Environmental Product Declaration

Fabric Panel (1 in) MEVAP

Fiberglass Acoustic Panel

Fiberglass acoustical ceiling panel consisting of a medium density core with a fabric finish.

decoustics
SAINT-GOBAIN

CertainTeed Corporation, as subsidiary of Saint-Gobain, is a leading North American manufacturer of interior building materials including gypsum, ceilings, and insulation, as well as exterior building materials, which include roofing, vinyl siding, trim, fence, railing and decking. CertainTeed respects the environment through the responsible development of sustainable building products and systems.

Architects, contractors and manufacturers continue to look for ways to reduce our industry's impact on the environment while meeting customer demand for products that deliver beauty, comfort, and performance. CertainTeed Decoustics's respect for the environment is reflected in our ongoing emphasis on sustainable building products and systems. Open sharing of the data we gather on these effects - as embodied in Environmental Product Declarations - is central to the process and sets CertainTeed Decoustics apart.

For more information, visit:
http://www.certainteed.com

UL
CERTIFIED
ENVIRONMENTAL
PRODUCT DECLARATION
UL.COM/EPD

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. Accuracy of Results: EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.

PROGRAM OPERATOR	UL Environment
DECLARATION HOLDER	CertainTeed Decoustics
DECLARATION NUMBER	4788541427.105.1
DECLARED PRODUCT	Fabric Panel (1 in) MEVAP
REFERENCE PCR	UL Part B: Non-Metal Ceiling Panel, October 2015 v1
REFERENCE PCR STANDARD	☒ EN 15804 (2012) ☒ ISO 21930 (2007) ☐ ISO 21930 (2017)
DATE OF ISSUE	November 6, 2018
PERIOD OF VALIDITY	5 Years
CONTENTS OF THE DECLARATION	Product definition and information about building physics Information about basic material and the material's origin Description of the product's manufacturing Indication of product processing Information about the in-use conditions Life cycle assessment results Testing results and verifications

The PCR review was conducted by	UL Environment PCR Peer Review Panel
This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories. The UL Environment Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project report, based on CEN Norm EN 15804, serves as the core PCR. ☐ INTERNAL ☒ EXTERNAL	Grant R. Martin Grant R. Martin, UL Environment
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by	James Mellentine James Mellentine, Ramboll

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Product System Documentation

Production Description

Product name: Fabric Panel (1 in) MEVAP
Product characteristic: Fiberglass acoustical ceiling panel
The Fabric Panel (1 in) MEVAP consists of a medium density core with a fabric finish. Additional features include:

- Custom fabricated
- Available in various sizes, shapes, thicknesses, finishes, and 3D curvatures.

This product can also be used in conjunction with the Decoustics' Ceilencio mounting system. The impact results for this optional system are presented seperately below.

Application

Modular installation of acoustic ceiling panels in commercial buildings.

Techincal Data

For the declared product, the following technical data in the delivery status must be provided with reference to the test standard:

Technical Data

Category	Value
Noise Reduction Coefficient (NRC) Test Method C423	Up to 0.85
Articulation Class (AC) Test Method E1111 and Classification E1110	N/A
Ceiling Attentuation Class (CAC) Test Method E1414 and Classification E413	33
Fire Rating Test Method E84	Available in Class A
Light Reflection Test Method E1477	Varies

Market Placement / Application Rules

The standards that can be applied for Decoustics are:
- ASTM E1264 - Classification for Acoustic Ceilings
- ASTM E84 - Surface Burning Characteristics; pusuant to test certificate
- ASTM C423 - Sound absorption
- ASTM E1414 - Airborne Sound Attentuation

Delivery Status

Characteristics		
Product	Fiberglass	-
Thickness	2.60 to 2.90	cm
Density	4.14	kg/m^2

Base Materials / Ancillary Materials

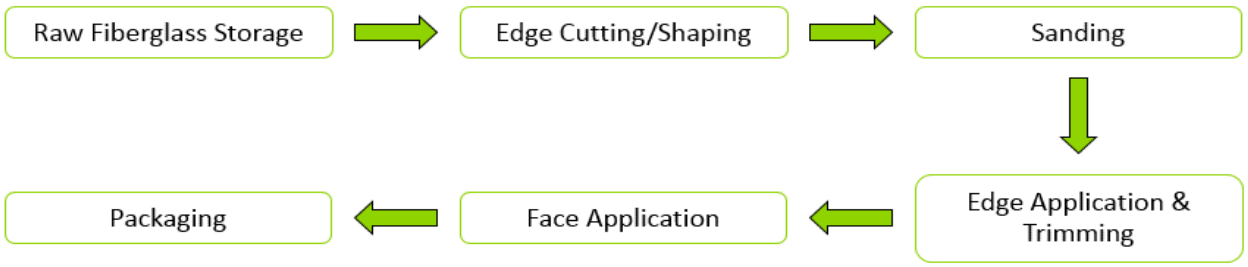
The composition of the Fabric Panel (1 in) MEVAP is as follows:

Component	Percentage in mass (%)
Aluminum	20.20%
EPDM	0.00%
Epoxy	0.00%
ETFE	0.00%
Fabric	8.42%
Fiberglass	54.84%
Glue	14.43%
Paint	0.00%
Polyethylene	0.43%
PVDF	0.00%
Steel	1.68%
Total	100.00%

Manufacturing

Raw fiberglass sheets are inventoried and stored as they arrive to the facility. Next, the fiberglass undergoes a water jet cutting process to shape the sheet, followed by a sanding process. If the panel includes a metal edge, a slit is then cut into the side of the fiberglass sheet in order to facilitate the application of the edge, and the edges are sanded. Next, the core's edges are trimmed, and the facing material is applied, either with glued fabric or a pre-coated fiberglass veil. Once the face is applied, the product is wrapped with plastic film and packaged in a crate, prior to shipment.

Manufacturing Location: Toronto, ON



Environment and Health During Manufacturing

CertainTeed has well-established Environmental, Health, and Safety (EHS) and product stewardship programs, which help to enforce proper evaluation and monitoring of chemicals that are chosen to manufacture products. Their programs ensure that all environmental and OSHA requirements are met or exceeded to ensure the health and safety of all employees and contractors.

Installation

The Decoustics panels must be installed in accordance with all applicable CertainTeed installation guidelines at the time of installation. Approved installation procedures described in the Ceilings Systems Handbook published by the Ceilings & Interior Systems Construction Association must be followed.

Installation of Decoustics is accomplished by manual labor and typically does not require any additional materials. If necessary, cutting is done by hand using handheld cutting tools.

There are no apparent risks involved with the installation of Decoustics' panels since no additional coating or finishing is required. The installer should wear safety glasses while installing the panels to avoid debris from falling into the eyes as well as approved gloves.

Packaging

These products are packaged with cardboard, wood, strapping tape, and styrofoam.

Component	Percentage in mass (%)
Waferboard / Aspenite	36.47%
Spruce	56.44%
Cardboard	2.11%
Strapping Tape	0.45%
Styrofoam	4.52%
Total	100.00%

Use Conditions

Cleaning and Maintenance:

Once installed, acoustic panels typically require no cleaning or maintenance. Maintenance personnel should wear white, clean cotton gloves when handling panels so oils and dirt from hands do not transfer to panels.

Prevention of Structural Damage:

To ensure longevity of the product, make sure panels are not exposed to high humidity or high temperatures.

Environmental and Health During Use

Acoustic panels are stationary during typical use and do not emit harmful emissions.

Broken or damaged panels should be picked up and placed in a container. Dust generated from making modifications of the panel should be cleaned by wet wiping or filtered vacuuming. Do not dry sweep or use compressed air to remove dust.

Reference Service Life

The Reference Service Life is determined by the guidance from the Product Category Rules and varies by product type. This specific product has a RSL of 75 years.

Extraordinary Effects

Fire
No negative environmental impact will result from exposure to fire.

Water
This product is subject to water damage. No water or water vapor from sources including, but not limited to, condensation, leaking pipes and/or ducts, or steam must come in contact with the acoustic panels.

Mechanical Destruction
There are no adverse environmental effects anticipated from the mechanical destruction of the product.

Re-use Phase

At this time, there are no re-use scenarios available for Decoustics acoustical panel products.

Disposal

Final product disposal is modeled as 100% to inert material landfill.

Further Information

Decoustics
61 Royal Group Crescent
Woodbridge, Ontario
Canada

Life Cycle Assessment

Functional Unit

The declaration refers to the functional unit of 1 m² of Fabric Panel (1 in) MEVAP.

Name	Value	Unit
Declared unit	1	m²
Declared thickness	2.60 to 2.90	cm
Weight per declared unit	4.14	kg/m²

System Boundary

This is a cradle to grave Environmental Product Declaration. The following life cycle phases were considered:

Product Stage			Construction Process Stage		Use Stage							End of Life Stage*				Benefits and Loads Beyond the System Boundaries
Raw material supply	Transport	Manufacturing	Transport from gate to the site	Construction/ installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction /demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	MND

Description of the System Boundary Stages Corresponding to the PCR
(X = Included; MND = Module Not Declared)

*This includes provision of all materials, products and energy, packaging processing and its transport, as well as waste processing up to the end-of waste state or disposal of final residues.

Estimates and Assumptions

Transport:
For materials and pre-products, the actual means of transport and distances, provided by the suppliers, were considered.
EoL:
In the End of Life phase, all materials are assumed to be disposed of in a 100% inert material landfill.

Cut-off Criteria

Processes whose total contribution to the final result, with respect to their mass and in relation to all considered impact categories, is less than 1% can be neglected. The sum of the neglected processes may not exceed 5% by mass of the considered impact categories. For that a documented assumption is admissable.

For Hazardous Substances - as defined by the U.S. Occupational Health and Safety Act the following requirements apply:

- The Life Cycle Inventory (LCI) of hazardous substances will be included, if the incentory is available.
- If the LCI for a hazardous substance is not availoable, the substance will appear as an input in the LCI of the product, if its mass represents more than 0.1% of the product composition.
- If the LCI of a hazardous substance is approximated by modeling another substance, documentation will be provided.

This EPD is in compliance with the cut-off criteria. No processes were neglected or excluded. Capital items for the production processes (machine, buildings, etc.) were not taken into consideration.

Background data

For life cycle modeling the SimaPro v8.1 Software System for Life Cycle Engineering, a recognized LCA modeling software program, was used. All background data sets relevant for production and disposal were taken from this software except for the mineral wool model, which was created based on data provided by industry experts and AP-42, Compilation of Air Pollutant Emission Factors.

Data Quality

For the data used in this LCA, the data quality is considered to be good to high quality. The data and data sets cover all relevant process steps and technologies over the supply chain of the represented ceiling panel products. The majority of secondary data sets are from the SimaPro v8.1 database and wherever secondary data are used, the study adopts critically reviewed data wherever possible for consistency, precision, and reducibility to limit uncertainty. The data used are complete and representative of North America in terms of the geographic and technological coverage and is of a recent vintage, i.e. less than ten years old.

Period Under Review

The data used for the Life Cycle Assement refer to the production processes from October 2016 to September 2016. The quantities of raw materials, energies, auxilary materials, and supplies used have been ascertained as average annual values.

Allocation

The LCI data was collected from the Toronto, ON manufacturing facility from October 2016 to September 2017. The manufacturing for all products made at this facility have similar energy, waste, and water input requirements. Allocation was done on an area basis.

Comparability

Comparison of EPD data of Decoustics products is only permissible if all data sets to be compared are created according to EN 15804 and are considered in a whole building context or utilize identical defined use stage scenarios. Comparisons are only allowed when EPDs report cradle-to-grave information using a functional unit.

LCA: Modeling Scenarios and Additional Technical Information - Fabric Panel (1 in)

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment if modules are not declared. Any information omitted from the following scenario tables was done so intentionally as it was unrelated and had no presentable values.

Transport to Building Site (A4)		
Name	**Value**	**Unit**
Liters of fuel	38	l/100km
Transport distance	1000	km
Capacity utilization (including empty runs)	90	%
Gross density of products transported	-	kg/m^3
Capacity utilization volume factor	0.68	-

Maintenance (B2)		
Name	**Value**	**Unit**
Information on maintenance	*	-
Maintenance cycle	-	Number / RSL
Maintenance cycle	-	Number / ESL
Water consumption (from tap, to sewer)	-	m^3
Auxiliary materials (cleaing agent)	-	kg
Other resources	-	kg
Electricity consumption	-	kWh
Other energy carriers	-	MJ
Material loss	-	kg

** No Maintenance Required*

Installation into the Building (A5)		
Name	**Value**	**Unit**
Auxiliary materials	0.22	kg
Water consumption	-	m^3
Other resources	-	kg
Electricity consumption	-	kWh
Other energy carriers	-	MJ
Waster materials at construction site	0.57	kg
Output substance (landfill)	0.57	kg
Output substance (incineration)	-	kg
Direct emissions to ambient air*, soil, and water	1.40	kg CO_2

** CO_2 emissions to air from disposal of packaging*

Replacement (B4) / Refurbishment (B5)		
Name	**Value**	**Unit**
Replacement cycle	-	Number / RSL
Replacement cycle	0.0	Number / ESL

End of Life (C1 - C4)		
Name	**Value**	**Unit**
Collected separately	-	kg
Collected as mixed construction waste	4.14	kg
Reuse	-	kg
Recycling	-	kg
Energy recovery	-	kg
Landfilling	4.14	kg

LCA Results - Fabric Panel (1 in)

Results shown below were calculated using TRACI 2.1 Methodology.

TRACI 2.1 Impact Assessment

Parameter	Parameter	Unit	A1-A3	A4	A5	B2*	C1	C2	C3	C4
GWP	Global warming potential	kg CO_2-Eq.	3.30E+01	3.90E-01	2.70E+00	0.00E+00	3.20E-03	1.90E-02	0.00E+00	1.90E-01
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	6.60E-07	1.50E-11	3.40E-14	0.00E+00	3.30E-14	7.30E-13	0.00E+00	3.40E-14
AP Air	Acidification potential for air emissions	kg SO_2-Eq.	1.70E-01	2.40E-03	2.40E-02	0.00E+00	2.80E-05	1.20E-04	0.00E+00	8.50E-04
EP	Eutrophication potential	kg N-Eq.	2.90E-02	1.30E-04	6.30E-03	0.00E+00	4.00E-07	6.40E-06	0.00E+00	4.30E-05
SP	Smog formation potential	kg O_3-Eq.	1.70E+00	6.50E-02	5.10E-02	0.00E+00	2.20E-04	3.20E-03	0.00E+00	1.70E-02
FFD	Fossil fuel depletion	MJ-surplus	5.20E+01	7.00E-01	3.30E-01	0.00E+00	2.00E-03	3.40E-02	0.00E+00	3.70E-01

**All use phase stages have been considered, and only maintenance (B2) contains non-zero values, which are reported above. The remainder of use phase stages have values of zero.*

Results shown below were calculated using CML 2001 - April 2013 Methodology.

CML 4.1 Impact Assessment

Parameter	Parameter	Unit	A1-A3	A4	A5	B2*	C1	C2	C3	C4
GWP	Global warming potential	kg CO_2-Eq.	2.50E+01	3.90E-01	4.20E+00	0.00E+00	3.20E-03	1.90E-02	0.00E+00	1.80E-01
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	6.00E-07	1.50E-11	3.40E-14	0.00E+00	2.80E-14	7.30E-13	0.00E+00	3.40E-14
AP Air	Acidification potential for air emissions	kg SO_2-Eq.	1.70E-01	1.90E-03	8.40E-03	0.00E+00	3.10E-05	9.50E-05	0.00E+00	7.80E-04
EP	Eutrophication potential	kg$(PO_4)^3$-Eq.	2.50E-02	3.50E-04	7.40E-03	0.00E+00	1.10E-06	1.70E-05	0.00E+00	1.00E-04
POCP	Formation potential of tropospheric ozone photochemical oxidants	kg ethane-Eq.	1.50E-02	2.30E-04	2.40E-03	0.00E+00	3.00E-06	1.10E-05	0.00E+00	6.60E-05
ADPE	Abiotic depletion potential for non-fossil resources	kg Sb-Eq.	3.00E-04	1.60E-10	7.20E-08	0.00E+00	3.60E-11	8.00E-12	0.00E+00	7.90E-08
ADPF	Abiotic depletion potential for fossil resources	MJ	4.50E+02	5.00E+00	2.60E+00	0.00E+00	4.60E-02	2.40E-01	0.00E+00	2.90E+00

**All use phase stages have been considered, and only maintenance (B2) contains non-zero values, which are reported above. The remainder of use phase stages have values of zero.*

Results below contain the resource use throughout the life cycle of the product.

Resource Use

Parameter	Parameter	Unit	A1-A3	A4	A5	B2*	C1	C2	C3	C4
PERE	Renewable primary energy as energy carrier	MJ, lower calorific value	1.80E+02	0.00E+00	1.90E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.10E-01
PERM	Renewable primary energy resources as material utilization	MJ, lower calorific value	6.35E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	Total use of renewable primary energy resources	MJ, lower calorific value	2.43E+02	0.00E+00	1.90E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.10E-01
PENRE	Nonrenewable primary energy as energy carrier	MJ, lower calorific value	5.30E+02	5.00E+00	2.70E+00	0.00E+00	5.60E-02	2.50E-01	0.00E+00	2.90E+00
PENRM	Nonrenewable primary energy as material utilization	MJ, lower calorific value	2.44E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	Total use of nonrenewable primary energy resources	MJ, lower calorific value	5.54E+02	5.00E+00	2.70E+00	0.00E+00	5.60E-02	2.50E-01	0.00E+00	2.90E+00
SM	Use of secondary material	MJ, lower calorific value	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	Use of renewable secondary fuels	MJ, lower calorific value	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	Use of nonrenewable secondary fuels	MJ, lower calorific value	8.55E+01	6.12E-03	0.00E+00	0.00E+00	0.00E+00	3.06E-04	0.00E+00	0.00E+00
FW	Use of net fresh water	m^3	1.20E+02	0.00E+00	8.30E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.00E-02

**All use phase stages have been considered, and only maintenance (B2) contains non-zero values, which are reported above. The remainder of use phase stages have values of zero.*

Results below contain the output flows and wastes throughout the life cycle of the product.

Output Flows and Waste Categories

Parameter	Parameter	Unit	A1-A3	A4	A5	B2*	C1	C2	C3	C4
HWD	Hazardous waste disposed	kg	8.59E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD	Non-hazardous waste disposed	kg	4.60E-02	0.00E+00	3.72E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.16E+00
RWD	Radioactive waste disposed	kg	2.90E-02	0.00E+00	3.00E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.00E-05
CRU	Components for re-use	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
MFR	Materials for recycling	kg	6.13E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ETE	Exported thermal energy	MJ	1.40E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**All use phase stages have been considered, and only maintenance (B2) contains non-zero values, which are reported above. The remainder of use phase stages have values of zero.*

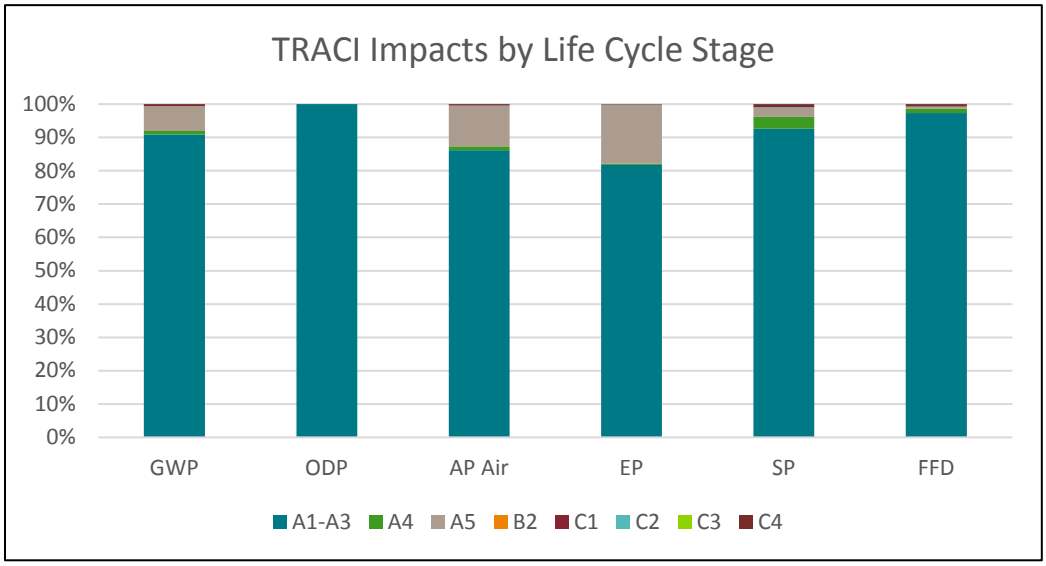
Results below contain direct greenhouse gas emissions and removals throughout the life cycle of the product.

Greenhouse Gas Emissions and Removals										
Parameter	**Parameter**	**Unit**	**A1-A3**	**A4**	**A5**	**B2***	**C1**	**C2**	**C3**	**C4**
BCRP	Biogenic Carbon Removal from Product	MJ, lower calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP	Biogenic Carbon Emissions from Product	MJ, lower calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK	Biogenic Carbon Removal from Packaging	MJ, lower calorific value	1.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	Biogenic Carbon Emissions from Packaging	MJ, lower calorific value	0.00E+00	0.00E+00	1.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW	Biogenic Cabron Emissions from Combustion of Waste from Renewable Sources Used in Production Process	MJ, lower calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE	Calcination Carbon Emissions	MJ, lower calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR	Carbonation Carbon Removal	MJ, lower calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR	Cabron Emissions from Combustion of Waste from Non-renewable Sources Used in Production Process	MJ, lower calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**All use phase stages have been considered, and only maintenance (B2) contains non-zero values, which are reported above. The remainder of use phase stages have values of zero.*

Interpretation

The production life cycle stage (A1-A3) dominates the impacts across all impact categories. This is due to the upstream production of fiberglass used in the product, along with electricity use in the manufacturing of the product. Construction and installation of this product has a notable impact on global warming, acidification potential for air emissions, and eutrophication. Potential benefits are due to the potential avoided burden of recycled materials after disposal.



LCA: Modeling Scenarios and Additional Technical Information - Ceilencio Mounting

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment if modules are not declared. Any information omitted from the following scenario tables was done so intentionally as it was unrelated and had no presentable values.

Transport to Building Site (A4)		
Name	**Value**	**Unit**
Liters of fuel	38	l/100km
Transport distance	0	km
Capacity utilization (including empty runs)	90	%
Gross density of products transported	-	kg/m^3
Capacity utilization volume factor	0.68	-

Maintenance (B2)		
Name	**Value**	**Unit**
Information on maintenance	*	-
Maintenance cycle	-	Number / RSL
Maintenance cycle	-	Number / ESL
Water consumption (from tap, to sewer)	-	m^3
Auxiliary materials (cleaing agent)	-	kg
Other resources	-	kg
Electricity consumption	-	kWh
Other energy carriers	-	MJ
Material loss	-	kg

** No Maintenance Required*

Installation into the Building (A5)		
Name	**Value**	**Unit**
Auxiliary materials	-	kg
Water consumption	-	m^3
Other resources	-	kg
Electricity consumption	-	kWh
Other energy carriers	-	MJ
Waster materials at construction site	0.15	kg
Output substance (landfill)	0.15	kg
Output substance (incineration)	-	kg
Direct emissions to ambient air*, soil, and water	1.40	kg CO_2

** CO_2 emissions to air from disposal of packaging*

Replacement (B4) / Refurbishment (B5)		
Name	**Value**	**Unit**
Replacement cycle	-	Number / RSL
Replacement cycle	0.0	Number / ESL

End of Life (C1 - C4)		
Name	**Value**	**Unit**
Collected separately	-	kg
Collected as mixed construction waste	1.07	kg
Reuse	-	kg
Recycling	-	kg
Energy recovery	-	kg
Landfilling	1.07	kg

LCA Results - Ceilencio Mounting

Results shown below were calculated using TRACI 2.1 Methodology.

TRACI 2.1 Impact Assessment

Parameter	Parameter	Unit	A1-A3	A4	A5	B2*	C1	C2	C3	C4
GWP	Global warming potential	kg CO_2-Eq.	2.00E+01	1.00E-01	2.70E+00	0.00E+00	3.20E-03	5.00E-03	0.00E+00	4.80E-02
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	8.40E-08	3.80E-12	3.40E-14	0.00E+00	3.30E-14	1.90E-13	0.00E+00	8.70E-15
AP Air	Acidification potential for air emissions	kg SO_2-Eq.	1.10E-01	6.10E-04	2.40E-02	0.00E+00	2.80E-05	3.00E-05	0.00E+00	2.20E-04
EP	Eutrophication potential	kg N-Eq.	4.00E-03	3.40E-05	6.30E-03	0.00E+00	4.00E-07	1.70E-06	0.00E+00	1.10E-05
SP	Smog formation potential	kg O_3-Eq.	8.20E-01	1.70E-02	5.10E-02	0.00E+00	2.20E-04	8.20E-04	0.00E+00	4.30E-03
FFD	Fossil fuel depletion	MJ-surplus	3.00E+01	1.80E-01	3.30E-01	0.00E+00	2.00E-03	8.80E-03	0.00E+00	9.40E-02

**All use phase stages have been considered, and only maintenance (B2) contains non-zero values, which are reported above. The remainder of use phase stages have values of zero.*

Results shown below were calculated using CML 2001 - April 2013 Methodology.

CML 4.1 Impact Assessment

Parameter	Parameter	Unit	A1-A3	A4	A5	B2*	C1	C2	C3	C4
GWP	Global warming potential	kg CO_2-Eq.	1.40E+01	1.00E-01	4.20E+00	0.00E+00	3.20E-03	5.00E-03	0.00E+00	4.70E-02
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	7.40E-08	3.80E-12	3.40E-14	0.00E+00	2.80E-14	1.90E-13	0.00E+00	8.70E-15
AP Air	Acidification potential for air emissions	kg SO_2-Eq.	1.10E-01	5.00E-04	8.40E-03	0.00E+00	3.10E-05	2.40E-05	0.00E+00	2.00E-04
EP	Eutrophication potential	kg$(PO_4)^3$-Eq.	5.90E-03	8.90E-05	7.40E-03	0.00E+00	1.10E-06	4.40E-06	0.00E+00	2.60E-05
POCP	Formation potential of tropospheric ozone photochemical oxidants	kg ethane-Eq.	9.40E-03	5.80E-05	2.40E-03	0.00E+00	3.00E-06	2.90E-06	0.00E+00	1.70E-05
ADPE	Abiotic depletion potential for non-fossil resources	kg Sb-Eq.	2.30E-05	4.20E-11	7.20E-08	0.00E+00	3.60E-11	2.10E-12	0.00E+00	2.00E-08
ADPF	Abiotic depletion potential for fossil resources	MJ	2.70E+02	1.30E+00	2.60E+00	0.00E+00	4.60E-02	6.30E-02	0.00E+00	7.40E-01

**All use phase stages have been considered, and only maintenance (B2) contains non-zero values, which are reported above. The remainder of use phase stages have values of zero.*

Results below contain the resource use throughout the life cycle of the product.

Resource Use

Parameter	Parameter	Unit	A1-A3	A4	A5	B2*	C1	C2	C3	C4
PERE	Renewable primary energy as energy carrier	MJ, lower calorific value	1.50E+02	0.00E+00	1.90E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.30E-02
PERM	Renewable primary energy resources as material utilization	MJ, lower calorific value	6.35E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	Total use of renewable primary energy resources	MJ, lower calorific value	2.13E+02	0.00E+00	1.90E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.30E-02
PENRE	Nonrenewable primary energy as energy carrier	MJ, lower calorific value	3.20E+02	1.30E+00	2.70E+00	0.00E+00	5.60E-02	6.30E-02	0.00E+00	7.50E-01
PENRM	Nonrenewable primary energy as material utilization	MJ, lower calorific value	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	Total use of nonrenewable primary energy resources	MJ, lower calorific value	3.20E+02	1.30E+00	2.70E+00	0.00E+00	5.60E-02	6.30E-02	0.00E+00	7.50E-01
SM	Use of secondary material	MJ, lower calorific value	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	Use of renewable secondary fuels	MJ, lower calorific value	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	Use of nonrenewable secondary fuels	MJ, lower calorific value	8.55E+01	1.58E-03	0.00E+00	0.00E+00	0.00E+00	7.89E-05	0.00E+00	0.00E+00
FW	Use of net fresh water	m^3	1.30E+02	0.00E+00	8.30E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E-02

**All use phase stages have been considered, and only maintenance (B2) contains non-zero values, which are reported above. The remainder of use phase stages have values of zero.*

Results below contain the output flows and wastes throughout the life cycle of the product.

Output Flows and Waste Categories

Parameter	Parameter	Unit	A1-A3	A4	A5	B2*	C1	C2	C3	C4
HWD	Hazardous waste disposed	kg	2.56E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD	Non-hazardous waste disposed	kg	2.40E-04	0.00E+00	3.72E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E+00
RWD	Radioactive waste disposed	kg	2.20E-02	0.00E+00	3.00E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.70E-06
CRU	Components for re-use	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
MFR	Materials for recycling	kg	6.13E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ETE	Exported thermal energy	MJ	1.40E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**All use phase stages have been considered, and only maintenance (B2) contains non-zero values, which are reported above. The remainder of use phase stages have values of zero.*

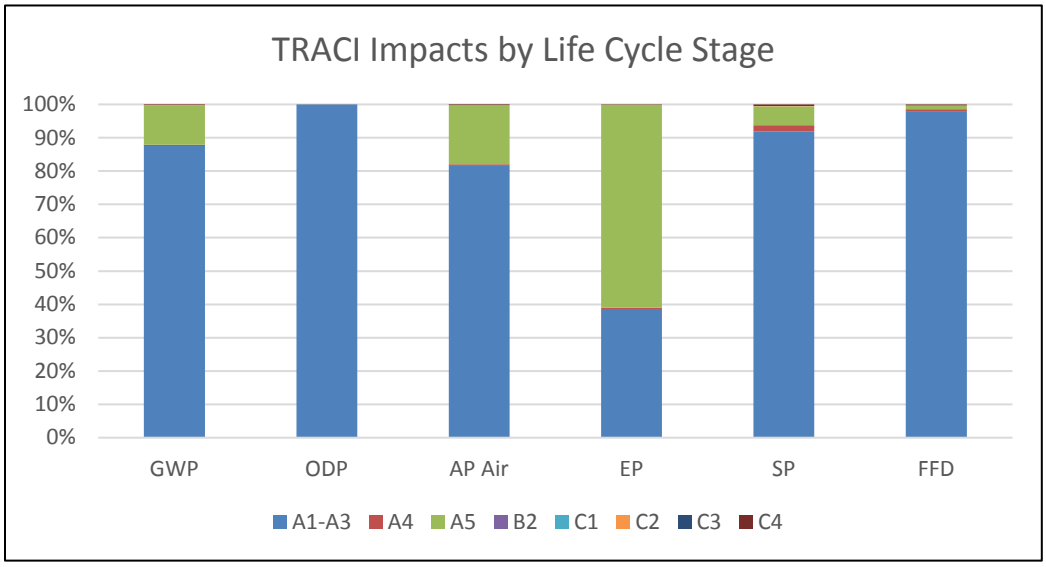
Results below contain direct greenhouse gas emissions and removals throughout the life cycle of the product.

Greenhouse Gas Emissions and Removals										
Parameter	**Parameter**	**Unit**	**A1-A3**	**A4**	**A5**	**B2***	**C1**	**C2**	**C3**	**C4**
BCRP	Biogenic Carbon Removal from Product	MJ, lower calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP	Biogenic Carbon Emissions from Product	MJ, lower calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK	Biogenic Carbon Removal from Packaging	MJ, lower calorific value	1.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	Biogenic Carbon Emissions from Packaging	MJ, lower calorific value	0.00E+00	0.00E+00	1.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW	Biogenic Cabron Emissions from Combustion of Waste from Renewable Sources Used in Production Process	MJ, lower calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE	Calcination Carbon Emissions	MJ, lower calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR	Carbonation Carbon Removal	MJ, lower calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR	Cabron Emissions from Combustion of Waste from Non-renewable Sources Used in Production Process	MJ, lower calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**All use phase stages have been considered, and only maintenance (B2) contains non-zero values, which are reported above. The remainder of use phase stages have values of zero.*

Interpretation

The production life cycle stage (A1-A3) dominates the impacts across all impact categories, except eutrophication potential. This is due to the upstream production of fiberglass used in the product, along with electricity use in the manufacturing of the product. Construction and installation of this product has a notable impact on global warming, acidification potential for air emissions, eutrophication, and smog. Potential benefits are due to the potential avoided burden of recycled materials after disposal.



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