.60 / 0.70	C	0.80	1.01 / 0.98
	40	0.90 / 0.85	A / B	0.90	0.99 / 1.04
	50	0.90 / 0.95	A	0.95 / 0.90	1.01 / 0.99
	70	0.95	A	1.00	0.95 / 0.98
BASWA Phon Classis Base	30	0.60 / 0.70	C	0.80	1.07 / 1.01
	40	0.95 / 0.85	A / B	0.90 / 0.85	0.99 / 1.01
	50	0.95 / 0.90	A	0.95 / 0.90	0.98 / 0.96
	70	1.00	A	1.05 / 1.00	0.98 / 1.02
BASWA Phon Classis Fine	30	0.70 / 0.75	C	0.75 / 0.80	0.96 / 0.97
	40	0.85 / 0.90	B / A	0.85 / 0.80	0.88
	50	0.80 / 0.85	B	0.90 / 0.85	0.87 / 0.91
	70	0.90	A	0.95 / 0.90	0.88 / 0.92
BASWA Phon Classis Top	30	0.70 / 0.75	C	0.80	0.97 / 1.02
	40	0.85	B	0.85 / 0.80	0.92 / 0.95
	50	0.95 / 0.90	A	0.90 / 0.95	0.95 / 1.02
	70	0.90 / 0.95	A	1.00 / 0.95	0.93 / 0.92

WSAC - Weighted Sound Absorption Coefficient (Type A Concrete / Type E-200 suspension)

SAC - Sound Absorption Class

Fire classification - Non-flammable (A2-s1, d0)

SAC - Sound absorption coefficient at 1000 Hz (Type A Concrete / Type E-200 suspension)

• NRC - Noise Reduction Coefficient (Type A Concrete / Type E-200 suspension)

TECHNICAL DATA AND COMPOSITION

Tables below show the mass composition and sound absorption performance of the BASWA systems included in this EPD. All raw materials that are part of the declared systems are shown. Once installed, BASWA Phon systems do not contain any substance included in the list of Substances of Very High Concern with concentrations higher than 0.1% in weight.

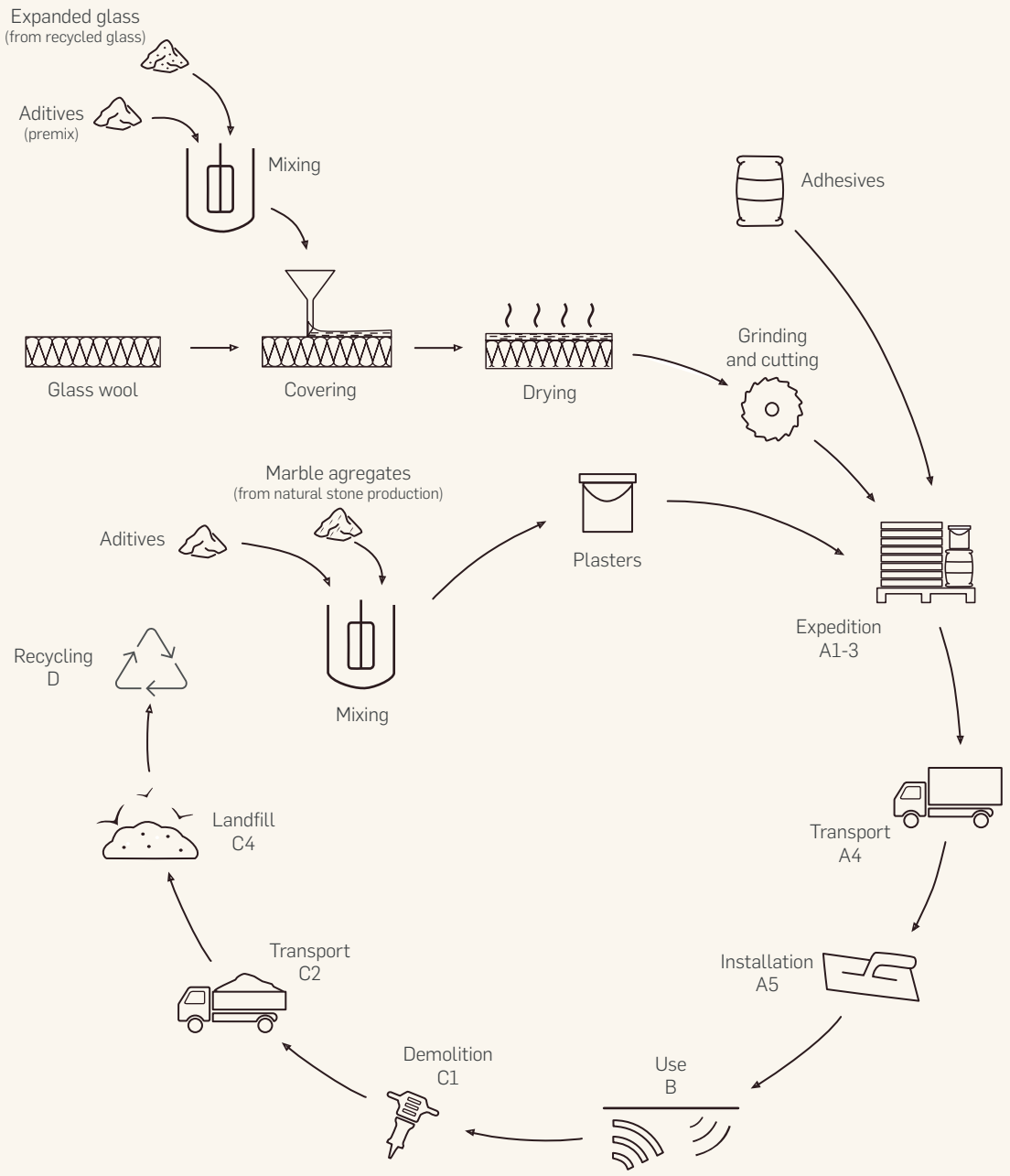
Reference service life of BASWA systems is 50 years according to the default value established in the C-PCR for acoustic systems.

	Single layer systems			**Double layer systems**		
Product components	Weight, kg	Post-consumer material,	Biogenic material, weight-%	Weight, kg	Post-consumer material,	Biogenic material, weight-% and
Marble agregates	3.02	0	0	5.44	0	0
Expanded glass	1.89	81	0	1.89	81	0
Glass wool	2.55	0	0	2.55	0	0
Adhesive	1.99	0	0	1.99	0	0
Aditives	1.14	0	0	1.37	0	0
Total	10.59	14.4	0	13.24	11.6	0
Packaging materials	**Weight, kg**	Weight-% (vs product)	**Weight biogenic carbon, kg C/kg**	**Weight, kg**	Weight-% (vs product)	**Weight biogenic carbon, kg C/kg**
Plastic	0.21	2.0%	0	0.34	2.6%	0
Paper/cardboard	0.03	0.3%	0.5	0.03	0.3%	0.5
Metal	0.02	0.2%	0	0.03	0.2%	0
Wood	0.94	8.8%	0.5	1.13	8.5%	0.5
Total	1.20	11.3%	0.49	1.53	11.6%	0.58

SYSTEMS LIFE CYCLE



The scope of the EPD is set to be “Cradle-to-grave”. Processes included in the assessment are presented on the following diagram process.



LCA INFORMATIONS

FUNCTIONAL UNIT

The functional unit is 1m² of acoustical systems solutions for ceiling during 50 years with an acoustic performance declared in the table of the previous page.

GOAL AND SCOPE

The intended use of this EPD is the business to business communication for clients and relevant stakeholders within the building sector.

SYSTEM BOUNDARIES

This EPD presents the information in a modular way separated in the following stages.

A1 - Raw material supply

This module represents the extraction and processing of raw materials used in the manufacture of BASWA systems. Among them are the main raw materials such as glass wool, expanded glass obtained from recycled glass and marble aggregate from the production of natural stone as secondary material.

A2 - Transport to production sites

Raw materials are transported totally by road with a distance not higher than 1.720 km for all providers.

A3 - Manufacturing

This stage is organized according to the manufacture of each of the components that are part of the BASWA systems. On the one hand, the covering that will be deposited on the glass wool panels is mixed starting from expanded glass, aditives and water. Once this operation is completed, the panels are dried in an oven fed by natural gas or diesel in the two productions plants of BASWA Acoustic placed in Switzerland and Germany. Finally, the covering thickness and the panels edges are rectified.

By other hand, BASWA acoustic plasters and BASWA Fill, both used during BASWA systems installation are also manufactured by simple mixing of their components.

The environmental profile of all energy carriers used during manufacturing is modelled for local conditions. The combustion of the diesel and natural gas used in the drying oven is also included.

The production and transport of primary and secondary packaging of these components are also included in this module, i.e. plastic bags, plastic buckets, cardboard, plastic film and wooden pallets. Except for adhesives, the packaging of raw materials is outside of the scope of this EPD but not theirs EoL.

The aggregation of the modules A1, A2 and A3 is allowed by EN 15804. This rule is applied in this EPD and denoted by A1-3.

A4 - Transport

This module includes transport from BASWA acoustic facilities to the building site.

Transport is calculated on the basis of a scenario with the parameters described in the following table and the distances by road and by sea are weighted to different destinations of the BASWA acoustic custumers in the analyzed period.

A5 - Installation

This module includes water consumed during the installation of BASWA systems and generated wastes by the additional products (5%) in order to compensate losses during installation. It also included the energy consumed by handheld appliances for plasters projection on BASWA Phon panels.

Installation is calculated on the basis of a scenario with the parameters described in the following table.

B1 to B7 - Use stage

Once installation of BASWA systems is completed, no actions or maintenance are required during the use phase until the end of life phase. Then, there are no contribution on impact categories of this stage.

A4 Parameter	Single/Double layer systems
Transport by road	Freight, lorry 16-32 metric ton, EURO6 {RER}
Transport by sea	Freight, sea, container ship {GLO}
Fuel consumption (road) - Diesel - kg/km	0.350
Fuel consumption (sea) - Heavy fuel oil - kg/km	99.9
Distance by road	704 km
Distance by sea	0 km
BASWA Phon panels (m^2/pallet)	43
Pallet of BASWA Phon panels (kg/pallet)	234
Pallet of plasters, adhesives and fill (kg/pallet)	715
Mass capacity utilisation (road) - Panels	30%
Mass capacity utilisation (road) - Plasters	87%

A5 Parameter	Single layer systems	Double layer systems
Water	1.01E-03 m^3	
Energy	Global mix power (low tension)	
Energy consumption	2.38E-01 MJ	4.16E-01 MJ
BASWA Phon panels (1)	3.46E-01 kg	
Plasters, adhesives and fill (1)	3.10E-01 kg	4.70E-01 kg
Packaging (1)	9.31E-01 kg	
BASWA Phon panels (2)	Glass wool from BASWA Phon panels can be 100% recycled by BASWA suppliers of glass wool	
Plasters, adhesives and fill (2)		
Packaging (2)	Plastic (29% recycling - 32% incineration - 39% landfill)	
	Carboard (75% recycling - 12% incineration - 13% landfill)	
	Wood - Pallet (30% recycling - 32% incineration - 38% landfill)	
	Metal (74% recycling - 12% incineration - 14% landfill)	

(1) Waste (average for 30 mm and 70 mm)
(2) Waste treatment

C1 - De-construction

According to the databases consulted, the dismantling of mineral wool and plasters only implies the emission of particles that have no environmental consequences on the impact categories analyzed in this EPD. Then, there is no contribution on impact categories of this module.

C2 - Transport to waste processing

The scenario for transport to waste processing is the same as that used for transport to construction site (see A4). A distance of 60 km has been assumed for the transport to final disposal.

C3 - Waste processing for reuse, recovery and/or recycling

Glass wool from BASWA Phon panels can be 100% recycled by BASWA suppliers of glass wool. Therefore, there is no contribution in the impact categories for this module or for module D.

C4 - Final disposal

The most likely disponal route for BASWA systems is a treatment as inert waste in landfill since a very high percentage of the materials involved are minerals. The amount of waste generated sent to final disposal is the same as that shown in the composition table of BASWA systems.

D - Reuse, recovery or recycling potentials

This module is not declared.

Stage	Production			Construction		Use							End-of-life				Resource recovery
Module	Raw materials supply	Transport	Manufacturing	Transport	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction	Transport	Waste processing	Disposal	Reuse, recovery or recycling potentials
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Declared module	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU
Specific data	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products [1]	9.4%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - plants	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-

(1) Maximum variation for all declared products
ND - Not declared

CUT-OFF RULES

All environmental issues related to upstream and downstream processes of BASWA systems have been included in this EPD. In the same way, all environmental issues related to wastes and emissions have also been included in this study.

It was not possible to provide measurements of elemental flows of the water discharged into the sanitary network after the decantation process of the cleaning water from mixers. It is estimated that all mineral substances are left in the decantation sludge but not so in the case of those non-mineral substances present in the additives that can be dissolved. Therefore these elemental flows have not been included in the LCI. For impact categories evaluated in this EPD, none of these substances have direct environmental consequences in the LCIA stage but they could have it indirectly, as could provoque, for example, an increase in COD or BOD5.

TIME REPRESENTATIVENESS

All primary data used in this EPD are based on the 2023 production data for the acoustic systems manufactured by BASWA in their facilities.

ALLOCATION

An allocation has been carried out using a bottom-up approach, starting with the composition of the products and directly assigning the quantities of raw materials present in the product

The environmental issues that could not be attributed to a specific process were assigned according to the m^2 of panels produced in plant since there is a linear relationship between all developed processes by BASWA and this magnitude.

Parameters	Unit
Collection process	2.55 kg collected separately
	10.69 kg collected with mixed construction waste
Recovery	1.91 kg for recycling
	0 kg for energy recovery
Landfill	11.32 kg of product for final disposal
Assumptions for the development of scenarios	
Transport by road	Transport, freight, lorry 16-32 t
Diesel consumption(1)	0.037 kg/tkm
Distance to CDW treatment, recycling, EoL	60 km

(1) Ecoinvent database

DATA QUALITY

In order to achieve precision, consistency and representativeness and to ensure reliable results, first-hand data were used. All foreground data were collected from BASWA for their facilities using customized data collection templates. The age of these data is less than three years.

Regionally specific datasets were used to model the energy consumption (electricity, natural gas or diesel). For the processes of transport, production of raw materials or end-of-life, datasets were chosen according to their technological and geographical representation of the actual process.

The technological and geographical representativeness of 80% of the processes included in the LCA is guaranteed, among which are the most contributing to final results. For the rest of processes, a geographical or technological approximation has been made to describe the flow.

DATABASES AND LCA SOFTWARE USED

The LCA modelling was carried out using an excel spreadsheet. All background LCI datasets were sourced from the Ecoinvent database v3.11. In certain cases, the original Ecoinvent datasets were adapted to the specific conditions of BASWA processes. The environmental information of background processes was generated by LCA software SimaPro 10.1 and were entered into the spreadsheet. The impact assessment results were calculated using characterization factors of EN 15804+A2 standard (based on EF 3.1).

The electricity mix used is based in the year 2023. Specific supplier electricity mix has been taken into consideration in the LCA model (94% hydroelectric and 6% maginal mix in Switzerland) with a carbon footprint (GWP-GHG) of 4.67E-03 Kg CO2-eq/kWh.

	Max	Min
GWP-fossil	13.5%	-11.9%
GWP-biogenic	10.6%	-10.7%
GWP-luluc	15.0%	-12.8%
GWP-Total	14.1%	-12.2%
OD	46.9%	-37.8%
A	23.2%	-19.9%
EAF	11.6%	-10.4%
EAM	21.8%	-18.2%
ET	28.8%	-23.7%
POF	20.4%	-17.4%
AD-non fossil	43.8%	-35.3%
AD-fossil	18.2%	-15.8%
WU	22.7%	-20.0%
GWP-GHG	13.5%	-11.9%





ESTIMATES AND ASSUMPTIONS

It has been assumed, as baseline scenario for single layer systems, a plaster consumption of 4 kg/m² during the installation of systems (4.25 kg/m² for BASWA Phon Base system and 3.75 kg/m² for BASWA Phon Fine system). Baseline scenario for double layer systems consider a plaster consumption of 7.2 kg/m² (8.0 kg/m² for BASWA Phon Classic Base and 6.4 kg/m² for BASWA Phon Classic Top). Sensitivity analysis performed for the higher and lower plaster consumption show that the impact categories do not vary in any case by more than 3.2 % for the sum of A1, A2 and A3 modules. For this reason, the two single layer systems are reported jointly as “single layer systems” while the three double layer systems are reported jointly as “double layer systems”.

It also assumed, as baseline scenario for all BASWA systems declared in this EPD, the use of a mix of adhesives (50% BASWA Fix K and 50% BASWA Fix C). Sensitivity analysis with 100% of BASWA Fix K or 100% of BASWA Fix C were also performed. The variation of impact categories is not higher than 1.8 % for the sum of A1, A2 and A3 modules. For this reason, all BASWA system declared in this EPD are calculated with the same mix of adhesives (50:50).

Adhesives were modeled according to the components provided by the suppliers. While the percentages were obtained from the typical composition for these mortars. All materials and their processing have been taken into account for the primary packaging of plaster, filler and adhesives. Infrastructure or capital goods have not been included in the analysis. The biogenic carbon contained in the products used in the packaging has been compensated for in the total of the A1-3 modules


RESULTS

IMPACT CATEGORIES

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. The use of the results of modules A1 to A3 without considering the results of modules C1 to C4 is discouraged. The results table is derived from the average of the results obtained for each of the products included in this EPD.

		A1-3	A4	A5	B1-7	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq	1.20E+01	1.65E+00	6.42E-02	0	0	4.55E-02	6.24E-02	1.41E-01	-1.60E+00
GWP-biogenic	kg CO_2 eq	-1.69E+00	5.74E-05	1.78E+00	0	0	1.64E-06	2.90E-05	3.00E-04	-1.17E-02
GWP-luluc	kg CO_2 eq	1.13E-02	2.61E-05	1.69E-05	0	0	7.45E-07	3.98E-05	4.85E-05	-1.99E-03
GWP-Total	kg CO_2 eq	1.03E+01	1.65E+00	1.84E+00	0	0	4.55E-02	6.25E-02	1.42E-01	-1.62E+00
OD	kg CFC-11 eq	5.87E-06	3.75E-08	8.23E-10	0	0	1.07E-09	7.98E-10	3.55E-09	-1.30E-07
A	mol H^+ eq	6.49E-02	2.05E-03	2.64E-04	0	0	5.80E-05	4.82E-04	1.17E-03	-1.72E-02
EAF	kg P eq	2.66E-04	1.02E-06	6.57E-07	0	0	2.91E-08	1.20E-06	5.52E-06	-4.19E-05
EAM	kg N eq	1.22E-02	4.61E-04	1.25E-04	0	0	1.29E-05	1.96E-04	2.88E-04	-3.45E-03
ET	mol N eq	1.82E-01	5.03E-03	1.08E-03	0	0	1.40E-04	2.15E-03	3.13E-03	-7.38E-02
POF	kg NMVOC eq	5.03E-02	4.02E-03	3.46E-04	0	0	1.14E-04	6.41E-04	1.18E-03	-1.22E-02
AD-non fossil (1)	kg Sb eq	9.33E-05	4.31E-08	5.24E-09	0	0	1.23E-09	2.01E-09	2.25E-08	-6.23E-05
AD-fossil (1)	MJ	2.23E+02	2.20E+01	5.86E-01	0	0	6.26E-01	8.21E-01	2.88E+00	-4.22E+01
WU (1)	m^3 eq	3.97E+00	7.18E-03	-8.47E-02	0	0	2.05E-04	3.15E-03	-1.60E+00	-8.60E-01
GWP-GHG (*)	kg CO_2 eq	1.20E+01	1.65E+00	1.07E-01	0	0	4.55E-02	6.25E-02	1.42E-01	-1.62E+00
PM (1)	Disease incidence	5.40E-07	9.90E-08	3.95E-09	0	7.44E-08	3.57E-09	1.18E-08	2.01E-08	-1.07E-07
IR (2)	kBq U235 eq	7.89E-01	2.11E-03	3.53E-04	0	0	6.01E-05	1.17E-03	5.41E-04	-3.03E-01
EF (1)	CTUe	1.22E+02	1.58E+00	4.70E+00	0	0	5.05E-02	1.19E-01	3.26E+00	-2.64E+01
HT-c (1)	CTUh	2.05E-08	1.02E-10	2.62E-11	0	0	3.03E-12	3.98E-12	3.47E-11	-1.98E-08
HT-nc (1)	CTUh	4.81E-08	1.10E-08	2.09E-09	0	0	3.91E-10	1.45E-10	2.07E-09	-6.57E-09
LU (1)	Dimensionless	1.41E+02	2.79E-02	4.48E-01	0	0	7.96E-04	2.67E-02	5.44E+00	-3.92E+00

(1) 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.
(2) 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.
(*) 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 CO2 is set to zero.

ENVIRONMENTAL IMPACTS. GWP-fossil - Global warming potential - fuels. **GWP-biogenic** - Global warming potential - biogenic. **GWP-luluc**- Global warming potential - land use and land use change. **GWP-Total** - Global warming potential - total. **OD** - Ozone depletion. **A** - Acidification. **EAF** - Eutrophication aquatic freshwater. **EAM** - Eutrophication aquatic marine. **ET** - Eutrophication terrestrial. **POF** - Photochemical ozone formation. **AD- non fossil** - Abiotic resource depletion - minerals and metals. **AD-fossil -** Abiotic resource depletion - fossils. **WU** - Water use. **GWP-GHG** - Global warming potential. **PM** - Particulate matter emissions. **IR** - Ionising radiation. **EF** - Ecotoxicity - freshwater. **HT-c** - Human toxicity, cancer effects. **HT-nc** - Human toxicity, non-cancer effects. **LU** - Land use.

INPUTS/OUTPUTS

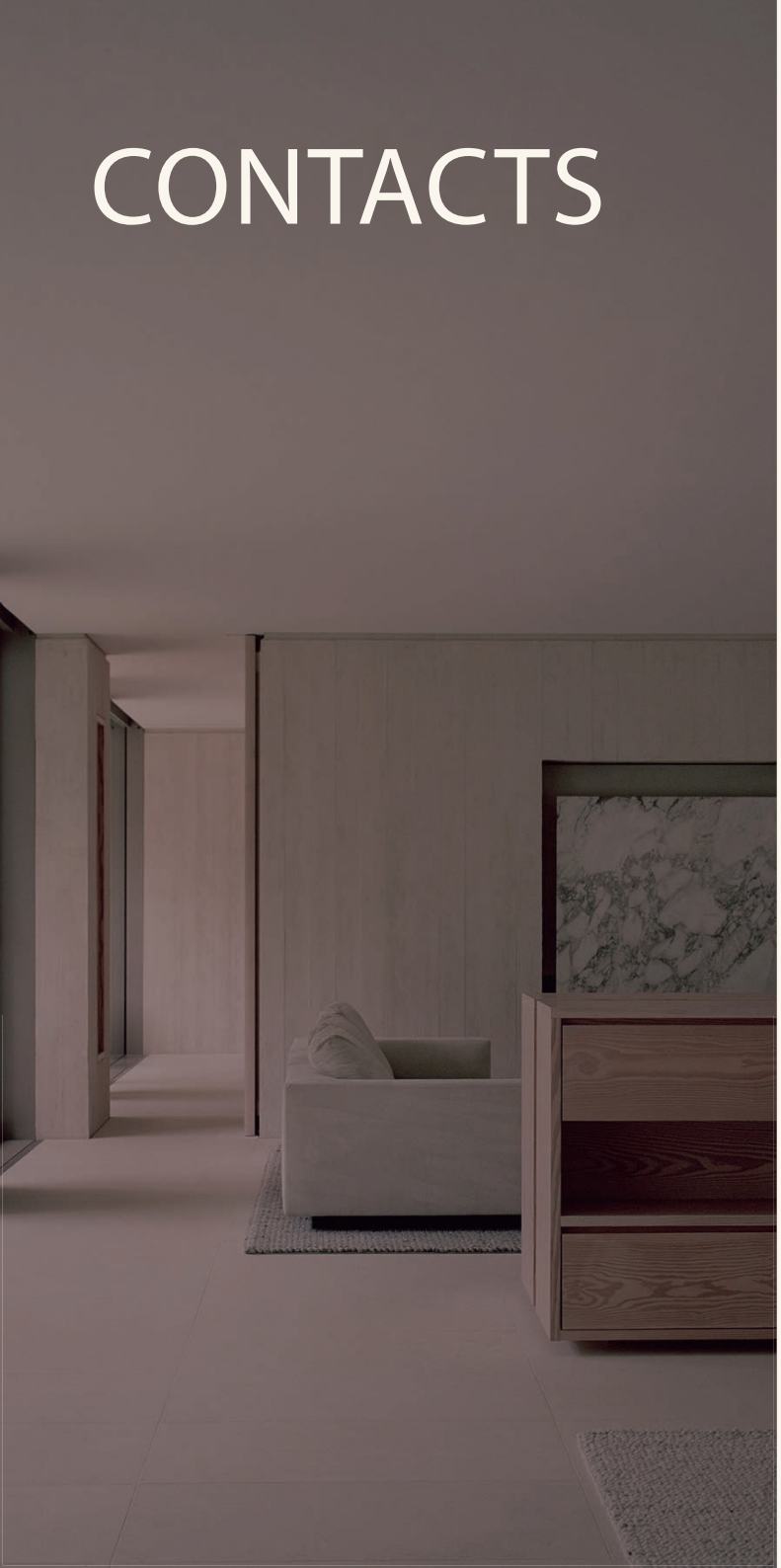
		A1-3	A4	A5	B1-7	C1	C2	C3	C4	D
PERE	MJ	5.56E+01	5.48E-02	1.29E-02	0	0	1.56E-03	4.31E-02	1.98E-02	-1.49E+01
PERM	MJ	1.46E+01	0	-1.46E+01	0	0	0	0	0	0
PERT	MJ	5.56E+01	5.48E-02	1.29E-02	0	0	1.56E-03	4.31E-02	1.98E-02	-1.49E+01
PENRE	MJ	6.21E+01	1.50E-01	6.10E-02	0	0	4.29E-03	2.15E-01	1.25E-01	-1.55E+01
PENRM	MJ	1.23E+01	0	-1.23E+01	0	0	0	0	0	0
PENRT	MJ	6.21E+01	1.50E-01	6.10E-02	0	0	4.29E-03	2.15E-01	1.25E-01	-1.55E+01
SM	kg	0	0	2.24E-02	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m3	1.74E+02	1.54E-01	2.84E-02	0	0	4.39E-03	7.27E-02	4.05E-02	-8.72E+01
HWD	kg	1.49E-03	1.46E-04	5.24E-06	0	0	4.17E-06	4.36E-06	1.91E-05	-2.26E-04
NHWD	kg	1.68E+00	7.26E-04	8.05E-01	0	0	2.07E-05	1.56E-04	1.00E+01	-8.57E-02
RWD	kg	4.57E-04	1.33E-06	2.30E-07	0	0	3.78E-08	7.47E-07	3.32E-07	-1.83E-04
CRU	kg	0	0	0	0	0	0	0	0	0
MFR	kg	2.72E-01	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0
EE	MJ	0	0	0	0	0	0	0	0	0

RESOURCE USE. PERE - Renewable primary energy as energy carrier. **PERM** - Renewable primary energy resource as material utilization. **PERT** - Total use of renewable primary energy resources. **PENRE** - Non-renewable primary energy as energy carrier. **PENRM** - Non-renewable primary energy as material utilization. **PENRT** - Total use of non-renewable primary energy resources. **SM** - Use of secondary materials. **RSF** - Use of renewable secondary fuels. **NRSF** - Use of non-renewable secondary fuels. **FW** - Use of net fresh water.
WASTE CATEGORIES. HWD - Hazardous waste disposed. **NHWD** - Non-hazardous waste disposed. **RWD** - Radioactive waste disposed.
OUTPUT FLOWS. CRU - Components for re-use. **MFR** - Materials for recycling. **MER** - Materials for energy recovery. **EE** - Exported energy per energy carrier.

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