

# Environmental Product Declaration



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

## Concrete Stairwells

from

**Alistron AS**



Programme:

Programme operator:

EPD registration number:

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## General information

### Programme information

<b>Programme:</b>	The International EPD® System
<b>Address:</b>	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
<b>Website:</b>	<a href="http://www.environdec.com">www.environdec.com</a>
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<b>Accountabilities for PCR, LCA and independent, third-party verification</b>
<b>Product Category Rules (PCR)</b>
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): <i>Construction Products, PCR 2019:14 Version 1.2.5</i>
PCR review was conducted by: <i>The Technical Committee of the International EPD® System. See <a href="http://www.environdec.com/TC">www.environdec.com/TC</a> for a list of members. Review chair: Claudia A. Peña, University of Concepción (Chile). The review panel may be contacted via the Secretariat <a href="mailto:info@environdec.com">info@environdec.com</a></i>
<b>Life Cycle Assessment (LCA)</b>
LCA accountability: <i>Bureau Veritas Latvia SIA. Email: <a href="mailto:riga@bureauveritas.com">riga@bureauveritas.com</a></i>
<b>Third-party verification</b>
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: <input checked="" type="checkbox"/> EPD verification by individual verifier Third-party verifier: Joanna Zhuravlova, Bureau Veritas Polska Sp. z o.o. 
Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves a third-party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

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

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g., identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

## Company information

Owner of the EPD: Alistron AS

Contact: alistron@alistron.ee

Description of the organization: AS ALISTRON was established in 1994. The company started with the production of building materials – mosaic concrete, i.e., terrazzo steps for interior stairways. A year later, the production of steps for outdoor Stairwells, as well as offering installation services, began. Since 2008, we have been manufacturing staircase elements from reinforced concrete as well as dealing with terrazzo finish, which became our main product. In cooperation with Finnish and Italian companies we have unified terrazzo and wash concrete tones, which allows us to combine materials of local and foreign origin. With the help of the same companies, we have acquired the production of monolithic flooring. Our clients include Tallinn café Pegasus, the Estonian Embassy in Berlin, the Estonian Embassy in Brussels, Hotel Ülemiste, Rotermann shopping centre and many other objects where monolithic flooring is used. In addition, we carry out installation of terrazzo tiles. The clients include the Lõuna Centre in Tartu, Prisma in Tallinn, several objects in St. Petersburg, Finland, Latvia. We also install natural stone and ceramic tiles. We have just acquired the world-leading flooring technology based on the SIB technology.

The business idea of AS Alistron is to provide architects, construction companies and building owners with high quality mosaic concrete (terrazzo in Italian) and wash concrete solutions, which can be both in elemental and monolithic forms. Recently, we also have been casting Stairwells with different surface finishes (terrazzo, wash concrete, hammered surface, mould surface). The area of activity is mainly in Estonia as well as in Finland, Sweden and Latvia.

Product-related or management system-related certifications:

ISO 9001 – since 2004

EVS EN 14843:2008 since 2008

ISO 14001:2004 since 2011

TR 15:2017 (INSPECTA FI) since 2012

EN 13369:2004+EN 13369:2004/A1:2006 (NORDSERT BBC No.2256) since 2019

Name and location of production site(s): Maealuse 10B ,12618, Tallinn, Estonia.

## Product information

Product name: Concrete Stairwells.

Product identification: Concrete Stairwells.

Product description: Concrete stairwells manufactured by Alistron are made according to individual drawings. Elements can be different geometry: straight, L-shaped, spiral, with 1 or 2 beams, etc. The type of aggregates (fraction and colour), geometry of edges (chamfers, skurkants etc.) is determined by the client. The product has BBC, FI, CE certificates and meets all customer requirements.

UN CPC code: 37550 - Prefabricated structural components for building or civil engineering, of cement, concrete or artificial stone.

Intended use:

No substance exceeds 0.1% in the final products of the "Candidate List of Substances of Very High Concern (SVHC) for authorization."

Geographical scope: This EPD has a European Scope, as installation activities and primary raw materials are independent of the region where the products will be installed. Nonetheless, it must be clarified that transport distances to installation sites (Stage A4) in the model under study correspond to several construction sites in different parts of Europe.

**LCA information**

Declared unit: The declared unit is one metric tonne of a concrete stair element.

Reference service life: The reference service life for concrete Stairwells is assumed as 50 years.

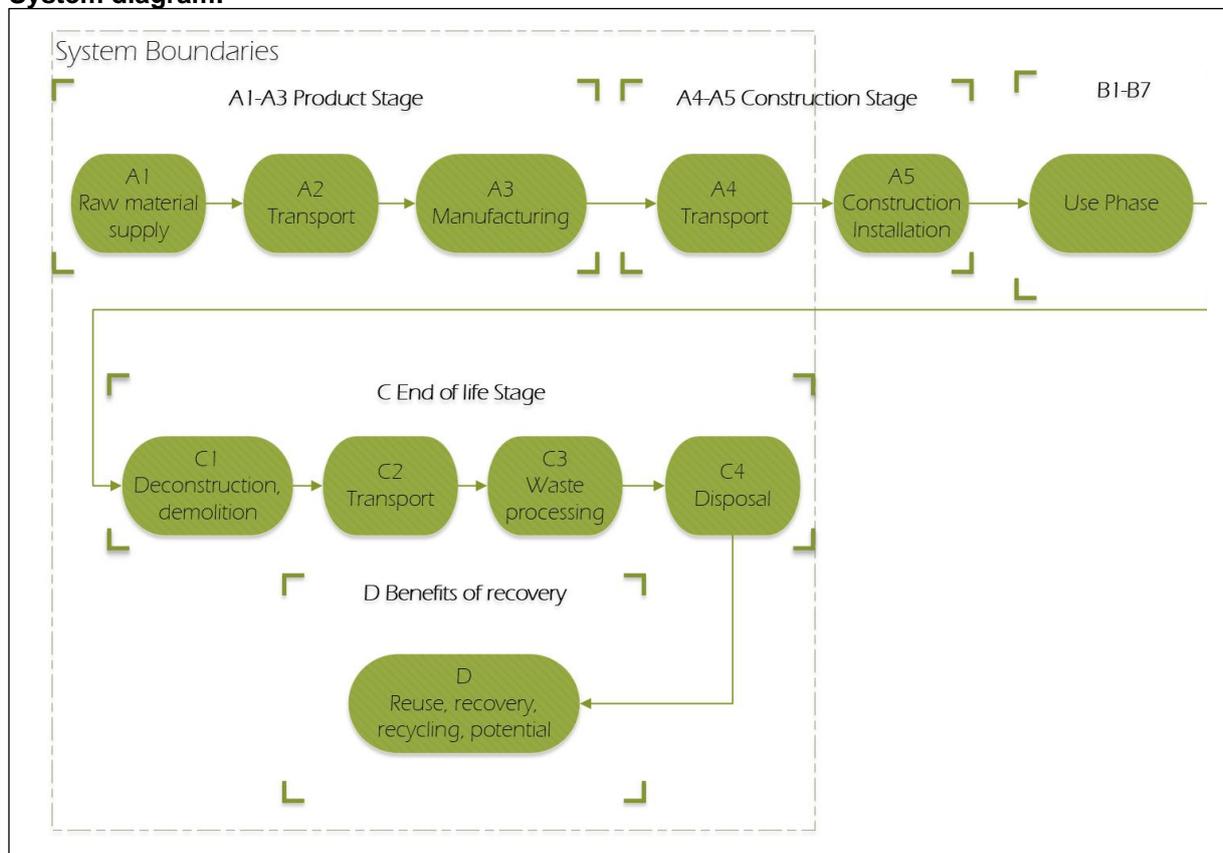
Time representativeness: The primary data was gathered internally. All production data corresponds to values for the year 2022.

Database(s) and LCA software used: The Ecoinvent 3.8v was used to conduct the quantitative evaluation in this study. This database provided the background system's life cycle inventory data for raw and processed materials. The LCA software utilized was SimaPro 9.4. To obtain the results following the provisions of EN 15804:2012+A2:2019, the "EN 15804:A1+A2:2019 method", "EDIP 2003", "CED (LHV)" and "IPCC GWP100a" calculation methods have been used for environmental impacts, waste generation, use of resources and biogenic carbon content respectively.

Description of system boundaries:

b) Cradle to gate with options. The LCA was carried out considering the product stage A1-A3, modules C1–C4, module D, and the additional optional module A4.

**System diagram:**



More information: During this LCA, the *polluters pay*, and modularity principles have been followed. Double counting has been avoided. This EPD is intended for a specific product rather than for multiple products.

The processes related to infrastructure, construction, and production of equipment and tools that are not directly consumed in the production process have been excluded. Activities personnel-related, such as transportation to and from work, have been excluded. Long-term emissions are also excluded from the impacts.

Data quality: The foreground data was collected internally, considering the latest available average production amounts and measures during the last year. Data regarding waste processes and scenarios were taken from waste scenarios for Europe contained in Ecoinvent 3.8.

The quality level is good according to the UN Environment Global Guidance criteria on LCA database development. Data is geographically representative as it comes from the area of study. It is technically representative as it comes from processes and products under study using the same state of technology defined in goal and scope. According to the documentation, it is also time representative as data was collected less than three years between the reference year. A data quality rating was performed using a rating system where one means excellent, and five are poor. An average for each criterion is presented as follows:

Technological Representativeness, TeR	Geographic representativeness, GeR	Time Representativeness, TiR	Precision, P	Average DQR
2.00	2.49	1.80	2.51	2.2

Cut-off criteria: All primary raw materials and processes have been considered. Only less than 1% of total material and energy flows were excluded, and 5% of materials and energy per module.

Allocation: The EN 15804 and PCR 2019:14, recommend that allocation among products and co-products should be avoided when possible. However, in this study, an allocation by mass has been conducted due to an existing co-product labeled as foundation blocks. The allocation by mass has been applied for the Product Stage (Modules A1-A3) and material and energy flows have been allocated to the main product following physical/mass criteria. The allocation factors are as follow:

Products	kg	Allocation factor %
Concrete stairs	1000	98.1%
Foundation blocks	19.1	1.9%

## Stages and Production description

Manufacturing summary: The production of the concrete stairwells begins after receiving the design and drawings approved by a customer. First, a mould satisfying customer designs is created. Next, polished steps and risers are installed in the mould. The reinforcing cage is installed on special clamps to comply with the protective layer. The concrete is brought from a ready-mix factory or produced independently and cast in forms. Twenty-four hours later, the concrete stairwells are removed from the mould, for final finishing and packaging.

### Product Stage

*A1 – Raw material supply:* This stage considers the extraction and processing of all raw materials.

*A2 - Transport:* This stage accounts for the transport activities of raw materials to the facilities in Estonia. It includes road transport by lorry and light commercial vehicles.

*A3 - Manufacturing:* This stage includes the manufacturing process conducted in the facilities before the transport to the different locations in Europe. The input of packaging materials is considered in this stage. Waste treatment activities derived from manufacturing are also accounted for until such waste elements reach the end of waste state. The modeled electricity mix for Estonia is presented as follows:

Electricity Source	Share in the Estonian electricity mix	GWP 100a (kg CO <sub>2</sub> eq.)/kWh
Hydro, run-of-river	0.16%	1.22E-08
Oil	31.42%	1.08E-01
Peat	0.18%	6.41E-04
Wind, <1MW turbine, onshore	0.17%	8.29E-08
Wind, >3MW turbine, onshore	0.24%	1.19E-07
Wind, 1-3MW turbine, onshore	5.66%	2.82E-06
Import from Finland	37.26%	2.17E-02
Import from Latvia	6.17%	8.29E-03
Heat and power co-generation, biogas, gas engine	0.28%	1.70E-04
Heat and power co-generation, natural gas, conventional power plant, 100MW electrical	0.15%	2.66E-04
Heat and power co-generation, oil	1.44%	3.63E-03
Heat and power co-generation, wood chips, 6667 kW	9.26%	1.12E-03
Coal gas, in power plant	7.61%	2.46E-02

### **Construction Stage**

*A4 – Transport to the construction site:* This stage reflects transporting the final product from production to the construction site. This stage has modeled different destinations, representing the latest year's sales distribution.

Destination	Share of product transported
Sweden	24%
Finland	56%
Baltic countries	20%

Two types of transport means are used for the distribution of the product to the final customers sites. For transport by road, the following characteristics were followed:

PARAMETER	VALUE/DESCRIPTION
Fuel type and consumption of vehicle or vehicle type used for transport, e.g., long-distance truck, commercial vehicle, etc.	Average freight lorry EURO5 with capacities varying from 16 – 32 metric tonnes. The transport dataset is taken from Ecoinvent 3.8, which includes empty returns.
Distance	The distances correspond to the intended destinations.
Average load factor (including empty returns)	- 5.79 tonnes, as reported in Ecoinvent 3.8 database
Volume capacity utilization factor	80% (average)

For transport by road, the following characteristics were followed:

PARAMETER	VALUE/DESCRIPTION
Fuel type and consumption of vehicle or vehicle type used for transport, e.g., long-distance truck, boat, etc.	Sea, ferry, heavy fuel oil consumption of 0.0012 kg per tkm.
Distance	Sweden: 290 km Finland: 80 km Baltic region: 150 km
Volume capacity utilization factor	- 50% (average)

*A5 – Construction/Installation:* This stage includes the on-site assembly of the product. In this study, the installation of the concrete Stairwells has not been considered due to the high uncertainty regarding the energy consumption and equipment utilized for this activity. This module is, therefore, not declared in this Environmental Product Declaration.

#### **Use Stage:**

During a regular-use scenario, it is assumed that no maintenance, repair, replacement, and/or refurbishment is required. Hence this optional stage is not considered (B1–B5). Energy or water consumption is unnecessary and thus not declared for the building operation (B6-B7).

#### **End of Life Stage:**

*C1 – Deconstruction/Demolition:* Deconstruction or dismantling of the entire building. The environmental impact is assumed to correspond to emissions from the Stairwells dismantling, and the fuel required for the machinery to perform the demolition tasks.

*C2 - Transport:* Transport to waste disposal treatment site: 50 km is assumed.

*C3 – Waste processing:* This stage is modeled considering the average waste treatment scenario available in Ecoinvent for the EU-27. This decision was made regarding the locations modeled for the construction module across European countries.

*C4 - Disposal:* The remaining concrete element is modeled as disposed of in an inert landfill. This assumption followed the average European waste treatment scenario for concrete elements in the Ecoinvent 3.8 database.

The main assumptions during the end-of-life stage are summarized in the following table:

PARAMETER	VALUE/DESCRIPTION
<b>Collection process specified by type</b>	Dismantling of the concrete element. Energy consumption and air emissions from dismantling reinforced concrete elements.
<b>Recovery system specified by type</b>	20% of the concrete element is recycled.

<b>Disposal specified by type</b>	<ul style="list-style-type: none"> <li>- 30% for final disposal:             <ul style="list-style-type: none"> <li>o Scrap steel</li> <li>o Landfill</li> </ul> </li> <li>- 50% to sorting plant:             <ul style="list-style-type: none"> <li>o To clinker production</li> </ul> </li> <li>- Landfill</li> </ul>
<b>Assumptions for scenario development (e.g., transportation)</b>	Municipal waste collection service by 21 metric tonne lorry, 50 km to the waste treatment disposal sites.

Benefits and loads beyond the system boundaries:

*D – Benefits or recovery:* The benefits and loads beyond the system boundaries include transporting the recovered materials to a market where they could theoretically replace primary materials for re-use, if necessary. In this study, we assumed the recycled reinforced concrete and steel scrap would substitute the production of the same/equivalent products. To model derived benefits, substituted products have been treated as "avoided products" in SimaPro.

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

	Product stage			Construction process stage		Use stage							End-of-life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	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	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	EUR	EUR	EE	EUR	ND	ND	ND	ND	ND	ND	ND	ND	EUR	EUR	EUR	EUR	EUR
Specific data used	> 90%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%					-	-	-	-	-	-	-	-	-	-	-	-

Description of the system boundary (X = Included in LCA; ND = Not declared; NR = Not relevant)

## Content information

The following table corresponds to the weighted average material content for the concrete Stairwells product.

Product components	Weight, kg	Post-consumer material, weight	Renewable material, weight
Cement	130 - 150	0.00%	0%
Stone and Sand	700 - 730	0.00%	0%
Reinforcement Steel	< 40	0.00%	0%
Additives	< 5	0.00%	0%
Concrete slabs	30 - 35	0.00%	0%
Water	120 - 140	0.00%	100%
TOTAL	1000	0.0%	13.0%
Packaging materials	Weight, kg	Weight-% (versus the product)	Renewable material, weight-%
Plywood	5 - 6	0.5%	100%
OSB	20 - 25	2%	100%
TOTAL	< 30	2.50%	100.00%

No dangerous substances from the candidate list of SVHC are contained in the product.

The biogenic carbon content in the product leaving the factory gate is less than 5% w/w; hence, the declaration of biogenic carbon content has been omitted. However, the biogenic carbon content in the packaging accompanying the product is presented in the following table:

Biogenic carbon content	Value (kg)
Carbon content in accompanying packaging	11.12

## Results of the environmental performance indicators

Data results are now presented for the concrete Stairwells product in its declared unit of 1 metric ton.

### Mandatory impact category indicators according to EN 15804

Results per declared unit								
Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP-fossil	kg CO <sub>2</sub> eq.	2.7E+02	3.2E+01	5.3E+00	6.8E+00	7.5E-01	1.3E+00	-2.6E+01
GWP-biogenic	kg CO <sub>2</sub> eq.	-3.9E+01	9.3E-03	1.5E-03	2.2E-03	1.4E-02	6.6E-04	-3.4E-01
GWP-luluc	kg CO <sub>2</sub> eq.	1.8E-01	3.5E-04	1.3E-04	5.6E-05	9.9E-04	4.3E-05	-8.5E-02
GWP-total	kg CO <sub>2</sub> eq.	2.3E+02	3.2E+01	5.3E+00	6.8E+00	7.7E-01	1.3E+00	-2.7E+01
ODP	kg CFC 11 eq.	3.3E-05	7.3E-06	1.2E-06	1.6E-06	9.9E-08	2.7E-07	-1.4E-06
AP	mol H <sup>+</sup> eq.	1.2E+00	4.5E-01	5.7E-02	3.2E-02	4.6E-03	1.3E-02	-1.0E-01
EP-freshwater	kg P eq.	6.3E-03	1.7E-05	3.7E-06	3.5E-06	4.5E-05	4.5E-06	-1.0E-03
EP-marine	kg N eq.	2.3E-01	1.1E-01	2.5E-02	1.2E-02	1.3E-03	5.7E-03	-3.2E-02
EP-terrestrial	mol N eq.	2.5E+00	1.2E+00	2.8E-01	1.3E-01	1.4E-02	6.3E-02	-2.8E-01
POCP	kg NMVOC eq.	9.3E-01	3.1E-01	7.6E-02	3.4E-02	3.9E-03	1.7E-02	-8.5E-02
ADP-minerals&metals*	kg Sb eq.	3.4E-04	1.0E-06	2.7E-07	3.0E-07	3.8E-08	6.2E-08	-3.4E-05
ADP-fossil*	MJ	3.3E+03	4.4E+02	7.3E+01	9.8E+01	1.4E+01	1.7E+01	-2.2E+02
WDP*	m <sup>3</sup>	8.4E+01	-7.5E-02	1.9E-02	-1.6E-02	9.5E-02	6.9E-03	-8.0E+00
Acronyms	<p><b>GWP-fossil</b> = Global Warming Potential fossil fuels; <b>GWP-biogenic</b> = Global Warming Potential biogenic; <b>GWP-luluc</b> = Global Warming Potential land use and land use change; <b>ODP</b> = Depletion potential of the stratospheric ozone layer; <b>AP</b> = Acidification potential, Accumulated Exceedance; <b>EP-freshwater</b> = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; <b>EP-marine</b> = Eutrophication potential, fraction of nutrients reaching marine end compartment; <b>EP-terrestrial</b> = Eutrophication potential, Accumulated Exceedance; <b>POCP</b> = Formation potential of tropospheric ozone; <b>ADP-minerals&amp;metals</b> = Abiotic depletion potential for non-fossil resources; <b>ADP-fossil</b> = Abiotic depletion for fossil resources potential; <b>WDP</b> = Water (user) deprivation potential, deprivation-weighted water consumption</p>							

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

### Additional mandatory and voluntary impact category indicators

The global warming potential, calculated as in previous standards (Global warming (GWP100a)), is presented in the following table using the CML method. The indicator includes all greenhouse gases in GWP excluding biogenic carbon dioxide uptake, emissions, and biogenic carbon stored in the product.

Results per declared unit								
Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP 100a	kg CO <sub>2</sub> eq.	2.6E+02	2.8E+01	5.2E+00	6.8E+00	7.4E-01	1.3E+00	-2.6E+01

### Resource use indicators

Results per declared unit								
Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
PERE	MJ	1.1E+02	4.8E-01	8.8E-02	1.1E-01	1.6E+00	2.9E-02	-1.2E+01
PERM	MJ	3.2E+02	1.6E-01	3.0E-02	3.7E-02	2.2E-01	4.2E-02	-2.7E+00
PERT	MJ	4.3E+02	6.4E-01	1.2E-01	1.5E-01	1.8E+00	7.1E-02	-1.4E+01
PENRE	MJ	3.3E+03	4.4E+02	7.3E+01	9.8E+01	1.4E+01	1.7E+01	-2.2E+02
PENRM	MJ.	2.5E-01	6.8E-04	4.2E-04	4.1E-05	3.0E-05	1.0E-04	-4.8E-01
PENRT	MJ	3.3E+03	4.4E+02	7.3E+01	9.8E+01	1.4E+01	1.7E+01	-2.2E+02
SM	kg	0.0E+00						
RSF	MJ	0.0E+00						
NRSF	MJ	0.0E+00						
FW	m <sup>3</sup>	2.0E+00	1.2E-03	1.2E-03	2.5E-04	7.4E-03	3.4E-04	-3.6E-01
Acronyms	<p><b>PERE</b> = use of renewable primary energy excluding renewable primary energy resources used as raw materials; <b>PERM</b> = Use of renewable primary energy resources used as raw materials; <b>PERT</b> = Total use of renewable primary energy resources; <b>PENRE</b> = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; <b>PENRM</b> = Use of non-renewable primary energy resources used as raw materials; <b>PENRT</b> = Total use of non-renewable primary energy resources; <b>SM</b> = Use of secondary material; <b>RSF</b> = Use of renewable secondary fuels; <b>NRSF</b> = Use of non-renewable secondary fuels; <b>FW</b> = use of net fresh water</p>							

## Waste indicators

Results per declared unit								
Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste disposed	kg	9.5E-03	8.4E-04	1.9E-04	2.6E-04	1.5E-05	4.3E-05	-4.4E-04
Non-hazardous waste disposed	kg	1.0E+02	1.9E-02	4.5E-03	4.0E-03	2.1E+02	5.1E+02	-6.4E+00
Radioactive waste disposed	kg	1.5E-02	3.1E-03	5.2E-04	7.0E-04	1.0E-04	1.2E-04	-8.1E-04

## Output flow indicators

Results per functional or declared unit								
Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
Components for re-use	kg	0.0E+00	0.0E+00	0.0E+00	2.9E+02	0.0E+00	0.0E+00	0.0E+00
Material for recycling	kg	0.0E+00	0.0E+00	0.0E+00	2.0E+02	0.0E+00	0.0E+00	0.0E+00
Materials for energy recovery	kg	0.0E+00						
Exported energy, electricity	MJ	0.0E+00						
Exported energy, thermal	MJ	0.0E+00						

## LCA Interpretation

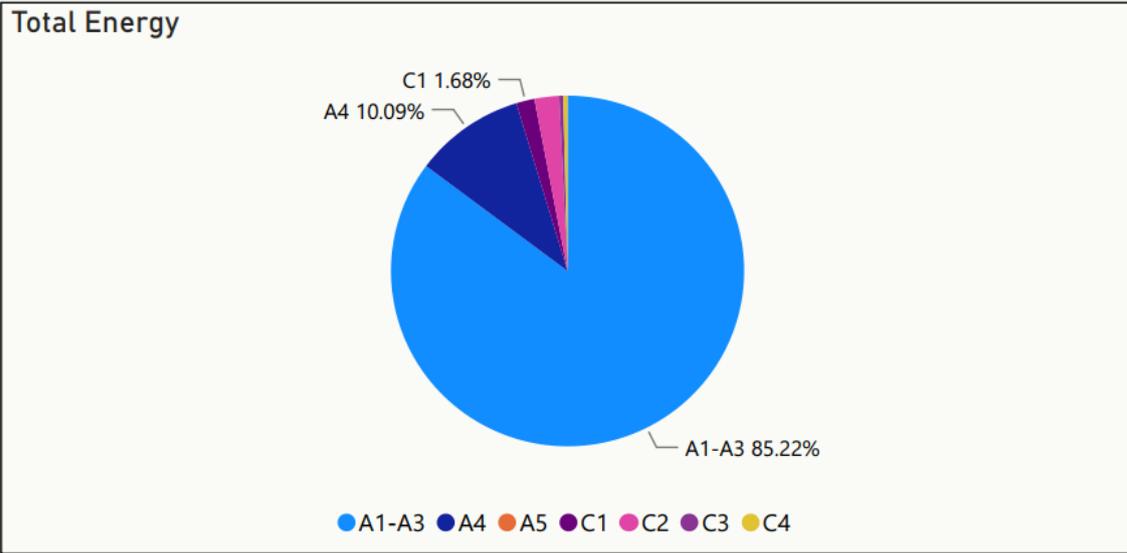
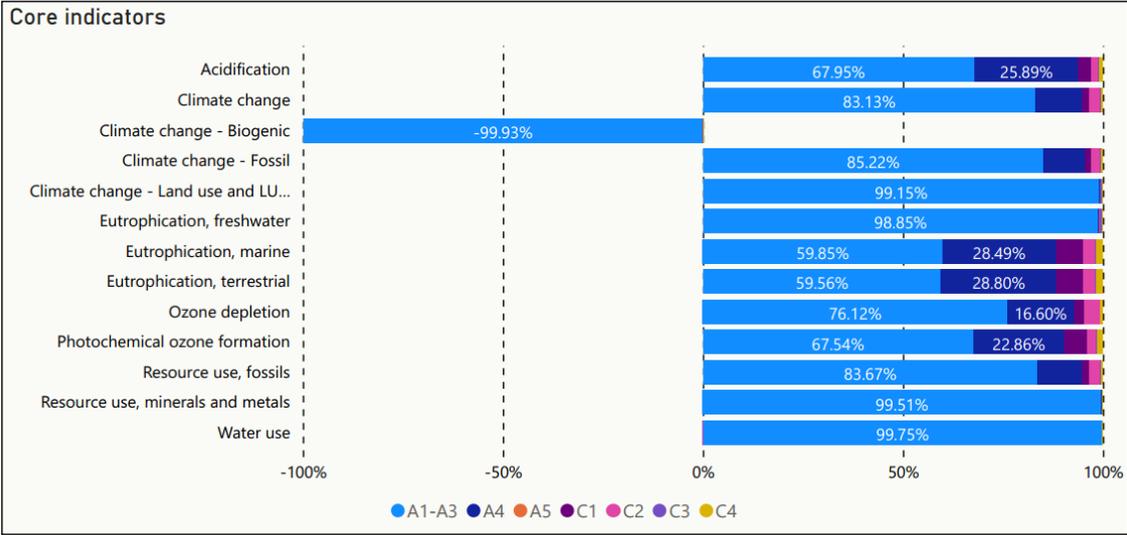
Individual Life Cycle Assessments have been carried out for the concrete element (Stairwells) manufactured by Alistron AS to identify its potential environmental impact following the framework described in the ISO 14025 (2006), ISO 21930 (2007), and EN 15804:2012+A2:2019/AC:2021. Additionally, the PCR 2019:14 for construction products was followed during this study. The LCA was performed for a declared unit equal to 1 metric tonne of product transported to the customer site.

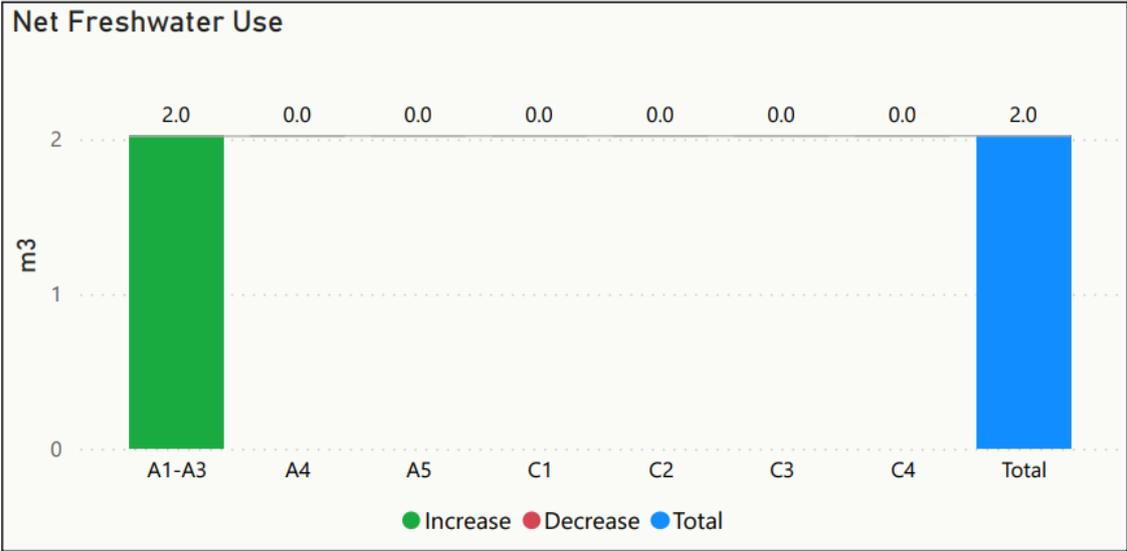
The impact on the various environmental impact categories in the life cycle of 1 declared unit is primarily driven by the production stage (A1-A3). The production stage accounts for more than 50% of the impact in all impact categories, reaching shares above 90% in several of them. At the climate change level, the concrete stair element delivers a total impact of 227 kg CO<sub>2</sub> eq/DU. The resulting value on climate change is driven mainly by reinforcing steel and cement production in module A1.

Regarding primary energy demand, the electricity consumption in module A3, the reinforcing steel production, and the fuel for transport activities are the more significant drivers.

The End-of-Life stage plays a small role in the product's environmental performance compared with the impact of the other steps. Nevertheless, the environmental toll from energy demand during demolition activities should not be overlooked.

Module D, accounting for benefits or loads beyond the system boundaries, delivers a potential benefit in impact categories such as climate change-LULUC, freshwater eutrophication, mineral and metal resources, and water use. Such potential benefits could result from recycling reinforced concrete and scrap steel.





**Information related to Sector EPD**

This EPD<sup>®</sup> is individual.

**Differences versus previous versions**

This document is the first version of EPD<sup>®</sup>.

## References

- General Programme Instructions of the International EPD® System. Version 4.0.
- PCR 2019:14. Construction Products. Version 1.2.5
- EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works. Environmental product Declarations. Core rules for the product category of construction products
- ISO 14040:2006: Environmental Management-Life Cycle Assessment-Principles and Framework
- ISO 14044:2006/Amd 2:2020 Environmental management. Life Cycle Assessment. Requirements and guidelines
- ISO 14025:2010 Environmental labels and declarations. Type III environmental declarations. Principles and procedures
- Ecoinvent v3.8 Database

