zintra
by baresque

Zintra Acoustic Solutions

Baresque

ENVIRONMENTAL PRODUCT DECLARATION

ISO 14025:2006, EN 15804:2012 +A2:2019 and ISO 21930:2017

ASTM INTERNATIONAL

Baresque is pleased to present this Environmental Product Declaration (EPD) for their Zintra Acoustic Solutions. This EPD was developed in compliance with ISO 14025, EN 15804:2012+A2:2019 and ISO 21930 and has been verified by Lindita Bushi, Athena Sustainable Materials Institute.

The LCA and the EPD were prepared by Vertıma Inc. The EPD includes cradle-to-grave life cycle assessment (LCA)

results.

For more informatıon about Baresque, visit hı ps://zintraacousı c.com/product-category/walls/zintra-acousı c-panel/.

For any explanatory material regarding this EPD, please contact the program operator.

1. GENERAL INFORMATION

PCR GENERAL INFORMATION	
Reference PCR	Product Category Rules for Construction Products 2019:14, version 1.11 (The International EPD System, 2021), Version 1.11, valid until 2024-12-20 and c-PCR-014 for Acoustic ceiling and wall solutions, valid until 2024-12-20.
The PCR moderator:	*Markus Beckman,* *Saint-Gobain Ecophon AB, markus.beckman@ecophon.se*
The PCR committee	*Saint-Gobain Ecophon AB, IVL* *Swedish Environmental Research Institute*

EPD GENERAL INFORMATION		
Program Operator	ASTM Program Operator for Product Category Rules (PCR) and Environmental Product Declarations (EPDs), General Program Instructions, Version: 8.0, Revised 04/29/20. 100 Barr Harbor Drive, West Conshohocken (PA) 19428-2959 USA www.astm.org	
Declared Product	Zintra Acoustic Solutions	
EPD Registration Number	**EPD Date of Issue** **12-2023**	**EPD Period of Validity** **12-2028**
EPD Recipient Organization	Baresque 21925 Field Parkway IL 60010 USA https://zintraacoustic.com/product-category/walls/zintra-acoustic-panel/	zintra®

EPD Type/Scope and Functional Unit	**Year of Reported Manufacturer Primary Data**
Product-specific type III, Cradle-to-Grave EPD with a functional unit (FU) of 1 m2 of installed acoustic panels with a service life of 30 years over the building estimated service life (ESL) of 75 years with the SAA performance value between 0.92 and 0.52 and the NRC performance value between 0.95 and 0.55 depending on the thickness of the panel.	2021

Geographical Scope	**LCA Software**	**LCI Databases**	**LCIA Methodology**
Global	OpenLCA v.1.11.0	Ecoinvent 3.9 and US LCI	EN 15804

This LCA and EPD were prepared by:	Gatien Geraud Essoua Essoua, Ph. D, Eng. f. Vertima Inc. www.vertima.ca
This EPD and LCA were independently verified in accordance with ISO 14025:2006, ISO 14040:2006 and ISO 14044:2006, as well as the International EPD system PCR 2019:14 and c- PCR for "Acoustical ceiling and wall solutions", which is based on EN 15804:2012+A2:2019 and ISO 21930. ☐ Internal ☒ External	Lindita Bushi _____ Lindita Bushi, Ph.D. Athena Sustainable Materials Institute

LIMITATIONS

The EPD owner has the sole ownership, liability and responsibility of the EPD. EPDs of construction products may not be comparable if they do not comply with EN 15804. 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) [1].

2 PRODUCT DEFINITION AND INFORMATION

2.1 DESCRIPTION OF THE COMPANY

Zintra is renowned for its leadership in offering a variety of quality materials, finishes and designs for acoustic solutions. Founded in Australia and multinational in scale with an environmental footprint, Zintra is the ''go to'' destination for architects and designers seeking inspiration, quality, outstanding service and insightful solution-oriented expertise.

Baresque Zintra Acoustic Panels are produced using pre-consumer and post-consumer polyester fiber. Zintra is the ideal material for absorbing internal and external sounds and reducing the noise level in a space. Available in a wide range of colors and designs, used for a variety of applications at an affordable price, their standard product line offers countless combinations of acoustic solutions sure to deliver style and function.

2.2 PRODUCT DESCRIPTION

2.2.1 Product Identification

Baresque Zintra Acoustic Panels are polyester acoustic panels with two different thicknesses (12 mm and 24 mm). Averages for the Zintra Acoustic Panel were calculated as the weighted average product based on annual production in square meters.

The standard sizes of panels produced are 2800 mm in length x 1225 mm in width.

The Zintra panel construction is durable and beautiful. Based on the manufacturer's information, the acoustic panel's service life is 30 years. According to the ASHRAE 189.1-2020, the estimated service life of the building is 75 years [2]. Figure 1 shows a room scene featuring Zintra panels. The primary United Nations Standard Products and Services Code (UNSPSC) code for acoustic insulation panels is 30161702 and the Construction Specifications Institute (CSI) code is 09 81 00.

Figure 1: Representation of Zintra Acoustic Solutions.

2.2.2 Product Average

The weighted average profile of each product is calculated based on 2021 annual production data (on mass) of the two (2) different thicknesses of Zintra Acoustic Panels (12 mm and 24 mm).

2.2.2.1 *Product-Specific EPD*

In the context of the growing popularity of sustainable building and LEED v4 and v4.1 Rating Systems, developing Type III Environmental Product Declarations (EPDs) would allow Baresque to increase visibility for its products:

Zintra Acoustic Panels have been developed according to the c-PCR for acoustical ceiling and wall solutions from International EPS system developed in accordance with the standard EN 15804 standard, ISO 21930 - 2017 and ISO 14025 [1, 3, 4, 5].

2.3 APPLICATION

The ease of use of the Zintra acoustic panel makes it the ideal material for residential, commercial and institutional applications. Zintra panels are installed on walls and ceilings.

2.4 DECLARATION OF METHODOLOGICAL FRAMEWORK

This LCA is a cradle-to-grave study. For this analysis, the attributional approach was followed and impacts of infrastructure have been excluded.

Life cycle stages included in the analysis are production, construction, use and end of life. According to the c-PCR 014 [1], the acoustic panel's service life is 30 years over the estimated services life (ESL) of the building (75 years). According to the c-PCR allocation procedure, mass should be used as the primary basis for co-product allocation. OpenLCA software v1.11 [6], an open-source software, was used to calculate the inventory and to assess potential environmental impacts associated with the inventoried emissions.

2.5 TECHNICAL DATA

For specific properties and performance data for Baresque's Zintra Acoustic Panels, please consult the following link: https://baresque.com.au/products/acoustic-solutions/zintra-acoustic-panel/. Table 1 presents the technical data for the products under study.

Table 1: Technical Details

Parameters	Zintra Acoustic Panels		Unit
	12 mm thick	24 mm thick	
Width	1225		mm
Length	2880		mm
FU Density	2.4	3.3	kg/m^2

2.6 MATERIAL COMPOSITION

A summary of the values compiled are presented in Table 2. The product does not contain any substance from the list of substances in REACH legislation with a concentration higher than 0.1% (w/w)". In keeping with this declaration, the component(s) that include the regulated substance(s) shall not to be highlighted in the table with an * and further information given in a note after table [1].

Table 2: Material Composition

Materials	Zintra Acoustic Panels
Post-consumer polyester fiber	60%
Pre-consumer low-melt fiber	35%
Polylactic acid	5%

2.7 MANUFACTURING

The manufacture of Baresque's acoustic insulation panels is a multistep process: mixing of fibres and low-melt fibres – addition of polylactic acid - layering out - needle punching – heating in oven - pressing - rolling out - cutting – cooling. Figure 2 shows the flow diagram for the manufacturing stage.

The products are packaged in cardboard boxes and placed on wood pallets, then tied down with polyethylene strapping. Packaging materials used are presented in section 2.8 below.

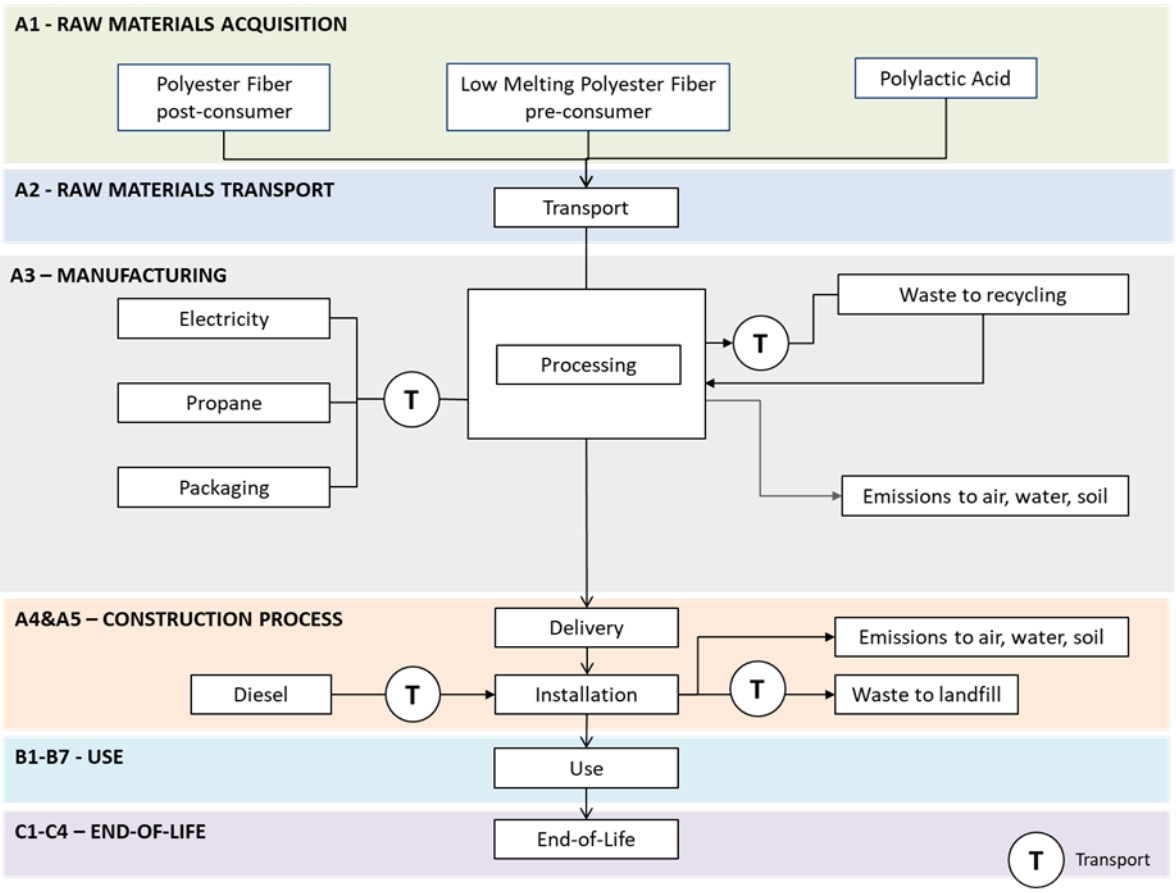

Figure 2: Flow Diagram for Zintra Acoustic Panels.

2.8 PACKAGING

All Zintra Acoustic Panels are packaged using the materials presented in Table 3.

Table 3: Amount of packaging materials per 1 m^2 of Zintra Acoustic Panels

Materials	Zintra Acoustic Panels		Unit
	12 mm thick	24 mm thick	
Wood pallet	3.68E-02	5.05E-02	Kg
Cardboard box	9.19E-03	1.26E-02	Kg
Polyester tie strapping	1.44E-03	1.97E-03	Kg

All Zintra Acoustic Panels are packaged in cardboard boxes with polyester strapping on the wood pallet for easy carrying.

2.9 TRANSPORTATION

Zintra Acoustic Panels are distributed in the USA, Australia and Europe, specifically in Belgium. Based on the global geographic area covered by the study, transportation was considered until the warehouse. The transportation modes were truck and boat. The steps of transportation accounted for are from factory in China to warehouses in the USA, Australia (Sydney) and Belgium.

2.10 PRODUCT INSTALLATION

The manufacturer's installation instructions should be followed [7]. During installation, personal protective equipment (ear plugs and safety glasses) should be worn to protect the installer's safety. In addition, the use of knee pads and rubber gloves is recommended. No energy is used during the installation module (A5).

Table 4: Installation inputs per FU

Silicone Adhesive Ingredients	Zintra Acoustic Panels		Unit
	12 mm thick	24 mm thick	
Limestone	5.22E-02	7.17E-02	Kg
Silica, Amorphous	4.47E-03	6.15E-03	Kg
Distillates (petroleum), hydrotreated light	8.94E-04	1.23E-03	Kg
Quartz	8.94E-04	1.23E-03	Kg
Water	9.06E-02	1.25E-01	Kg

2.11 USE CONDITIONS

After installation, apart from ordinary cleaning to remove any dust that may settle on any surface, the manufacturer does not have specific recommendation about use conditions.

2.12 REFERENCE SERVICE LIFE AND ESTIMATED BUILDING SERVICE LIFE

According to the manufacturer's warranty, the reference service life of the Zintra acoustic panel is 30 years [7]. Based on ASHREA 189.1 [2], the estimated service life (ESL) of the building accounting for in this study was 75 years.

2.13 REUSE, RECYCLING, AND ENERGY RECOVERY

During the life cycle stages of Zintra panels, there is no re-use, recycling, or energy recovery.

2.14 DISPOSAL

This LCA study assumes that Zintra acoustic panels are disposed of at the end of their service life as construction, renovation and demolition (CRD) waste. As the international PRC is used globally [8], it was assumed that Zintra acoustic panels and packaging materials are 100% landfilled. In landfills, with the timeline of 100 years to be conservative and based on the ecoinvent dataset ''treatment of waste polyethylene, sanitary landfill | waste polyethylene | Cutoff, U'', the degradation of polyethylene represents less than 1% (negligible). In this LCA, it was considered no degradation rate at landfill sites. In the Zintra acoustic panel, there is 0% biogenic carbon.

2.15 FURTHER INFORMATION

Further information about Zintra Acoustic Panels is available at https://baresque.com/

For this EPD, the system boundaries encompass a cradle-to-grave scope. Environmental impacts of products during the use stage and D module are included in accordance with the c-PCR [1].

Baresque is committed to making products that contribute to a healthy living environment. This is evidenced by the fact that all Zintra Acoustic Panels (12 mm and 24 mm) are tested for VOC and formaldehyde emissions by a third-party laboratory. Zintra panels also have Health Product Declarations (HPD), certified by a third party (Vertima Inc.).

3 LIFE CYCLE ASSESSMENT CALCULATION RULES

3.1 FUNCTIONAL UNIT

The functional unit (FU) analyzed is 1 m^2 of installed acoustic panels with the service life of 30 years over the building estimated service life (ESL) of 75 years with the sound absorption average (SAA) performance value between 0.92 and 0.52 and the NRC performance value between 0.95 and 0.55 depending on the thickness of the panel. Different thicknesses were analyzed. For the 24 mm thickness, the performance value is 0.92 and noise reduction coefficient (NRC) value is 0.95. For the 12 mm thickness, the declared SAA performance value is 0.52 and NRC value is 0.55. The ESL of 75 years was used to be consistent with the analysis conducted in North American context. Table 5 presents all products covered by this report and their respective functional units (FU).

Table 5: Functional Unit of assessed products.

Items	Zintra Acoustic Panels		Unit
	12 mm thick	24 mm thick	
Functional Unit	1	1	m^2
Average Weight	2.4	3.3	Kg

3.2 SYSTEM BOUNDARIES

According to c-PCR [1], the LCA is cradle-to-grave and module D. All life cycle stages are included in the analysis; Production, Construction, Use and End-of-life. The production stage includes the following modules: A1) Extraction and upstream production, A2) Raw materials transportation to the manufacturing site, and A3) Manufacturing. The Construction stage includes the following modules: A4) Transportation of Baresque Zintra products from manufacturing sites to the warehouse sites in Europe (Belgium), North America (USA) and Australia (Sydney) and A5) Installation of the product. The Use stage includes the B1 to B7 modules. The End-of-Life (EoL) stage includes the C1 to C4 modules and D module.

During the use stage, the resources used on rare occasions, if necessary, are negligible for modules B1 and B3. For cleaning purposes, the panel product can be cleaned and maintained (module B2) by removing dust and dirt with a stiff plastic bristle brush, with no associated environmental impacts. Based on the C-PCR, it is considered that the product's default service life corresponds to the building design lifespan, but as mentioned before, to be consistent with the EPD developed for the North America geographic area and for the warranty gave to the product, 30 years was also used in the global EPD. As mentioned in section 3.1.2, the ESL of the building accounting for in this study is 75 years. Based on this fact, replacement (B4) is accounted for 1.5 times during the ESL of the building. There is no refurbishment (B5) during the service life of the building. During the service life of the building, the product doesn't require operational energy (B6) or water use (B7). In this analysis, the environmental impacts of these modules (B1, B2, B3, B5, B6 and B7) are therefore considered as nil. For the EoL stage, there is no energy consumption for the deconstruction module (C1) because it is generally a manual operation. For modules C3, the waste goes directly from the building site to the landfill site without any energy consumption at a sorting plant. The EoL modules included in this analysis are the C2 and C4 modules for transportation from building sites to the landfill site and landfill respectively.

The distance for module C2 was assumed to be 95.5 km. Module D is included in the system boundaries with environmental burden null as there is no activities in this module (no recycling and/or reuse of materials at the end of life of the acoustic panel). Figure 3 presents the life cycle stages, and their modules, included in the system boundaries.

	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	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	CN-CSG	CN-CSG	CN-CSG	Global	Global	Global	Global	Global	Global	Global	Global	Global	Global	Global	Global	Global	Global
Specific data used	>90% for A1 to A5					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	>10%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-

Note: This global EPD aligns with the European standard EN 15804:2012+A2:2019 and the global standard ISO 21930:2017.

X = included

Figure 3: presents the life cycle stages, and their modules, included in the system boundaries

Extraction and upstream production (module A1): This stage includes the extraction and transformation of raw materials needed to produce Zintra Acoustic Panels (12 mm and 24 mm thicknesses). All chemicals used in the process have been taken into account in the inventory.

Raw materials transportation to flooring factory (module A2): This stage includes the transportation of raw materials from suppliers to Baresque's manufacturing site at Zhangjiagang (Suzhou) city, Jiangsu province, China.

Manufacturing of flooring (module A3): This stage includes water and energy (electricity, diesel and propane) consumption for the manufacturing processes. It also takes in to account chemicals used in the process as well as their transport to the site. Hazardous waste treatment has been counted as well.

Manufacturing processes for Zintra Acoustic Panels generate losses. These losses have been reintroduced into the process. Finally, packaging materials to make products ready for shipment are covered by this stage.

Transport to installation site (module A4): Products are transported by truck and boats from the manufacturing site to the warehouse sites in USA, Belgium and Australia.

Product installation (module A5): To Install the Zintra Acoustic Panels to the wall, the manufacturer recommends using silicone adhesive. The waste generated in this module represents 7% of the product and packaging. The burden of wastage for module A5 represents 7% of production and distribution burden of the product.

Use phase (module B1 to B7): No impacts are associated with the use of the product over the service lifetime (RSL) except for the B4 module (replacement). The panel product can be cleaned and maintained by removing dust and dirt with a stiff plastic bristle brush, with no associated environmental impacts (B2). Product repair (B3) and refurbishment (B5) are not relevant during the lifetime of the product. The RSL of the product is 30 years and the ESL of the building is 75 years. Based on this, the Zintra acoustic panel must be replaced 1.5 times during the building ESL. There is no operational energy or water use associated with the use of the product and the results for these stages are nil.

Transport to waste processing and/or disposal (module C2): Transport distance from the demolition site to a landfill site is considered in this module and it was assumed to be 95.5 km.

Disposal of waste (module C4): At the end of the life, 100% of Zintra Acoustic Panels are landfilled.

Re-use, recycling and recovery as energy (module D) was accounted for.

3.3 ESTIMATION AND ASSUMPTIONS

Based on the c-PCR, it was assumed that distribution of the product was up to the warehouse in Illinois (USA), Belgium (Europe) and Australia (Sydney). During the use stage, the resources used on rare occasions, if necessary, are negligible for modules B1, B2, B3 and B5. During the service life of the building, the product doesn't require operational energy (B6) or water use (B7). In this analysis, the environmental impacts of these modules (B1, B2, B3, B5, B6 and B7) are therefore considered as nil. For cleaning purposes, the panel product can be cleaned and maintained by removing dust and dirt with a stiff plastic bristle brush, with no associated environmental impacts.

For the EoL stage, there is no energy consumption for the deconstruction module (C1) because it is generally a manual operation. For modules C3, the waste goes directly from the building site to the landfill site without any energy consumption at the plant. The EoL modules included in this analysis are the C2 and C4 modules. For transportation from building sites to the landfill site, 95.5 km was used in the calculation.

3.4 CUT-OFF CRITERIA

According to section 6.3.3 of the EN 15804 [3], if a mass flow or energy flow represents less than 1% of the cumulative mass or energy flows of the system, it may be excluded from the system boundaries. However, these flows should not have a significant environmental contribution. Also, at least 95% of the total energy and mass flows must be included, and the cumulative mass or environmental impacts of the excluded flows shall not exceed 5% of the total mass and energy flows or potential environmental impacts.

In this study, no primary data (input material, energy consumption) was excluded from the system boundaries. Water consumption was assumed to be 100% dedicated to the employees. Therefore, this water consumption was estimated negligible by the manufacturer. No primary data on the construction, maintenance or dismantling of the company's capital assets was included in the model. Also, primary data on the daily transport of the employees, office work, business trips and other activities from manufacturer's employees was not included in the model.

3.5 DATA SOURCES

Inventory data was collected from Baresque's manufacturing plant located in Zhangjiagang (Suzhou) city, Jiangsu province (China), using a life cycle inventory (LCI) questionnaire. All data collected from Baresque (primary data) was used in the analysis.

When primary data was not available, unit processes were selected from the ecoinvent database v3.9.1 or from the US LCI database, the most comprehensive LCI databases currently available [9, 10].

When ecoinvent unit processes were not available specifically for China, they were adapted by replacing their electricity grid by the ecoinvent process "Market for Electricity, medium or high voltage – CN-CSG".

3.6 DATA QUALITY

Data Quality Parameter	Data Quality Discussion
Source of manufacturing data: Description sources of data	Manufacturing data was collected from Baresque's manufacturing site located in Zhangjiagang (Suzhou) city, Jiangsu province (China), for the 2021 production year. Data included the total mass of products produced at the manufacturing plant, as well as the total annual units in m^2 and total production mass of products under study; raw materials entering the production of the products under study, losses of materials, transport modes and distance of materials, energy consumption, water consumption, emissions to the environment at the manufacturing plant, waste treatment, packaging material, acoustic products distribution.
Source of secondary data: Description sources of raw material, energy source, transport, waste and packaging data	When appropriate, the grid mix was changed for the grid mix of the province or country where the process takes place. Otherwise, ecoinvent datasets representative of the global market or "rest-of-the-world" were mainly selected as proxies.
Geographical representativeness	The manufacturing site is located in Zhangjiagang (Suzhou) city, Jiangsu province (China), hence electricity consumption is based on the Chinese grid mix. Geographical correlation of the material supply and the selected datasets are representative of each specific area or a larger area.
Temporal representativeness	Primary data were collected to be representative of the full year 2021, while this was not always the case for ecoinvent and US LCI datasets. Nevertheless, ecoinvent and US LCI remain reference LCI databases used in this study.
Technological representativeness	Primary data, obtained from the manufacturer, are representative of the current technologies and materials used by the company.
Completeness	All relevant process steps were considered and modelled to satisfy the goal and scope. Cut-off criteria were respected.

3.7 PERIOD UNDER REVIEW

The period under review is the year 2021.

3.8 ALLOCATION

The ISO 14040/44 allocation procedure states that whenever possible, allocation should be avoided by collecting data related to the process under study or by expanding the product system [11, 12].

According to the c-PCR, for allocation rules, mass should be used as the primary basis co-product allocation [1]. In this study, mass allocation was used for input and output flows. Allocation was performed on the basis of the yearly production mass of each product under study. Baresque provided all data relative to energy consumption (electricity) for all products.

Material flows undergoing recycling/reuse processes are excluded from the system boundary. A cut-off approach was used because recycled/reused material is part of raw material preparation of another product system.

3.9 COMPARABILITY AND BENCHMARKING

According to the c-PCR, ‘’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).” [1].

4 LIFE CYCLE ASSESSMENT SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

Table 6: Transport from gate to warehouse (A4)

Name	Truck	Ship	Unit
Fuel type	Diesel	Heavy Fuel Oil	
Litres of fuel	-	-	l/100 km
Vehicle type	Transport truck	Transoceanic container ship, 50,000 dwt	-
Transport distance from China to Illinois warehouse	710	15,000	Km
Transport distance from China to Sydney warehouse	240	8,000	Km
Transport distance from China to Belgium warehouse	467	22,200	Km
Capacity utilization (including empty runs, mass-based)	-	-	%
Weight of products transported (if gross density not reported)	-	-	kg
Capacity utilization volume factor (factor=1 or <1 or ≥1 for compressed or nested packaging products)	1	1	-

Table 7: Installation (A5)

Name	12 mm thick	24 mm thick	Unit
Ancillary materials – Adhesive	1.49E-01	2.05E-01	Kg/m^2
Net freshwater consumption	0	0	Kg/m^2
Product loss per functional unit	0	0	%
Waste materials at the construction site before waste processing, generated by product installation	7	7	%
Packaging waste	3.32E-03	4.56E-03	Kg/m^2
Biogenic carbon contained in packaging	1.91E-02	2.63E-02	Kg C/FU
VOC emissions	≤ 0.5	≤ 0.5	mg/m^3

Table 8: Reference Service Life (RSL)

Name	Value	Unit
RSL	30	Years
Declared product properties (at the gate) and finishes, etc.	-	Units as appropriate
Design application parameters (if instructed by the manufacturer), including references to the appropriate practices and application codes	Installation as per manufacturer's recommendations	-
An assumed quality of work, when installed in accordance with the manufacturer's instructions	Accepted industry standard	-
Indoor environment, (if relevant for indoor applications), e.g temperature, moisture, chemical exposure	Normal building operating conditions	-
Use conditions, e.g. frequency of use, mechanical exposure	Normal building operating conditions	-
Maintenance, e.g. required frequency, type and quality of replacement components	Maintenance based on manufacturer's recommendations	-

Use stage (B1 to B7)

No impacts are associated with the use of the product over the service lifetime (RSL) except for the B4 module (replacement). The panel product can be cleaned and maintained by removing dust and dirt with a stiff plastic bristle brush, with no associated environmental impacts (B2). Product repair (B3) and refurbishment (B5) are not relevant during the lifetime of the product. The RSL of the product is 30 years and the ESL of the building is 75 years. Based on this, the Zintra acoustic panel has to be replaced 1.5 times during the building ESL. There is no operational energy and water use associated with the use of the product and the results for these stages are nil.

Table 9: End of Life (C1-C4)

Name		12 mm thick	24 mm thick	Unit
Assumptions for scenario development (description of deconstruction, collection, recovery, disposal method and transportation)		Zintra's product is manually removed		
Collection process (specified by type)	Collected separately	0	0	kg
	Collected with mixed construction waste	2.4	3.3	kg
Recovery (specified by type)	Reuse	0	0	kg
	Recycling	0	0	kg
	Landfill	0	0	kg
	Incineration	0	0	kg
	Incineration with energy recovery	0	0	kg
	Energy conversion (specify efficiency rate)	0	0	%
Disposal (specified by type)	Product or material for final deposition	2.4	3.3	kg
Biogenic carbon removals (excluding packaging)		0	0	Kg CO_2eq.

5 LIFE CYCLE ASSESSMENT RESULTS

5.1 RESULTS TABLES

According to the c-PCR [1] life cycle assessment results must be presented per FU. It should be noted that LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds safety margins, or risks. These impact categories are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined and LCA should continue making advances in their development. However, EPD users shall not use additional measures for comparative purposes.

Table 10: Life Cycle Impact Assessment Results for Zintra Acoustic Panel 12 mm Thickness

Impact Categories	Units	Production stage			Construction stage		Use stage			End of Life stage				Resource recovery stage
		A1	A2	A3	A4	A5	B1-B3	B4	B5-B7	C1	C2	C3	C4	D
climate change - global warming potential (GWP100)_Total	kg CO2-Eq	1.04E-01	9.43E-01	1.99E+00	1.49E+00	3.78E-01	0.00E+00	8.24E+00	0.00E+00	0.00E+00	4.76E-01	0.00E+00	1.39E-02	0.00E+00
climate change: fossil - global warming potential (GWP100)	kg CO2-Eq	3.59E-01	9.41E-01	2.08E+00	1.49E+00	4.01E-01	0.00E+00	8.70E+00	0.00E+00	0.00E+00	4.75E-01	0.00E+00	1.39E-02	0.00E+00
climate change: biogenic - global warming potential (GWP100)	kg CO2-Eq	-2.69E-01	9.97E-04	-9.03E-02	1.71E-03	-2.49E-02	0.00E+00	-4.90E-01	0.00E+00	0.00E+00	5.03E-04	0.00E+00	1.37E-05	0.00E+00
climate change: land use and land use change - global warming potential (GWP100)	kg CO2-Eq	1.40E-02	6.36E-04	2.17E-03	1.01E-03	1.29E-03	0.00E+00	2.81E-02	0.00E+00	0.00E+00	3.21E-04	0.00E+00	6.12E-06	0.00E+00
ozone depletion - ozone depletion potential (ODP)	kg CFC-11-Eq	5.75E-09	1.49E-08	2.79E-08	2.27E-08	6.07E-09	0.00E+00	1.37E-07	0.00E+00	0.00E+00	7.52E-09	0.00E+00	1.93E-10	0.00E+00
acidification - accumulated exceedance (AE)	mol H+-Eq	2.41E-03	4.60E-03	1.16E-02	1.39E-02	2.63E-03	0.00E+00	5.97E-02	0.00E+00	0.00E+00	2.32E-03	0.00E+00	1.17E-04	0.00E+00
eutrophication: freshwater - fraction of nutrients reaching freshwater end compartment (P)	kg P-Eq	1.50E-04	1.30E-04	3.67E-04	1.70E-04	6.76E-05	0.00E+00	1.33E-03	0.00E+00	0.00E+00	6.55E-05	0.00E+00	1.55E-06	0.00E+00
eutrophication: marine - fraction of nutrients reaching marine end compartment (N)	kg N-Eq	9.16E-04	1.50E-03	2.34E-03	4.00E-03	7.06E-04	0.00E+00	1.64E-02	0.00E+00	0.00E+00	7.58E-04	0.00E+00	5.03E-05	0.00E+00
eutrophication: terrestrial - accumulated exceedance (AE)	mol N-Eq	7.59E-03	1.62E-02	2.47E-02	4.37E-02	7.48E-03	0.00E+00	1.73E-01	0.00E+00	0.00E+00	8.18E-03	0.00E+00	5.44E-04	0.00E+00
photochemical oxidant formation: human health - tropospheric ozone concentration increase	kg NMVOC-Eq	1.53E-03	6.12E-03	6.85E-03	1.40E-02	2.37E-03	0.00E+00	5.70E-02	0.00E+00	0.00E+00	3.09E-03	0.00E+00	1.63E-04	0.00E+00
energy resources: non-renewable - abiotic depletion potential (ADP): fossil fuels	MJ, net calorific value	4.55E+00	1.31E+01	2.47E+01	2.03E+01	5.24E+00	0.00E+00	1.80E+02	0.00E+00	0.00E+00	6.60E+00	0.00E+00	1.81E-01	0.00E+00
material resources: metals/minerals - abiotic depletion potential (ADP): elements (ultimate reserves)	kg Sb-Eq	2.51E-06	7.48E-06	2.47E-06	9.53E-06	2.34E-06	0.00E+00	3.87E-05	0.00E+00	0.00E+00	3.78E-06	0.00E+00	6.33E-09	0.00E+00
water use - user deprivation potential (deprivation-weighted water consumption)	m3 world eq. deprived	7.29E-01	8.56E-02	3.10E-01	1.16E-01	9.75E-02	0.00E+00	1.96E+00	0.00E+00	0.00E+00	4.32E-02	0.00E+00	9.50E-04	0.00E+00

A negative represents a biogenic carbon GWP impact.

*The results of ADP-fossil and ADP-minerals environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Table 11: Life Cycle Impact Assessment Results for Zintra Acoustic Panel 24 mm Thickness

Impact Categories	Units	Production stage			Construction stage		Use stage			End of Life stage				Resource recovery stage
		A1	A2	A3	A4	A5	B1-B3	B4	B5-B7	C1	C2	C3	C4	D
climate change - global warming potential (GWP100)_Total	kg CO2-Eq	1.43E-01	1.30E+00	2.74E+00	2.05E+00	5.19E-01	0.00E+00	1.13E+01	0.00E+00	0.00E+00	6.54E-01	0.00E+00	1.91E-02	0.00E+00
climate change: fossil - global warming potential (GWP100)	kg CO2-Eq	4.94E-01	1.29E+00	2.86E+00	2.05E+00	5.52E-01	0.00E+00	1.20E+01	0.00E+00	0.00E+00	6.53E-01	0.00E+00	1.91E-02	0.00E+00
climate change: biogenic - global warming potential (GWP100)	kg CO2-Eq	-3.69E-01	1.37E-03	-1.24E-01	2.35E-03	-3.42E-02	0.00E+00	-6.74E-01	0.00E+00	0.00E+00	6.92E-04	0.00E+00	1.89E-05	0.00E+00
climate change: land use and land use change - global warming potential (GWP100)	kg CO2-Eq	1.92E-02	8.75E-04	2.98E-03	1.38E-03	1.77E-03	0.00E+00	3.86E-02	0.00E+00	0.00E+00	4.42E-04	0.00E+00	8.42E-06	0.00E+00
ozone depletion - ozone depletion potential (ODP)	kg CFC-11-Eq	7.91E-09	2.05E-08	3.83E-08	3.12E-08	8.34E-09	0.00E+00	1.88E-07	0.00E+00	0.00E+00	1.03E-08	0.00E+00	2.65E-10	0.00E+00
acidification - accumulated exceedance (AE)	mol H+-Eq	3.32E-03	6.33E-03	1.59E-02	1.91E-02	3.62E-03	0.00E+00	8.21E-02	0.00E+00	0.00E+00	3.19E-03	0.00E+00	1.61E-04	0.00E+00
eutrophication: freshwater - fraction of nutrients reaching freshwater end compartment (P)	kg P-Eq	2.06E-04	1.78E-04	5.05E-04	2.34E-04	9.30E-05	0.00E+00	1.83E-03	0.00E+00	0.00E+00	9.01E-05	0.00E+00	2.13E-06	0.00E+00
eutrophication: marine - fraction of nutrients reaching marine end compartment (N)	kg N-Eq	1.26E-03	2.06E-03	3.22E-03	5.49E-03	9.70E-04	0.00E+00	2.25E-02	0.00E+00	0.00E+00	1.04E-03	0.00E+00	6.91E-05	0.00E+00
eutrophication: terrestrial - accumulated exceedance (AE)	mol N-Eq	1.04E-02	2.23E-02	3.40E-02	6.01E-02	1.03E-02	0.00E+00	2.37E-01	0.00E+00	0.00E+00	1.12E-02	0.00E+00	7.48E-04	0.00E+00
photochemical oxidant formation: human health - tropospheric ozone concentration increase	kg NMVOC-Eq	2.10E-03	8.42E-03	9.42E-03	1.92E-02	3.25E-03	0.00E+00	7.83E-02	0.00E+00	0.00E+00	4.25E-03	0.00E+00	2.24E-04	0.00E+00
energy resources: non-renewable - abiotic depletion potential (ADP): fossil fuels	MJ, net calorific value	6.25E+00	1.80E+01	3.40E+01	2.80E+01	7.21E+00	0.00E+00	2.47E+02	0.00E+00	0.00E+00	9.08E+00	0.00E+00	2.49E-01	0.00E+00
material resources: metals/minerals - abiotic depletion potential (ADP): elements (ultimate reserves)	kg Sb-Eq	3.45E-06	1.03E-05	3.40E-06	1.31E-05	3.22E-06	0.00E+00	5.32E-05	0.00E+00	0.00E+00	5.19E-06	0.00E+00	8.71E-09	0.00E+00
water use - user deprivation potential (deprivation-weighted water consumption)	m3 world eq. deprived	1.00E+00	1.18E-01	4.26E-01	1.59E-01	1.34E-01	0.00E+00	2.69E+00	0.00E+00	0.00E+00	5.94E-02	0.00E+00	1.31E-03	0.00E+00

A negative represents a biogenic carbon GWP impact.

*The results of ADP-fossil and ADP-minerals environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Table 12: Life Cycle Inventory Results for Zintra Acoustic Panel 12 mm Thickness

Resource use												
Parameter	Unit	Production stage	Construction stage		Use stage			End-of-life stage				Resource recovery stage
		A1-A3	A4	A5	B1-B3	B4	B5-B7	C1	C2	C3	C4	D
RPRE(4)	MJ, LHV	9.57E+00	4.21E-01	7.26E-01	0.00E+00	1.54E+01	0.00E+00	0.00E+00	1.62E-01	0.00E+00	4.69E-03	0.00E+00
RPRM(5)	MJ, LHV	4.62E-02	0.00E+00	3.24E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT(6)	MJ, LHV	9.61E+00	4.21E-01	7.30E-01	0.00E+00	1.54E+01	0.00E+00	0.00E+00	1.62E-01	0.00E+00	4.69E-03	0.00E+00
NRPRE(7)	MJ, LHV	4.04E+01	2.02E+01	5.09E+00	0.00E+00	1.81E+02	0.00E+00	0.00E+00	6.55E+00	0.00E+00	1.79E-01	0.00E+00
NRPRM(8)	MJ, LHV	1.84E+00	0.00E+00	1.29E-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
PENRT(9)	MJ, LHV	4.23E+01	2.02E+01	5.22E+00	0.00E+00	1.81E+02	0.00E+00	0.00E+00	6.55E+00	0.00E+00	1.79E-01	0.00E+00
SM(10)	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	0.00E+00	0.00E+00
RSF (11)	MJ, LHV	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	0.00E+00	0.00E+00
NRSF(12)	MJ, LHV	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	0.00E+00	0.00E+00
FW(13)	m^3	1.39E-02	2.66E-03	2.97E-03	0.00E+00	5.90E-02	0.00E+00	0.00E+00	9.91E-04	0.00E+00	1.96E-05	0.00E+00
Output Flows and Waste												
HWD(14)	kg	3.22E+00	9.88E-01	3.58E-01	0.00E+00	6.94E+00	0.00E+00	0.00E+00	3.84E-01	0.00E+00	7.62E-03	0.00E+00
NHWD(15)	kg	4.85E-01	4.89E-01	8.95E-02	0.00E+00	1.82E+00	0.00E+00	0.00E+00	1.94E-01	0.00E+00	1.78E-04	0.00E+00
HLRW(16)	m^3	3.22E-09	4.00E-10	2.76E-10	0.00E+00	5.68E-09	0.00E+00	0.00E+00	1.55E-10	0.00E+00	5.05E-12	0.00E+00
ILLRW(17)	m^3	2.33E-08	2.27E-09	1.94E-09	0.00E+00	4.04E-08	0.00E+00	0.00E+00	8.83E-10	0.00E+00	2.78E-11	0.00E+00
CRU(18)	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	0.00E+00	0.00E+00
MR(18)	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	0.00E+00	0.00E+00
MER(18)	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	0.00E+00	0.00E+00
EE, electricity(18)	MJ, LHV	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	0.00E+00	0.00E+00
EE, thermal(18)	MJ, LHV	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	0.00E+00	0.00E+00

Table 13: Life Cycle Inventory Results for Zintra Acoustic Panel 24 mm Thickness

Resource use												
Parameter	Unit	Production stage	Construction stage		Use stage			End-of-life stage				Resource recovery stage
		A1-A3	A4	A5	B1-B3	B4	B5-B7	C1	C2	C3	C4	D
RPRE(4)	MJ, LHV	1.32E+01	5.79E-01	9.99E-01	0.00E+00	2.12E+01	0.00E+00	0.00E+00	2.22E-01	0.00E+00	6.45E-03	0.00E+00
RPRM(5)	MJ, LHV	6.36E-02	0.00E+00	4.45E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT(6)	MJ, LHV	1.32E+01	5.79E-01	1.00E+00	0.00E+00	2.12E+01	0.00E+00	0.00E+00	2.22E-01	0.00E+00	6.45E-03	0.00E+00
NRPRE(7)	MJ, LHV	5.56E+01	2.78E+01	7.00E+00	0.00E+00	2.49E+02	0.00E+00	0.00E+00	9.01E+00	0.00E+00	2.47E-01	0.00E+00
NRPRM(8)	MJ, LHV	2.54E+00	0.00E+00	1.78E-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
PENRT(9)	MJ, LHV	5.81E+01	2.78E+01	7.17E+00	0.00E+00	2.49E+02	0.00E+00	0.00E+00	9.01E+00	0.00E+00	2.47E-01	0.00E+00
SM(10)	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	0.00E+00	0.00E+00
RSF (11)	MJ, LHV	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	0.00E+00	0.00E+00
NRSF(12)	MJ, LHV	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	0.00E+00	0.00E+00
FW(13)	m^3	1.92E-02	3.66E-03	4.08E-03	0.00E+00	8.11E-02	0.00E+00	0.00E+00	1.36E-03	0.00E+00	2.69E-05	0.00E+00
Output Flows and Waste												
HWD(14)	kg	4.43E+00	1.36E+00	4.93E-01	0.00E+00	9.54E+00	0.00E+00	0.00E+00	5.28E-01	0.00E+00	1.05E-02	0.00E+00
NHWD(15)	kg	6.67E-01	6.72E-01	1.23E-01	0.00E+00	2.50E+00	0.00E+00	0.00E+00	2.66E-01	0.00E+00	2.45E-04	0.00E+00
HLRW(16)	m^3	4.43E-09	5.50E-10	3.79E-10	0.00E+00	7.81E-09	0.00E+00	0.00E+00	2.13E-10	0.00E+00	6.95E-12	0.00E+00
ILLRW(17)	m^3	3.21E-08	3.12E-09	2.67E-09	0.00E+00	5.56E-08	0.00E+00	0.00E+00	1.21E-09	0.00E+00	3.83E-11	0.00E+00
CRU(18)	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	0.00E+00	0.00E+00
MR(18)	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	0.00E+00	0.00E+00
MER(18)	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	0.00E+00	0.00E+00
EE, electricity(18)	MJ, LHV	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	0.00E+00	0.00E+00
EE, thermal(18)	MJ, LHV	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	0.00E+00	0.00E+00

*In the calculation of RPR_M and $NRPR_M$, packaging materials were included

(1): Calculated as per EN 15804+A2 [3] methodology and OpenLCA v 1.11 [6].

(2): GWP 100a, excludes biogenic CO_2 removals and emissions associated with biobased products and packaging; 100-year time horizon GWP factors are provided by the IPCC 2013 Fifth Assessment Report (AR5). Results of biogenic carbon are presented in a separate line.

(3): Global warming potential biogenic carbon

*In the calculation of RPR_M and $NRPR_M$, packaging materials were included

(4): $\mathbf{RPR_E}$ = RPRT - RPR_M, where RPRT[6] is equal to the value for renewable energy obtained using the CED LHV

(5): RPR_M, is calculated by multiplication of the mass (kg) of the material input (or its components) with the net calorific value (lower heating value) (MJ/kg) of this input as per ACLCA ISO 21930 Guidance [4]. In the calculation of RPR_M, packaging materials were included.

(7): $\mathbf{NRPR_E}$ = NRPRT - $NRPR_M$, where NRPRT[9] is equal to the value for non- renewable energy obtained using the CED LHV methodology (both non- renewable energy fossil fuel and nuclear).

(8): $NRPR_M$, is calculated by multiplication of the mass (kg) of the material input (or its components) with the net calorific value (lower heating value) (MJ/kg) of this input as per ACLCA ISO 21930 Guidance [4]. In the calculation of $NRPR_M$, packaging materials were included.

(10): Calculated as per ACLCA ISO 21930 Guidance [13], 6.5 Secondary material, SM: There is SM involved in Zintra Acoustic Panels.

(11): Calculated as per ACLCA ISO 21930 Guidance [13], 6.6 Renewable secondary fuels, RSF: There is no RSF involved in Zintra Acoustic Panels manufacturing process.

(12): Calculated as per ACLCA ISO 21930 Guidance [13], 6.7 Non-renewable secondary fuels, NRSF: There is no NRSF involved in Zintra Acoustic Panels manufacturing process.

(13): There is no water used in the Zintra Acoustic Panels manufacturing process. Water mentioned comes from the upstream process.

(14): Calculated from life cycle inventory results, based on datasets marked as "hazardous".

(15): Calculated from life cycle inventory results, based on waste maked as "non-hazardous"

(16): Calculated as per ACLCA ISO 21930 Guidance [13], 10.3 High-level radioactive waste, conditioned, to final repository. It should be noted that Zintra Acoustic Panels manufacturing process does not generate any HLRW. High-level radioactive waste, e.g., when generated by electricity production, consists mostly of spent fuel from reactors." (ISO 21930:2017, clause 7.2.14).

(17): Calculated as per ACLCA ISO 21930 Guidance [13], 10.4 Intermediate- and low-level radioactive waste, conditioned, to final repository. It should be noted that Zintra Acoustic Panels manufacturing process does not generate any ILLRW. Low- and intermediate-level radioactive wastes, e.g., when generated by electricity production, arise mainly from routine facility maintenance and operations (ISO 21930:2017, clause 7.2.14).

(18): Reused components (CRU), materials for recycling (MR), materials for energy recovery (MER), exported energy electricity (EEE) and exported energy thermal (EET) are nil in this analysis.

Table 14: Biogenic Carbon Removal and Emissions from Packaging

Product	Category	Thicknesses	A3		A5		B4	
			BCR (kg CO_2 Eq.)	BCE (kg CO_2 Eq.)	BCR (kg CO_2 Eq.)	BCE (kg CO_2 Eq.)	BCR (kg CO_2 Eq.)	BCE (kg CO_2 Eq.)
Zintra Panels	Packaging	6 mm	-4.92E-02	0.00E+00	-4.92E-04	7.32E-03	-7.38E-02	1.02E-02
		12 mm	-6.94E-02	0.00E+00	-6.94E-04	1.03E-02	-1.04E-01	1.45E-02
		24 mm	-9.54E-02	0.00E+00	-9.54E-04	1.42E-02	-1.43E-01	1.99E-02

6 LCA: INTERPRETATION

The aim of this section is to present more details on the contribution to the impacts and resource use of the different life cycle modules of each Zintra Acoustic Panel products studied.

The relative impacts are similar for both thicknesses of Zintra acoustic panels. The analysis of the 12 mm Zintra acoustic panel results shows that the replacement module (B4) is a major contributor to the total impacts for all impact categories, with impacts between 56% to 71%. This is because B4 impacts represent 1.5 times the impacts of modules A1 to A5, module C2 and module C4. The production stage (A1 to A3) represents the second greatest impact except for eutrophication-terrestrial accumulated exceedance (AE) and photochemical oxidant formation, with impacts between 16% and 41%. For the global warming potential (GWP) total impact category, the impact of the production stage represents 22% of the total impact. For the same GWP_{total} impact category, the construction impact represents 14%, the end of life represents 4% and module D is null (Figure 3).

Breaking down the production stage, the manufacturing module (A3) is a major contributor due to the Chinese electricity grid mix used for the product manufacturing. The GWP_{total} impact category epresents 15% of the total impacts of the production stage. Regarding the construction stage, the distribution module (A4) is a major contributor with impacts between 3% and 16% of the total impacts for all impacts categories (Figure 4). The great impact of module A4 is due to the long distances that the product travels before being installed.

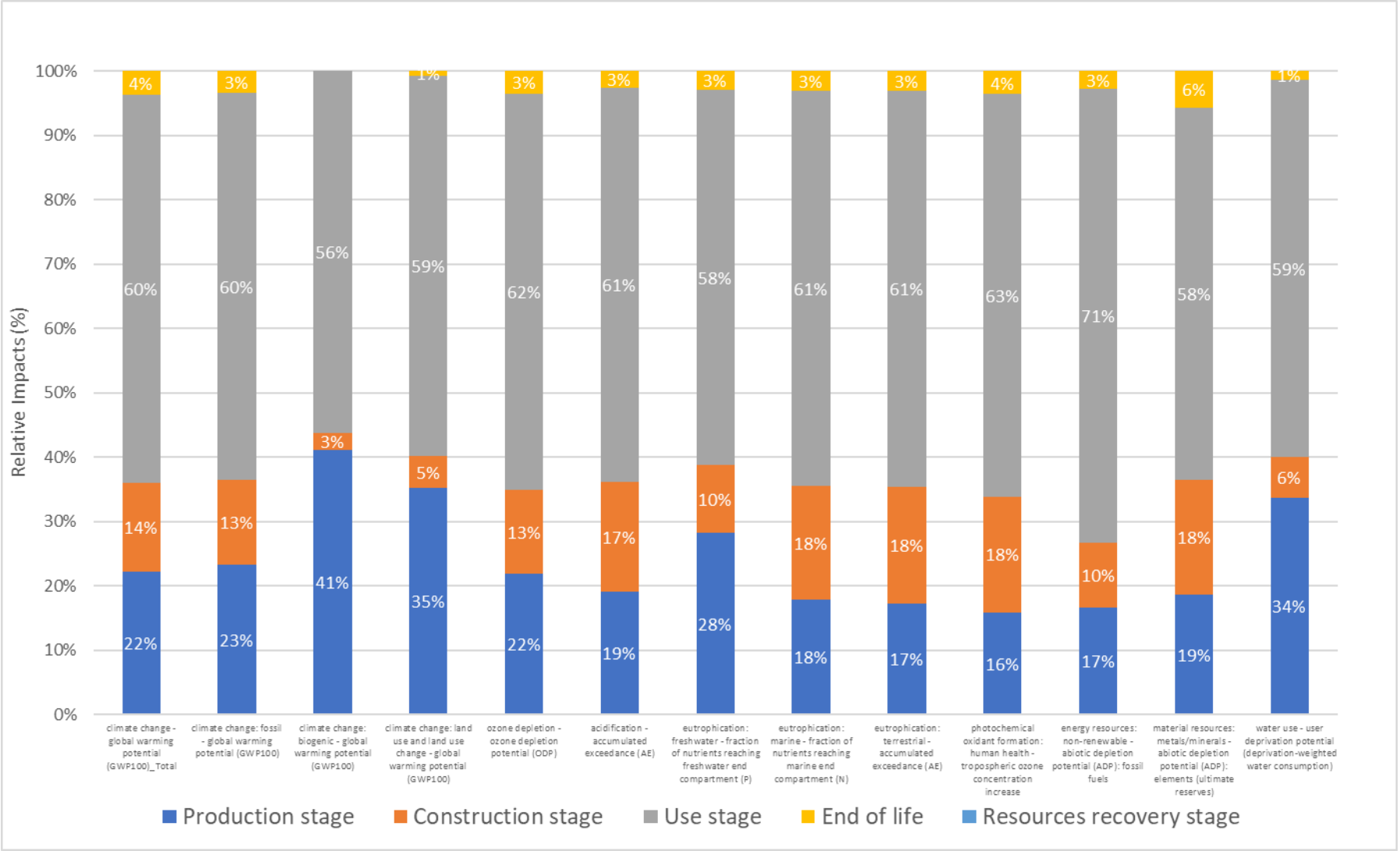

Figure 3: Contribution of each life cycle stages for Zintra Acoustic Panels.

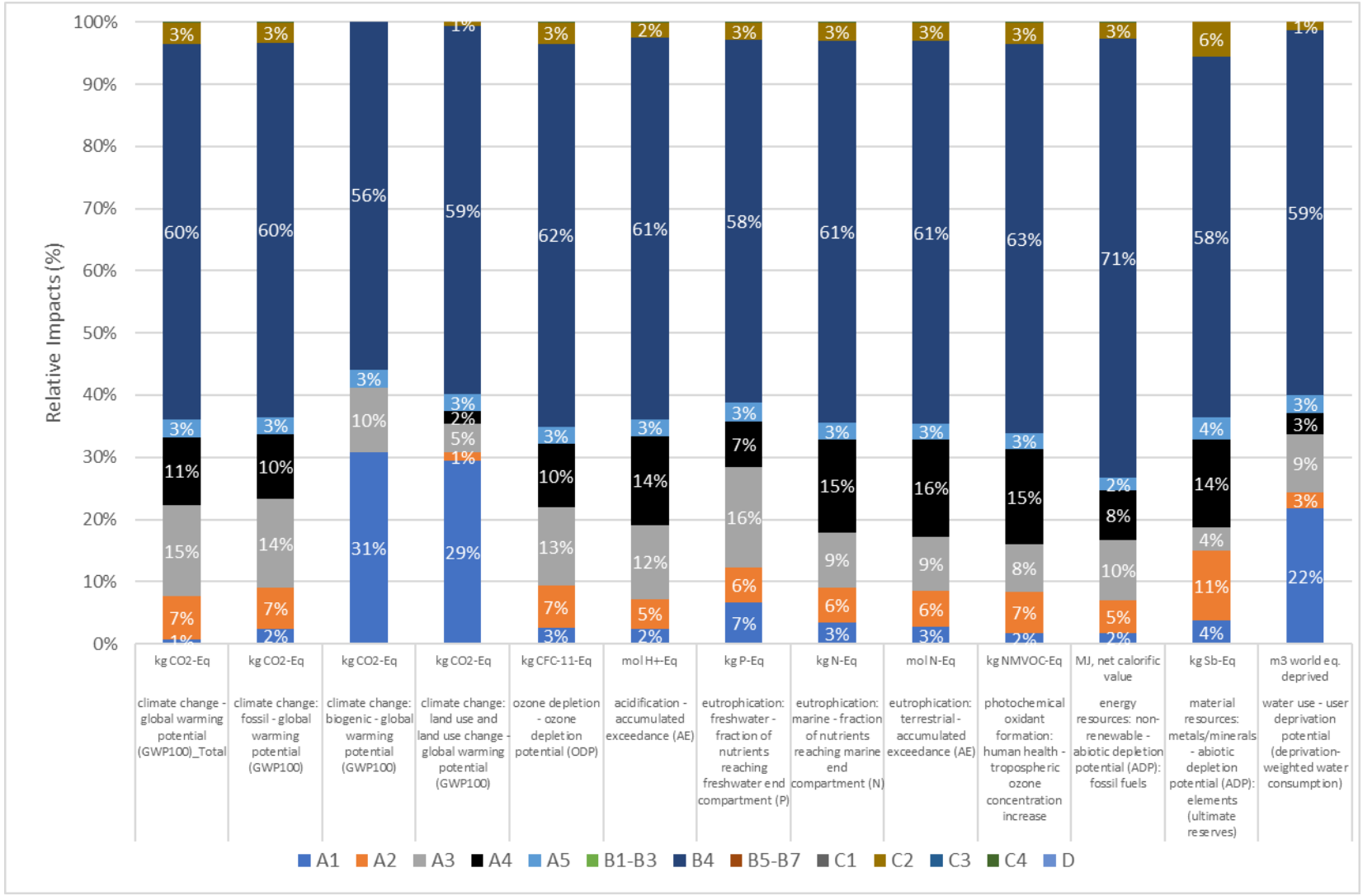

Figure 4: Contribution of each life cycle modules for Zintra Acoustic Panels.

7 ADDITIONAL ENVIRONMENTAL INFORMATION

7.1 ENVIRONMENTAL ACTIVITIES AND CERTIFICATION

In addition, Baresque is engaged in a third-party verification process with Vertima Inc. where their Zintra Acoustic Panel products and environmental documents are assessed. At the end of the process, it will receive a Validated Eco-Declaration® (EDS-Environmental Data Sheet) summarizing verified environmental claims.

Baresque has a Health Product Declaration (HPD) for Zintra Acoustic Panels based on a process performed by the third-party preparer, Vertima Inc.

7.2 EXTRAORDINARY EFFECTS

There are no extraordinary effects for Zintra ‘s product.

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EPD

This LCA and EPD were prepared by Vertima Inc.

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