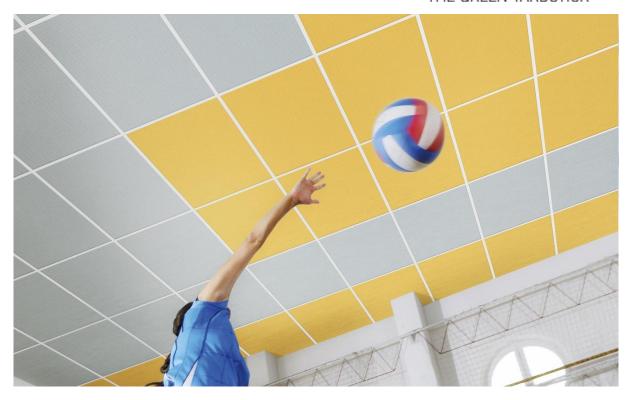




THE GREEN YARDSTICK



Environmental product declaration

In accordance with EN 15804 and ISO 14025

Acoustichoc®



 $\label{programme:program$

Programme operator: EPD International AB

Version: 1.0

Registration number: S-P-05189

Date of publication (issue): 04/01/2022 Date of revision: 26/11/2021 Date of validity: 26/11/2026

In accordance with ISO 14025, ISO 21930 and EN 15804





Summary Environmental product declaration

Content summary						
Verified by (external third-party verifier)	Martin Erlandsson, IVL Swedish Environmental Research Institute					
Programme used	The International EPD System. For more information see www.environdec.com					
Registration No	S-P-05189					
Owners declaration by	Saint-Gobain Eurocoustic Tour Saint-Gobain, 12 place de l'Iris 92400 Courbevoie France					
Declaration as construction products	The products to be verified herein are acoustic stone wool panels made for sound absorbing ceilings. The present environmental product declaration complies with standard ISO 14025 and describes the environmental impact. Its purpose is to promote compatible and sustainable environmental development of related construction methods. Reference PCR document: EN 15804 as the core PCR + International EPD System Product Category Rules - PCR for constructions products and construction services, Acoustical systems solutions (sub-oriented PCR; appendix					
	to PCR 2012:01) - previously Acoustic ceilings. EPD of construction products may not be comparable if they do not comply with EN 15804.					
Validity	26/11/2026					
Content of the declaration	This is an environmental product declaration containing environmental information of the product in the family Acoustichoc®. The values presented in this EPD are represented for the following products: Acoustichoc® A 22, Acoustichoc® A 40 Supplemental product information can be found at www.eurocoustic.com					
Issued date	26/11/2021					

Product responsible:

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Independent third party verifier:

Martin Erlandsson

V Hair CLANGER

LCA Business Development Manager

IVL

Product description

Product description and description of use:

This Environmental Product Declaration (EPD) describes the environmental impact of 1 m² of acoustic ceiling with the intended use to increase sound absorption in a room to create a better indoor environment.

This Environmental Product Declaration (EPD) are valid for products produced in the Eurocoustic production plants in France with a high-quality stone wool in different densities and thicknesses. The mineral wool is covered with a painted or woven surface layer and cut into panels of different sizes and edge designs. The edges are painted and the panels are packed in cardboard boxes.

The structure of stone wool gives the material excellent sound energy absorption properties. Sound absorption is the main function of acoustic stone wool panels. The panels are also stable, and easy to handle and cut.

Acoustic stone wool panels are commonly used in schools, offices, health care facilities and production premises where there is a need for noise reduction to improve the working environment. The decrease in reverberation time, sound pressure level and other acoustic parameters are related to the amount of panels used in the room as well as the placement of the panels. The acoustic panels need no maintenance and do not age. They can last as long as the building itself. For aesthetic reasons, normal room surface cleaning is advised.

Description of the main product components and materials for 1 m² of product:

Parameter	Value (Weight in %)	Pre-consumer recycled content
Product thickness	22-40 mm	-
Stone wool	90%-95%	27%
Waterborne paint	0%	-
Glass tissue	5%-10%	-
Waterborne glue	0%	-
Plastic wrapping	40-80 g	-

Total weight						
Product	Acoustichoc® A 22	Acoustichoc® A 40				
Total weight (kg)	2.2	4.2				

All raw materials contributing more than 5% to any environmental impact are listed in the table above. The panels are free from substances of very high concern (SVHC). The product contains no substances from the REACH Candidate list (of 13.07.2021).

If there in future occur production changes that generate an increased impact larger than 10% the EPD will be updated and re-verified.

Other environmental indicators

Regarding the indoor environment, the Acoustichoc® products are certified for or fulfil regulations according to the following table:

Certificate and Regulations

French VOC A+

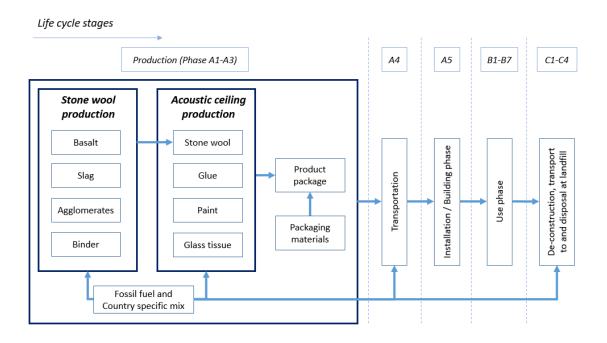
LCA calculation information

Declared unit	1 m² of acoustic celling panel.
Functional unit	1 m² acoustic ceiling with sound absorption class A installed at an ODS of 200mm according to ISO 354.
System boundaries	Cradle to grave: Mandatory stages = A1-3, A4-5, B1-7, C1-4 and optional stage = D This EPD covers the environmental impact of acoustic panels without grid or suspension system.
Reference Service Life (RSL)	50 years
Cutoff rules	The use of cut-off criterion on mass inputs and primary energy at the unit process level (1%) and at the information module level (5%). Flows related to human activities such as employee transport are excluded. Biogenic carbon has not been included in calculations. The construction of plants, production of machines and transportation systems are excluded since the related flows are supposed to be negligible compared to the production of the building product when compared at these systems lifetime level.
Allocations	Allocation criteria are based on mass.
Geographical coverage and time period	For A1-A3: Global For A4 : European covering (2019)

According to EN 15804, EPD of construction products might not be comparable if they do not comply with this standard. According to ISO 21930, EPD's might not be comparable if they are from different EPD administrating schemes.

Life Cycle stages

Flow diagram of the Life Cycle





Building life time (B1-B7)

Product stage, A1-A3

Description of the stage:

The product stage of the stone wool products is divided into 3 modules: A1 "Raw material and supply", A2 "Transport to the manufacturer" and A3 "Manufacturer". The aggregation of the modules A1, A2 and A3 is a possibility considered by the EN 15 804 standard. This rule is applied in this EPD.

A1 Raw material supply

This module takes into account the extraction and processing of all raw materials and energy which occur upstream to the studied manufacturing process.

Specifically, the stone wool raw material supply covers production of binder components and sourcing (quarry) of raw materials for fiber production, e.g. basalt. Besides these raw materials, recycled materials (briquette and slag) are also used as input. Electricity is taken as country specific mix. Production of packaging materials is also covered.

A2 Transport to the manufacturer

The raw materials are transported to the manufacturing site. In our case, the modelling includes: road, boat or train transportations (average values) of each raw material.

A3 Manufacturing

The manufacturing includes two steps; stone wool production and stone wool panel production. The mineral wool panels are produced in a continuous online process starting with applying glass tissue on the stone wool baseboard. The panels are cut into correct size and the edges of the panels are painted. After drying the panels are packed in cardboard boxes.

Manufacturing covers all processes linked to production, which comprises various related operations besides on-site activities such as grinding, painting and drying, packaging and internal transportation. The manufacturing process also yields data on the combustion of refinery products, such as natural gas, diesel and gasoline, related to the production process.

The environmental profile of these energy carriers is modelled for local conditions. Packaging-related flows in the production process and all up-stream packaging are included in the manufacturing module, i.e. wooden pallets, cardboard and PE-film. Apart from production of packaging material, the supply and transport of packaging material are also considered in the LCA model. They are reported and allocated to the module where the packaging is applied. Data on packaging waste created during this step is then generated. It is assumed that packaging waste generated in the course of production and up-stream processes is 100% collected and either recycled or incinerated with energy recovery, related to material and quality, in ratios according to the local material handling companies.

A representative electricity mix for stone wool production in the country of origin was used. The finished product is produced in France.

Construction process stage, A4-A5

Description of the stage:

The construction process is divided into 2 modules: A4 "Transport to the building site" and A5 "Installation in the building.

Description of scenarios and additional technical information:

A4 Transport to the building site

This module includes transport from the production gate to the building site. Transport is calculated on the basis of a scenario with the parameters described in the following table.

Parameter	Value
Fuel type, consumption of fuel and vehicle or vehicle type used for transport	Average truck trailer with a 24t payload, diesel consumption 31.7 litres for 100 km
Distance	645 km (based on transports in 2019)
Capacity utilisation (including empty returns)	90% of the capacity in volume 100% of empty returns
Bulk density of transported products (if available)	90 - 105 kg/m³
Volume capacity utilisation factor (if available)	0.45

The transport distance has been calculated from a European average transport for Eurocoustic in 2019 from the parameters in the table above.

A5:1 Installation in the building

This module includes waste of products during the implementation, i.e. the additional production processes to compensate the loss and the waste processing which occur in this stage.

Scenarios used for quantity of product wastage and waste processing are:

Parameter	Value
Waste of materials on the building site before waste processing, generated by the product's installation	5%
Output materials (specified by type) as results of waste processing at the building site e.g. of collection for recycling,	Packaging waste is 100 % collected and modelled as material for recycling
for energy recovering, disposal	Ceiling panel losses are landfilled

A5:2 Energy usage

As a general figure the time to install 1 m^2 ceiling is considered to be 20 minutes. During this time the installer is considered to use handheld appliances for about 5% of this time which in this case results in 1 minute. A handheld device such as a cordless screwdriver is considered to have a power of 0.7 kilowatt. Therefore, in one minute it will consume a total energy of 0.7*60 = 4.2 kilojoule = 0.0042 MJ, per m^2 ceiling. In this context it is a negligible contribution and will not be part of the LCA calculation (lower than 0.1% of the total energy consumption).

Use stage (excluding potential savings), B1-B7

Description of the stage:

The use stage is divided into 7 modules, B1 "Use", B2 "Maintenance", B3 "Repair", B4 "Replacement", B5 "Refurbishment", B6 "Operational energy use", B7 "Operational water use"

Description of scenarios and additional technical information:

Once installation is complete, no actions or technical operations are required during the use stages until the end of life stage. Therefore, acoustic ceiling panels have no impact (excluding potential energy savings) on this stage.

End-of-life stage C1-C4

Description of the stage:

The end-of life stage is divided into 4 modules; C1 "De-construction, demolition", C2 "Transport to waste processing", C3 "Waste processing for reuse, recovery and/or recycling", C4 "Disposal".

Description of scenarios and additional technical information:

C1, De-construction, demolition

The dismantling of acoustic ceiling panels takes part during renovation or demolition of the building. In this case, the environmental impact is assumed to be very small and can be neglected.

C2, Transport to waste processing

The model for transportation (see A4, Transportation to the building site) is applied.

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

The product is considered to be landfilled without reuse, recovery or recycling.

C4, Disposal;

The product is assumed to be 100% landfilled.

Parameter	Value/description					
Collection process specified by type	2200 - 4200 g of acoustic ceiling (collected with mixed construction waste)					
Recovery system specified by type	No reuse, recycling or energy recovery					
Disposal specified by type	2200 - 4200 g of acoustic ceiling will go to landfill					
Assumptions for scenario development (e.g. transportation)	Average truck trailer with a 24t payload, diesel consumption 31.7 litres for 100 km 50 km (distance to landfill)					

Reuse/recovery/recycling potential, D

Not declared.

LCA results

LCA model, aggregation of data and environmental impact are calculated through the GaBi Professional software. Secondary data is mainly taken from Ecoinvent 3.6 with some GaBi datasets.

Raw materials and energy consumption, as well as transport distances have been taken directly from the manufacturing plants of Saint-Gobain Eurocoustic in 2019.

Modules declared, geographical scope, share of specific data, and variation between sites (last two percentages given in GWP indicator) are stated in the following table. For stages A1-A3 (largest contribution to total GWP), the raw materials are modelled with very low amount of generic data – over 82% of the GWP comes from specific data.

	Product phase		Construction process phase					Eı	nd of li	fe phas	ie	Resou rce recov ery phase					
Module	Raw material and supply	S Transport to the manufacturer	SP Manufacturing	A Transport to the building site	S Installation in the building	B1	Paintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	O Deconstruction demolition	D Transport to waste processing	S Waste processing	psodsid C4	□ Reuse-Recovery-Recycling-potential
Modules declared	Х	Х	Х	Х	X	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	MND
Geography	SE, NL, FR, DK, PL, DE, FI, GB, EU, GLO	SE, NL, FR, DK, PL, DE, FI, GB, EU, GLO	FR	GB, EU, GLO	EU, GLO								GB, EU, GLO	GB, EU, GLO	GB, EU, GLO	GB, EU, GLO	-
Specific data		> 82 %	_	-							-						
Variation sites	_	One site	;		-								-				

Summary of the LCA results are detailed in the tables below.

All results in the EPD are written in logarithmic base of ten. Reading example: $5.2E-0.3=5.2*10^3=0,00.52$.

MND (module not declared), is equal to MNA (module not assessed).

_			
▼ Enviror Parameters	ımental imp	Acoustichoc 22	Acoustichoc 40
1 drameters	A1-A3	3,30E+00	5,88E+00
	A4	1.21E-01	2.30E-01
	A5 B1-B7	2.42E-01 0.00E+00	4.39E-01 0.00E+00
_	C1	0.00E+00	0.00E+00
(3)	C2	8.71E-03	1.68E-02
_	C3 C4	0.00E+00 1.36E-01	0.00E+00 1.66E-01
Global Warming Potential (GWP) - kg CO ₂ equiv/FU	D	MND	MND
(0 W) / - kg 002 0 qui v / 10	Total A-C	3.81E+00	6.73E+00
		The global warm gas refers to the to	ning potential of a
		global warming	resulting from the
		emission of one relative to one un	
		gas, carbon di	oxide, which is
	A1-A3	assigned a 1.36E-07	value of 1. 2.18E-07
	A4	2.76E-17	5.23E-17
	A5	6.79E-09	1.09E-08
	B1-B7 C1	0.00E+00 0.00E+00	0.00E+00 0.00E+00
©	C2	1.98E-18	3.83E-18
Ozone Depletion (ODP) kg	C3	0.00E+00	0.00E+00
CFC 11 equiv/FU	C4 D	1.68E-18 MND	1.59E-16 MND
	Total A-C	1.43E-07	2.29E-07
		Destruction of the stra which shields the e	tospheric ozone layer arth from ultraviolet
		radiation harmful to I ozone is caused by the	ife. This destruction of
		chlorine and/or b compounds (chlor	romine containing
		haloaensl, which br	eak down when thev
	A1-A3 A4	1.58E-02 1.64E-04	2.74E-02 3.11E-04
	A5	8.20E-04	1.42E-03
	B1-B7 C1	0.00E+00	0.00E+00
65	C2	0.00E+00 1.18E-05	0.00E+00 2.27E-05
Acidification potential (AP)	C3	0.00E+00	0.00E+00
kg SO ₂ equiv/FU	C4 D	1.98E-04	3.70E-04
	Total A-C	MND 1.70E-02	MND 2.95E-02
		Acid depositions ha	ve negative impacts tems and the man-
		made environment	incl, buildings. The
		main sources f acidifying substan	or emissions of ces are agriculture
	11 42	and faceil fuel on	5.75E-03
	A1-A3 A4	4.11E-03 3.47E-05	6.57E-05
	A5	3.02E-04	4.70E-04
_	81-87 C1	0.00E+00 0.00E+00	0.00E+00 0.00E+00
	C2	2.49E-06	4.81E-06
Eutrophication potential	C3	0.00E+00	0.00E+00
(EP) kg (PO ₄) ³ - equiv/FU	C4 D	1.64E-04 MND	1.83E-04 MND
	Total A-C	4.61E-03	6.47E-03
			nent of waters and
		continental surface	ces with nutrients, ciated adverse
		biologico	
	A1-A3	2.99E-03	5.62E-03
	A4 A5	-4.91E-05 1.69E-04	-9.29E-05 3.18E-04
	B1-B7	0.00E+00	0.00E+00
	C1 C2	0.00E+00	0.00E+00
Photochemical ozone creation (POPC) kg Ethene	C2	-3.52E-06 0.00E+00	-6.80E-06 0.00E+00
equiv/FU	C4	4.77E-05	6.09E-05
	D Total A-C	MND 3.16E-03	MND 5.90E-03
		Chemical reactions	brought about by
		the light energy of t of nitrogen oxides	
		in the presence o	f sunlight to form
	A1-A3	4.35E-06	6.23E-06
	A4 A5	4.47E-09 2.17E-07	8.45E-09 3.11E-07
Abiotic depletion potential	B1-B7	0.00E+00	0.00E+00
for non-fossil resources	C1	0.00E+00	0.00E+00
(ADP-elements) - kg Sb equiv/FU	C2 C3	3.20E-10 0.00E+00	6.18E-10 0.00E+00
- 7//	C4	1.73E-09	4.62E-09
	D	MND	MND
	Total A-C A1 - A3	4.58E-06 2.39E+01	6.56E-06 3.78E+01
	A4	1.67E+00	3.16E+00
	A5	1.34E+00	2.17E+00
	B1-B7 C1	0.00E+00 0.00E+00	0.00E+00 0.00E+00
Abiotic depletion potential	C2	1.20E-01	2.31E-01
for fossil resources (ADP- fossil fuels) - MJ/FU	C3	0.00E+00	0.00E+00
	C4 D	4.56E-01 MND	8.47E-01 MND
	Total A-C	2.75E+01	4.42E+01
			f non-renewable
		resources, there	by lowering their
		availability for fu	ture generations.

Parameters		- made	
	onmental im	Acoustichoc 22	Acoustichoc 40
	A1-A3	5.89E+00	8.21E+00
— Hereforestle	A4	4.07E-02	7.69E-02
Use of renewable primary energy	A5 81-87	2.73E-01 0.00E+00	3.70E-01 0.00E+00
excluding renewable	C1	0.00E+00	0.00E+00
primary energy	C2	2.92E-03	5.63E-03
resources used as raw materials	C3	0.00E+00	0.00E+00
- MJ / FU	C4	5.35E-02	1.08E-01
,	D	MND	MND
	Total A-C	6.26E+00	8.77E+00
	A1-A3	2.33E+00	2.86E+00
	A4	0.00E+00	0.00E+00
Use of renewable	A5 81-87	-2.33E+00	-2.86E+00
primary energy used as	C1	0.00E+00 0.00E+00	0.00E+00 0.00E+00
raw materials	C2	0.00E+00	0.00E+00
- MJ / FU	C3	0.00E+00	0.00E+00
	C4	0.00E+00	0.00E+00
	D	MND	MND
	Total A-C	0.00E+00	0.00E+00
	A1-A3	8.22E+00	1.11E+01
	A4	4.07E-02	7.69E-02
otal use of renewable primary	A5	-2.06E+00	-2.49E+00
energy resources (primary	81-87	0.00E+00	0.00E+00
energy and primary energy	C1	0.00E+00	0.00E+00
resources used as raw materials)	C2	2.92E-03	5.63E-03
- MJ / FU	C3 C4	0.00E+00	0.00E+00
,	C4 D	5.35E-02 MND	1.08E-01
	Total A-C		MND 8.77E+00
	roral A-C	6.26E+00	
		Acoustichoc 22	Acoustichoc 40
	A1-A3	3.60E+01	5.80E+01
Use of non-renewable	A4 A5	1.69E+00	3.19E+00
primary energy		1.93E+00	3.14E+00
excluding non-	81 - 87 C1	0.00E+00	0.00E+00
renewable primary	C1 C2	0.00E+00 1.21E-01	0.00E+00 2.34E-01
energy resources used	C2 C3	0.00E+00	0.00E+00
as raw materials - MJ /FU	C4	4.86E-01	8.90E-01
/F0	D	MND	MND
	Total A-C	4.02E+01	6.55E+01
	A1-A3	2.07E+00	4.26E+00
	A4	0.00E+00	0.00E+00
	A5	-1.46E+00	-3.06E+00
Use of non-renewable	81-87	0.00E+00	0.00E+00
primary energy used as raw materials	C1	0.00E+00	0.00E+00
- MJ / FU	C2	0.00E+00	0.00E+00
	C3	0.00E+00	0.00E+00
	C4	-6.07E-01	-1.20E+00
	D	MND	MND
	Total A-C	0.00E+00	0.00E+00
	A1-A3	3.80E+01	6.23E+01
	A4	1.69E+00	3.19E+00
Total use of non-renewable	A5	4.70E-01	8.00E-02
primary energy resources	B1-B7	0.00E+00	0.00E+00
(primary energy and primary energy resources used as raw	C1	0.00E+00	0.00E+00
materials) - MJ / FU	C2 C3	1.21E-01	2.34E-01
,,	C4	0.00E+00 -1.21E-01	0.00E+00 -3.08E-01
	D	MND	MND
	Total A-C	4.02E+01	6.55E+01
		Acoustichoc 22	Acoustichoc 40
	A1 - A3 A4	7.46E-01 0.00E+00	1.47E+00 0.00E+00
	A5	3.73E-02	7.34E-02
		0.00E+00	0.00E+00
Use of secondary	B1_P7	0.00L 100	0.00E+00
material	81-87 C1	0.00E+00	
use or secondary	B1-B7 C1 C2	0.00E+00 0.00E+00	0.00E+00
material	C1	0.00E+00	
material	C1 C2	0.00E+00 0.00E+00	0.00E+00 0.00E+00
material	C1 C2 C3 C4	0.00E+00	0.00E+00 0.00E+00 0.00E+00
material	C1 C2 C3 C4 D	0.00E+00 0.00E+00 0.00E+00	0.00E+00 0.00E+00 0.00E+00 MND
material	C1 C2 C3 C4 D	0.00E+00 0.00E+00 0.00E+00 MND	0.00E+00 0.00E+00 0.00E+00 MND
material	C1 C2 C3 C4 D Total AC	0.00E+00 0.00E+00 0.00E+00 MND 7.83E-01 Acoustichoc 22	0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 Acoustichoc 40
use or secondary material Kg / FU	C1 C2 C3 C4 D Total AC	0.00E+00 0.00E+00 0.00E+00 MND 7.83E-01 Acoustichoc 22 0.00E+00	0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 Acoustichoc 40
use or secondary material Kg / FU	C1 C2 C3 C4 D Total AC	0.00E+00 0.00E+00 0.00E+00 MND 7.83E-01 Acoustichoc 22 0.00E+00 0.00E+00	0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 Acoustichoc 40 0.00E+00 0.00E+00
Use of renewable	C1 C2 C3 C4 D Total AC	0.00E+00 0.00E+00 0.00E+00 MND 7.83E-01 Acoustichoc 22 0.00E+00 0.00E+00 0.00E+00	0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 Acoustichec 40 0.00E+00 0.00E+00
use of renewable secondary fuels	C1 C2 C3 C4 D Total AC A1-A3 A4 A5 B1-B7	0.00E+00 0.00E+00 0.00E+00 MND 7.83E-01 Acoustichec 22 0.00E+00 0.00E+00 0.00E+00	0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 Acoustichoc 40 0.00E+00 0.00E+00
use of renewable	C1 C2 C3 C4 D Total AC A1-A3 A4 A5 B1-B7	0.00E+00 0.00E+00 0.00E+00 MND 7.83E-01 Acoustichoc 22 0.00E+00 0.00E+00 0.00E+00	0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 Acoustichoc 40 0.00E+00 0.00E+00 0.00E+00 0.00E+00
use of renewable secondary fuels	C1 C2 C3 C4 D Total AC A1-A3 A4 A5 B1-B7	0.00E+00 0.00E+00 0.00E+00 MND 7.83E-01 Acoustichec 22 0.00E+00 0.00E+00 0.00E+00 0.00E+00	0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 Acoustichec 40 0.00E+00 0.00E+00 0.00E+00 0.00E+00
use of renewable secondary fuels	C1 C2 C3 C4 D Total AC A1-A3 A4 A5 B1-B7 C1 C2	0.00E+00 0.00E+00 0.00E+00 MND 7.83E-01 Acoustichec 22 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 MND 1.54E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00
use of renewable secondary fuels	C1 C2 C3 C4 D Total AC A1 - A3 A4 A5 B1 - B7 C1 C2 C3 C4 D	0.00E+00 0.00E+00 0.00E+00 MND 7.83E-01 Acoustichec 22 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	0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 Acoustichoc 40 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 MND
use of renewable secondary fuels	C1 C2 C3 C4 D Total AC A1-A3 A4 A5 B1-B7 C1 C2 C3 C4	0.00E+00 0.00E+00 0.00E+00 MND 7.83E-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 0.00E+00 0.00E+00	0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00
use of renewable secondary fuels	C1 C2 C3 C4 D Total AC A1 - A3 A4 A5 B1 - B7 C1 C2 C3 C4 D	0.00E+00 0.00E+00 0.00E+00 MND 7.83E-01 Acoustichec 22 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	0.00E+00 0.00E+00 MND 1.54E+00 Acoustichec 40 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
Use of renewable secondary fuels	C1 C2 C3 C4 D Total AC A1 – A3 A4 A5 B1 – B7 C1 C2 C3 C4 D Total AC	0.00E+00 0.00E+00 0.00E+00 MND 7.83E-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 0.00E+00 0.00E+00	0.00E+00 0.00E+00 MND 1.54E+00 Acoustichec 40 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
Use of renewable secondary fuels	C1 C2 C3 C4 D Total AC A1-A3 A4 A5 B1-B7 C1 C2 C3 C4 D Total AC	0.00E+00 0.00E+00 0.00E+00 MND 7.83E-01 Acoustiches 22 0.00E+00	0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 Acousticher 40 0.00E+00 Acousticher 40
Use of renewable secondary fuels MJ / FU	C1 C2 C3 C4 D Total AC A1-A3 A4 A5 B1-B7 C1 C2 C3 C4 D Total AC A1-A3 A4 A5	0.00E+00 0.00E+00 0.00E+00 MND 7.83E-01 Acoustiches 22 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 0.00E+00 0.00E+00 0.00E+00 MNID 1.54E+00 0.00E+00
Use of renewable secondary fuels - M.J / FU Use of non-renewable secondary fuels - M.J / FU	C1 C2 C3 C4 D Total AC A1-A3 A4 A5 B1-B7 C1 C2 C3 C4 D Total AC	0.00E+00 0.00E+00 0.00E+00 MNND 7.83E01 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 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 MND 1.54E+00 0.00E+00
Use of renewable secondary fuels MJ / FU Use of non-renewable	C1 C2 C3 C4 D Totel AC A1-A3 A4 A5 B1-B7 C1 C2 C3 C4 D Totel AC A1-A3 A4 A5 B1-B7 C1 C1 C2 C3 C4 C4 C4 C5 C4 C7 C4 C7 C4 C7 C4 C7	0.00E+00 0.00E+00 0.00E+00 0.00E+00 M/ND 7.83E-01 Acourticlas 22 0.00E+00	0.00E+00 0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 0.00E+00
Use of renewable secondary fuels MJ/FU Use of non-renewable secondary fuels MJ/FU	C1 C2 C3 C4 D Totel AC A1-A3 A4 A5 B1-B7 C1 C2 C3 C4 D Totel AC A1-A3 C5 B1-B7 C1 C2 C3 C4 C4 C5 C5 C5 C6 C7	0.00E+00 0.00E+00 0.00E+00 MNID 7.83Ec1 0.00E+00	0.00E+00. 0.00E+00. 0.00E+00. MND 1.54E+00. 0.00E+00.
Use of renewable secondary fuels MJ/FU Use of non-renewable secondary fuels MJ/FU	C1 C2 C3 C4 D Total AC A1-A3 A4 A5 B1-B7 C1 C2 A1-A3 C4 D Total AC C1 C2 C3 C4 D Total AC C1 C2 C3 C4 C4 C5 C6 C7	0.00E+00 0.00E+00 0.00E+00 MNID 7.83E-01 0.00E+00	0.00E+00 0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 0.00E+00
Use of renewable secondary fuels MJ/FU Use of non-renewable secondary fuels MJ/FU	C1 C2 C3 C4 D Total AC A1-A3 A4 A5 B1-B7 C1 C2 C3 A1-A3 C4 D Total AC C1 C2 C3 C4 C1 C2 C3 C4 C1 C2 C3 C4 C1 C2 C3 C4 C4 C4 C4 C5 C4 C6 C7	0.00E+00 0.00E+00 0.00E+00 MND 7.83Eo1 Acoustisho: 22 0.00E+00	0.00E+00. 0.00E+00. 0.00E+00. MND 1.54E+00. 0.00E+00.
Use of renewable secondary fuels MJ/FU Use of non-renewable secondary fuels MJ/FU	C1 C2 C3 C4 D Toral AC A1 - A3 A4 A5 B1 - B7 C1 C2 C3 C4 D Toral AC C1 C2 C3 C4 D D	0.00E+00 0.00E+00 0.00E+00 MMND 7.83E01 Acoustisher 22 0.00E+00	0.00E+00 0.00E+00 0.00E+00 MNID 1.54E+00 0.00E+00
Use of renewable secondary fuels MJ/FU Use of non-renewable secondary fuels MJ/FU	C1 C2 C3 C4 D Total AC A1-A3 A4 A5 B1-B7 C1 C2 C3 A1-A3 C4 D Total AC C1 C2 C3 C4 C1 C2 C3 C4 C1 C2 C3 C4 C1 C2 C3 C4 C4 C4 C4 C5 C4 C6 C7	0.00E+00 0.00E+00 0.00E+00 MND 7.83Eo1 Acoustisho: 22 0.00E+00	0.00E+00 0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 0.00E+00
Use of renewable secondary fuels MJ/FU Use of non-renewable secondary fuels MJ/FU	C1 C2 C3 C4 D Toral AC A1 - A3 A4 A5 B1 - B7 C1 C2 C3 C4 D Toral AC C1 C2 C3 C4 D D	0.00E+00 0.00E+00 0.00E+00 MMND 7.83E01 Acoustisher 22 0.00E+00	0.00E+00 0.00E+00 0.00E+00 MNID 1.54E+00 0.00E+00
Use of renewable secondary fuels MJ/FU Use of non-renewable secondary fuels MJ/FU	C1 C2 C3 C4 D Total AC A1 - A3 A4 A5 B1 - B7 C1 Total AC C4 D Total AC C5 C3 C4 D Total AC C1 C2 C3 C4 C4 C5 C1 C5 C5 C1 C5	0.00E+00 0.00E+00 0.00E+00 0.00E+00 MNIN 7.83E-01 Acourticlace 22 0.00E+00	0.00E+00 0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 0.00E+00
Use of renewable secondary fuels - MJ / FU Use of non-renewable secondary fuels - MJ / FU	C1 C2 C3 C4 D Toral AC A1-A3 A4 A5 B1-B7 C1 C2 C3 C4 D Toral AC A1-A3 A4 A5 B1-B7 C1 C4 D Toral AC A1-A3 A4 A5 B1-B7 C1 A1-A3 A4 A5 B1-B7 A1 A4 A5 B1-B7 A1 A4 A5 A1 A5 B1-B7 A1	0.00E+00 0.00E+00 0.00E+00 MMND 7.83E01 0.00E+00	0.00E+00 0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 0.00E+00
Use of renewable secondary fuels MJ / FU Use of non-renewable secondary fuels FU	C1 C2 C3 C4 D Total AC A1 - A3 A4 A5 B1 - B7 C1 C2 C3 C4 D Total AC C1 C2 C3 C4 C4 C1 C2 C3 C4 C1 C2 C3 C4 C1 C4 C1 C4 C4 C7 C4 C7 C7 C7 C4 C7	0.00E+00 0.00E+00 0.00E+00 MNIND 7.83E-01 Acountribus 22 0.00E+00	0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 0.00E+00
Use of renewable secondary fuels MJ / FU Use of non-renewable secondary fuels MJ / FU Use of non-renewable secondary fuels - MJ / FU Use of non-renewable secondary fuels - MJ / FU	C1 C2 C3 C4 D Total AC A1-A3 A4 A5 B1-B7 Total AC C1 C2 C3 C4 D Total AC C1 C2 C3 C4 D Total AC A1-A3 A4 A5 B1-B7 Total AC A1-A3 A4 A5 A5 A6 A6 A7 A7 A8	0.00E+00 0.0	0.00E+00 0.00E+00 0.00E+00 0.00E+00 MNID 1.54E+00 0.00E+00 0.00E+0
Use of renewable secondary fuels MJ / FU Use of non-renewable secondary fuels FU	C1 C2 C3 C4 D Torol AC A1-A3 A4 A5 A5 C1 C2 C3 C4 D Torol AC C1 C2 C3 C4 D Torol AC C1 C2 C3 C4 D Torol AC A1-A3 A4 A5 A5 A1-A3 A4 A5 A5 A1-A3 A4 A5 B1-B7 C1 C2 C3 C4 D Torol AC C1 C4 A1-A3 A4 A5 B1-B7 A1-A3 A4 A5 B1-B7 B1	0.00E+00 0.00E+00 0.00E+00 MMND 7.83E01 0.00E+00	0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 0.00E+00 0.00E+01
Use of renewable secondary fuels MJ / FU Use of non-renewable secondary fuels MJ / FU Use of non-renewable secondary fuels - MJ / FU Use of non-renewable secondary fuels - MJ / FU	C1 C2 C3 C4 D Total AC C1 C4	0.00E+00 0.00E+00 0.00E+00 0.00E+00 MNIND 7.83E-01 Acourticlace 22 0.00E+00	0.00E+00 0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 0.00E+00
Use of renewable secondary fuels MJ / FU Use of non-renewable secondary fuels MJ / FU Use of non-renewable secondary fuels - MJ / FU Use of non-renewable secondary fuels - MJ / FU	C1 C2 C3 C4 D Torol AC A1-A3 A4 A5 B1-B7 C1 C2 C3 A1-A3 A4 A5 B1-B7 C1 C2 C3 C4 D Torol AC C1 C2 C3 C4 D Torol AC C1 C2 C3 C4 D D Torol AC C1 C2 C3 C4 C4 D D Torol AC C1 C2 C3 C4 D D Torol AC C1 C2 C3 C4 C4 C4 C5 C5 C5 C6 C7	0.00E+00 0.00E+00 0.00E+00 0.00E+00 MNND 7.83E01 Acoustisher 22 0.00E+00	0.00E+00 0.00E+00 0.00E+00 0.00E+00 MNID 1.54E+00 0.00E+00
Use of renewable secondary fuels MJ / FU Use of non-renewable secondary fuels MJ / FU Use of non-renewable secondary fuels - MJ / FU Use of non-renewable secondary fuels - MJ / FU	C1 C2 C3 C4 D Total AC A1 - A3 A4 A5 C1 C2 C3 C4 D Total AC C1 C2 C3 C4 D Total AC A1 - A2 A4 A5 A5 B1 - B7 C1 C2 C3 C4 D Total AC A1 - A3 A4 A5 A5 B1 - B7 C1 C2 C3 C4 C1 C2 C3	0.00E+00 0.00E+00 0.00E+00 MNIND 7.83E-01 Acoustidas: 22 0.00E+00	0.00E+00 0.00E+00 0.00E+00 MND 1.54E+00 0.00E+00 1.52E-03 1.52E-03 0.00E+00
Use of renewable secondary fuels MJ / FU Use of non-renewable secondary fuels MJ / FU Use of non-renewable secondary fuels - MJ / FU Use of non-renewable secondary fuels - MJ / FU	C1 C2 C3 C4 D Torol AC A1-A3 A4 A5 B1-B7 C1 C2 C3 A1-A3 A4 A5 B1-B7 C1 C2 C3 C4 D Torol AC C1 C2 C3 C4 D Torol AC C1 C2 C3 C4 D D Torol AC C1 C2 C3 C4 C4 D D Torol AC C1 C2 C3 C4 D D Torol AC C1 C2 C3 C4 C4 C4 C5 C5 C5 C6 C7	0.00E+00 0.00E+00 0.00E+00 0.00E+00 MNND 7.83E01 Acoustisher 22 0.00E+00	0.00E+00 0.00E+00 0.00E+00 0.00E+00 MNID 1.54E+00 0.00E+00

Environmental impacts					
Parameters		Acoustichoc 22	Acoustichoc 40		
	A1-A3	1.10E-09	1.94E-09		
	A4	1.80E-11	3.40E-11		
-	A5	5.43E-11	9.57E-11		
△ Hazardous waste	B1-B7	0.00E+00	0.00E+00		
disposed	C1	0.00E+00	0.00E+00		
kg / FU	C2	1.29E-12	2.49E-12		
3,	C3	0.00E+00	0.00E+00		
	C4	3.96E-11	8.24E-11		
	D	MND	MND		
	Total A-C	1.21E-09	2.15E-09		
		Acoustichoc 22	Acoustichoc 40		
	A1-A3	6.93E-01	1.25E+00		
	A4	4.53E-05	8.57E-05		
	A5	1.29E-01	2.41E-01		
Non-hazardous	B1-B7	0.00E+00	0.00E+00		
waste	C1	0.00E+00	0.00E+00		
disposed - kg / FU	C2	3.25E-06	6.27E-06		
	C3	0.00E+00	0.00E+00		
	C4	2.13E+00	4.14E+00		
	D	MND	MND		
	Total A-C	2.95E+00	5.63E+00		
		Acoustichoc 22	Acoustichoc 40		
	A1-A3	3.87E-03	6.80E-03		
	A4	1.98E-06	3.74E-06		
Radioactive waste	A5	1.84E-04	3.23E-04		
disposed	B1-B7	0.00E+00	0.00E+00		
ka / FU	C1	0.00E+00	0.00E+00		
	C2	1.42E-07	2.74E-07		
	C3	0.00E+00	0.00E+00		
	C4	-9.52E-06	-5.29E-06		
	D	MND	MND		

Output flow

Environmental impacts							
Paran	neters		Acoustichoc 22	Acoustichoc 40			
		A1-A3	-	-			
		A4	-	-			
		A5		-			
6		B1-B7	-	-			
	Components for re-use	C1	-	-			
	kg/FU	C2	-	-			
		C3	-	-			
		C4	-				
		D	MND	MND			
		Total A-C	-	-			
			Acoustichoc 22	Acoustichoc 40			
		A1-A3	0.00E+00	0.00E+00			
		A4	0.00E+00	0.00E+00			
		A5	0.00E+00	0.00E+00			
6	Managed at the second as	B1-B7	0.00E+00	0.00E+00			
	Materials for recycling kg/FU	C1	0.00E+00	0.00E+00			
	kg/F0	C2	0.00E+00	0.00E+00			
		C3	0.00E+00	0.00E+00			
		C4	0.00E+00	0.00E+00			
		D	MND	MND			
		Total AC	-	-			
			Acoustichoc 22	Acoustichoc 40			
		A1-A3	-	-			
		A4	-	-			
		A5	-	-			
		B1-B7	-	-			
_	Materials for energy reovery - kg/FU	C1	-	-			
	reovery - kg/ro	C2					
		C3					
		C4	-	-			
		D	MND	MND			
		Total A-C	-	-			
			Acoustichoc 22	Acoustichoc 40			
		A1-A3	0.00E+00	0.00E+00			
		A4	0.00E+00	0.00E+00			
		A5	0.00E+00	0.00E+00			
6		B1-B7	0.00E+00	0.00E+00			
	Exported energy MJ/FU	C1	0.00E+00	0.00E+00			
		C2	0.00E+00	0.00E+00			
		C3	0.00E+00	0.00E+00			
		C4	0.00E+00	0.00E+00			
		D	MND	MND			

Summary

Aggregation of results from A1 to C4 in selected impact categories.

	Acoustichoc 22	Acoustichoc 40
Global warming		
kg CO₂equiv/FU	3.81	6.73
Non-renewable resources consumption [1]		
MJ/FU	28	44
Energy consumption [2]		
MJ/FU	46	74
Water consumption [3]		
m³/FU	0.02	0.03
Waste production [4]		
kg/FU	2.96	5.64

^[1] This indicator corresponds to the abiotic depletion potential of fossil resources.

^[2] This indicator corresponds to the total use of primary energy.

^[3] This indicator corresponds to the use of net fresh water.

 $[\]label{lem:constraints} \emph{[4] This indicator corresponds to the sum of hazardous, non-hazardous and radioactive waste disposed.}$

Reference list

ISO 354:2003: Acoustics - Measurement of sound absorption in a reverberation room

Reach: EU REACH Regulation (EC) No 1907/2006

LCA report: Project_report_on_Eurocoustic_LCA_2021-12-06

EN 15804:2012+A1:2013: Sustainability of construction works - Environmental product declarations

Acoustical systems solutions (sub-oriented PCR; appendix to PCR 2012:01) - previously Acoustic ceilings.

PCR 2012:01 Construction products and construction services (version 2.33 dated 2020-09-18)

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