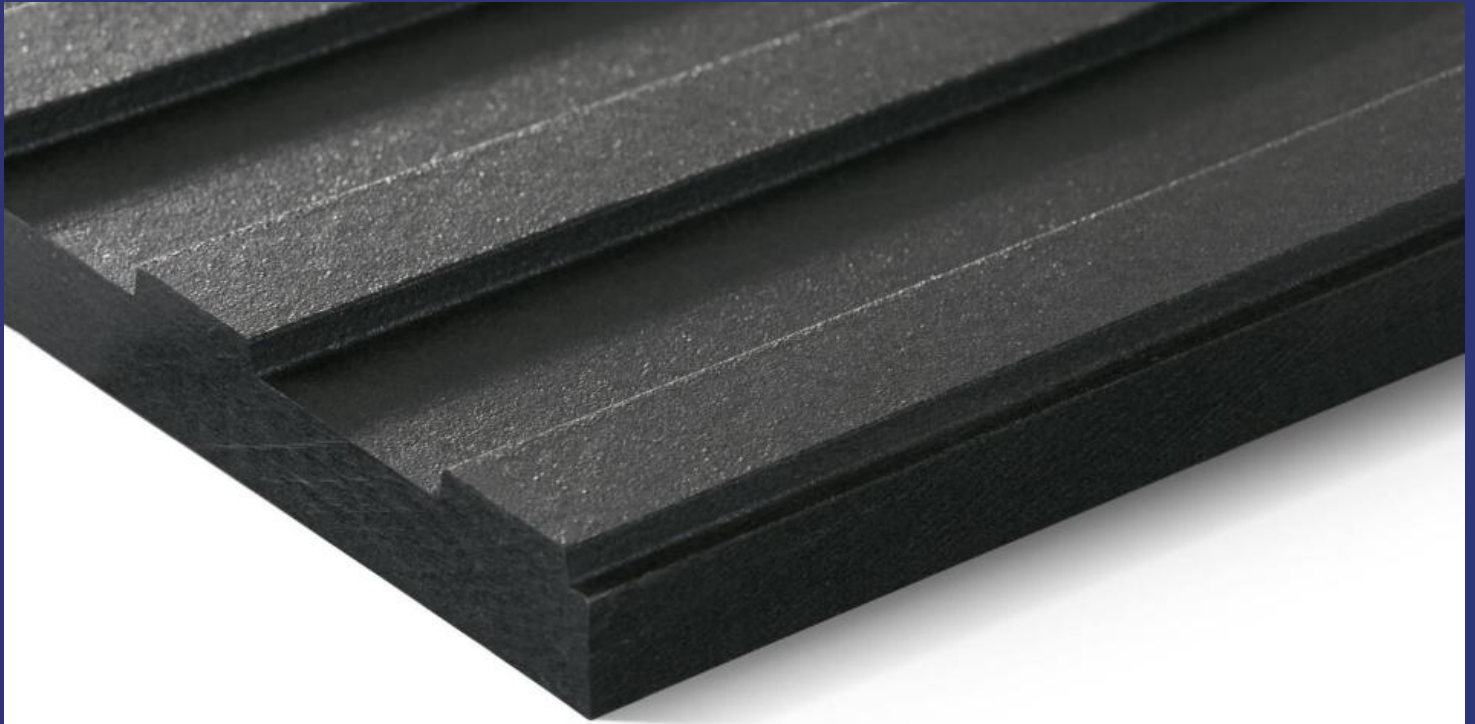


**Environmental  
Product  
Declaration**

According to ISO14025+EN15804+A2

This declaration is for:  
**Swisspearl Gravial**

Provided by:  
**Swisspearl Group AG**



MRPI® registration:  
**1.1.00909.2025**

Program operator:  
**Stichting MRPI®**  
Publisher:  
**Stichting MRPI®**  
[www.mrpi.nl](http://www.mrpi.nl)

Date of first issue:  
**20-7-2025**  
Date of this issue:  
**1-6-2026**  
Expiry date:  
**20-7-2030**



## COMPANY INFORMATION

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## MRPI® REGISTRATION

1.1.00909.2025

## DATE OF THIS ISSUE

1-6-2026

## EXPIRY DATE

20-7-2030

## SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by Mantijn van Leeuwen, Nibe. The LCA study has been done by Chantal Houben, SGS INTRON. The certificate is based on an LCA-dossier according to ISO14025+EN15804+A2. It is verified according to the ". EPDs of construction products may not be comparable if they do not comply with EN15804+A2. Declaration of SVHC that are listed on the 'Candidate list of Substances of Very High Concern for authorisation' when content exceeds the limits for registration with ECHA.

## PROGRAM OPERATOR

Stichting MRPI®

Kingsfordweg 151

1043 GR

Amsterdam

## PRODUCT

Swisspearl Gravial

## DECLARED UNIT / FUNCTIONAL UNIT

1 Area (m2)

## DESCRIPTION OF PRODUCT

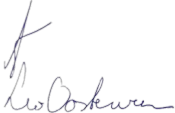

The Gravial is a façade board with milled grooves.

## VISUAL PRODUCT



## MORE INFORMATION

<https://www.swisspearl.com/swisspearl-gravial>

<p><b>Ing. L. L. Oosterveen MSc. MBA</b>  <b>Managing Director MRPI</b></p>	<p><b>DEMONSTRATION OF VERIFICATION</b></p>
	<p>CEN standard EN15804 serves as the core PCR [1]</p>
	<p>Independent verification of the declaration and data according to ISO14025+EN15804+A2</p> <p>Internal: <input type="checkbox"/> External: <input checked="" type="checkbox"/></p>
	<p>Third party verifier: Mantijn van Leeuwen, Nibe</p> 
<p>[1] PCR = Product Category Rules</p>	

## DETAILED PRODUCT DESCRIPTION

The Gravail is a fiber cement façade board with milled grooves intended for use on external facades of buildings. More information about the gravail can be found online: <https://www.swisspearl.com/swisspearl-gravail>

The fiber cement boards are produced using the Hatschek method. Homogeneous mixture of the base materials with water is transferred to the vats of the machine. In the vats, rotating sieve cylinders collect a thin layer of solid material that is transferred to a layer of rotating felt for lowering the water content of the solid material. This is furthermore transferred and accumulated onto the format roller is gradually covered by layers of fiber cement until the desired thickness of the boards is reached.

The fiber cement layer is unrolled and taken from the roll while still moist and moldable. The fiber cement board products are pre-cured for a period and are then air cured in drying tents. After the drying process the products are ready for further treatment, such as painting and milling of the grooves, after which it is weighed, quality controlled and packaged. The thickness of the thick part of the board is 12 mm and the thin part is 9mm.

The products are packaged in plastic and delivered on pallets. The pallets are reused and therefore only their weight in transport was accounted for in the calculation. The Gravail fiber cement boards have a reference service lifetime of 50 years according to the BBSR.

For the Niederurnen production facility, Swisspearl stated that all energy certificates bought in the year of data collection were 100% nuclear energy. The energy process used in the calculation is listed in the table below. In this energy process the downstream card for high voltage was adapted to 100% nuclear. This was done by multiplying every non-nuclear energy process with 0. The nuclear energy processes in the card have been adapted to add up to 100% while maintaining the proportion the types occur at in the downstream card. The process in the high voltage card that is added as a distribution loss is replaced by the new card. Consequently every upstream process is adapted with the 100% nuclear version and other energy processes are multiplied by 0.

Global warming potential (GWP) of 1 kWh energy	Process	GWP (kg CO2eq)
Electricity Switzerland 100% nuclear	Electricity, low voltage {CH} market for electricity, low voltage   Cut-off, U adapted 100% nuclear	0,0106

## SCOPE AND TYPE

The product was made in Switzerland, Niederurnen. This EPD is market-based. The calculations were done for the Dutch market and are also applicable for the European market. The end-of-life was also calculated for Europe.

The LCA software used in Simapro with the background database Ecoinvent 3.9.1 allocation, cut-off by classification – unit were used (December 15th, 2022). For some basic processes, the SimaPro file of the National Environmental Database version 3.9 (August 6, 2023) were also used. This EPD is a product specific and Cradle to Grave.

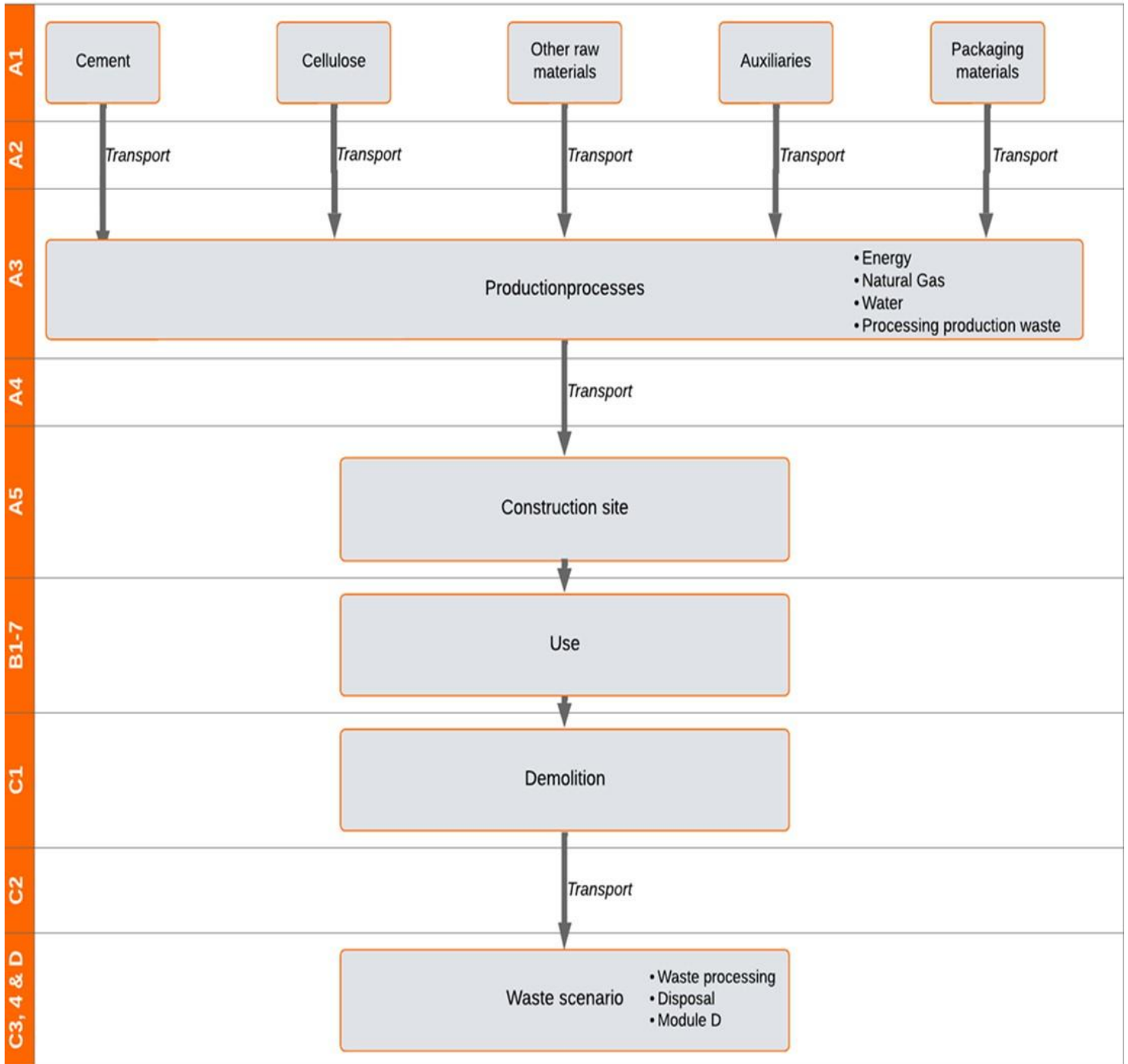
PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport gate to site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction 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	ND	ND	ND	ND	ND	ND	X	X	X	X	X

X = Modules Assessed

ND = Not Declared



# SWISSPEARL



## REPRESENTATIVENESS

The product is only produced at one production site in Switzerland. This EPD is representative for 1 m<sup>2</sup> of Graviat (grey cement).



## ENVIRONMENTAL IMPACT per functional unit or declared unit (core indicators A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	1,73E+01	1,23E+00	2,56E+00	2,11E+01	2,40E+00	8,24E-01	0,00E+00	ND	ND	ND	ND	ND	ND	2,63E-01	1,36E-01	1,66E+00	2,92E-02	-7,24E-02
GWP-fossil	kg CO2 eq.	1,89E+01	1,22E+00	2,57E+00	2,27E+01	2,39E+00	8,20E-01	0,00E+00	ND	ND	ND	ND	ND	ND	2,63E-01	1,35E-01	2,58E-02	1,26E-02	-7,23E-02
GWP-biogenic	kg CO2 eq.	-1,63E+00	0,00E+00	-2,24E-03	-1,63E+00	0,00E+00	2,40E-03	0,00E+00	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	1,64E+00	1,65E-02	0,00E+00
GWP-luluc	kg CO2 eq.	4,91E-02	1,71E-03	6,51E-04	5,14E-02	8,51E-03	1,56E-03	0,00E+00	ND	ND	ND	ND	ND	ND	2,95E-05	4,82E-04	5,82E-06	2,12E-05	-8,60E-05
ODP	kg CFC11 eq.	9,28E-08	1,67E-08	3,79E-08	1,47E-07	4,25E-08	4,69E-09	0,00E+00	ND	ND	ND	ND	ND	ND	4,18E-09	2,41E-09	5,81E-10	2,15E-10	-7,65E-10
AP	mol H+ eq.	4,96E-02	1,42E-02	3,67E-03	6,74E-02	1,14E-02	2,14E-03	0,00E+00	ND	ND	ND	ND	ND	ND	2,43E-03	6,48E-04	1,63E-04	8,13E-05	-4,98E-04
EP-fresh water	kg P eq.	4,48E-04	2,10E-05	1,47E-05	4,83E-04	2,37E-05	1,46E-05	0,00E+00	ND	ND	ND	ND	ND	ND	9,48E-07	1,35E-06	5,11E-07	1,55E-07	-2,44E-06
EP-marine	kg N eq.	1,39E-02	4,70E-03	6,91E-04	1,92E-02	4,34E-03	6,31E-04	0,00E+00	ND	ND	ND	ND	ND	ND	1,13E-03	2,46E-04	6,91E-05	3,35E-05	-1,49E-04
EP-terrestrial	mol N eq.	1,52E-01	5,14E-02	7,72E-03	2,11E-01	4,63E-02	6,92E-03	0,00E+00	ND	ND	ND	ND	ND	ND	1,23E-02	2,63E-03	7,57E-04	3,58E-04	-1,71E-03
POCP	kg NMVOC eq.	4,28E-02	1,48E-02	4,10E-03	6,17E-02	1,58E-02	2,02E-03	0,00E+00	ND	ND	ND	ND	ND	ND	3,63E-03	8,97E-04	2,25E-04	1,13E-04	-5,12E-04
ADP-minerals & metals	kg Sb eq.	6,42E-05	2,84E-06	1,19E-05	7,90E-05	7,48E-06	2,39E-06	0,00E+00	ND	ND	ND	ND	ND	ND	9,16E-08	4,24E-07	1,05E-07	2,64E-08	-3,53E-07
ADP-fossil	MJ, net calorific value	1,20E+02	1,56E+01	2,72E+01	1,62E+02	3,42E+01	5,07E+00	0,00E+00	ND	ND	ND	ND	ND	ND	3,44E+00	1,94E+00	3,53E-01	1,70E-01	-8,94E-01
WDP	m3 world eq. Deprived	3,31E+00	9,37E-02	2,96E-01	3,70E+00	1,87E-01	1,12E-01	0,00E+00	ND	ND	ND	ND	ND	ND	7,41E-03	1,06E-02	1,94E-03	-5,05E-03	-4,29E-02

- GWP-total = Global Warming Potential total
- GWP-fossil = Global Warming Potential fossil fuels
- GWP-biogenic = Global Warming Potential biogenic total
- GWP-luluc = Global Warming Potential land use and land use change
- ODP = Depletion potential of the stratospheric ozone layer
- AP = Acidification Potential, Accumulated Exceedence
- EP-freshwater = Eutrophication Potential, fraction of nutrients reaching freshwater end compartment
- EP-marine = Eutrophication Potential, fraction of nutrients reaching marine end compartment
- EP-terrestrial = Eutrophication Potential, Accumulated Exceedence
- POCP = Formation potential of tropospheric ozone photochemical oxidants
- ADP-minerals & metals = Abiotic Depletion Potential for non-fossil resources [1]
- ADP-fossil = Abiotic Depletion for fossil resources potential [1]
- WDP = Water (user) deprivation potential, deprivation-weighted water consumption [1]

### Disclaimer [1]:

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



## ENVIRONMENTAL IMPACT per functional unit or declared unit (additional indicators A2)

Unit		A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease incidence	3,23E-07	1,38E-07	3,72E-08	4,99E-07	2,36E-07	1,80E-08	0,00E+00	ND	ND	ND	ND	ND	ND	6,78E-08	1,34E-08	3,95E-09	8,77E-09	-9,27E-09
IRP	kBq U235 eq.	2,40E-01	1,36E-02	2,45E-01	4,99E-01	1,33E-02	1,50E-02	0,00E+00	ND	ND	ND	ND	ND	ND	7,03E-04	7,56E-04	4,03E-04	7,18E-05	-1,98E-03
ETP-fw	CTUe	4,55E+01	8,63E+00	8,53E+00	6,26E+01	2,52E+01	2,02E+00	0,00E+00	ND	ND	ND	ND	ND	ND	1,64E+00	1,43E+00	1,19E-01	1,10E-01	-3,33E-01
HTP-c	CTUh	3,48E-09	9,51E-10	4,14E-09	8,58E-09	1,26E-09	2,68E-10	0,00E+00	ND	ND	ND	ND	ND	ND	8,04E-11	7,17E-11	8,20E-12	1,62E-11	-5,70E-11
HTP-nc	CTUh	1,35E-07	9,81E-09	1,96E-08	1,64E-07	2,75E-08	5,22E-09	0,00E+00	ND	ND	ND	ND	ND	ND	5,59E-10	1,56E-09	1,65E-10	3,95E-10	-7,30E-10
SQP	-	2,87E+01	8,94E+00	2,42E+00	4,00E+01	2,70E+01	1,27E+00	0,00E+00	ND	ND	ND	ND	ND	ND	2,32E-01	1,53E+00	4,75E-02	1,26E-01	-1,12E+00

- PM = Potential incidence of disease due to PM emissions
- IRP = Potential Human exposure efficiency relative to U235 [1]
- ETP-fw = Potential Comparative Toxic Unit for ecosystems [2]
- HTP-c = Potential Comparative Toxic Unit for humans, cancer [2]
- HTP-nc = Potential Comparative Toxic Unit for humans, non-cancer [2]
- SQP = Potential soil quality index [2]

### Disclaimer [1]:

- This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste.

### Disclaimer [2]:

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

## OUTPUT FLOWS AND WASTE CATEGORIES per functional unit or declared unit (A1 en A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	2,61E-04	8,63E-05	1,43E-04	4,90E-04	2,18E-04	1,61E-05	0,00E+00	ND	ND	ND	ND	ND	ND	2,31E-05	1,24E-05	1,82E-06	1,03E-06	-3,84E-06
NHWD	kg	5,52E-01	3,48E-01	1,60E-01	1,06E+00	2,26E+00	3,98E-02	0,00E+00	ND	ND	ND	ND	ND	ND	4,92E-03	1,28E-01	5,30E-02	8,38E-03	-1,01E-02
RWD	kg	1,81E-04	8,66E-06	1,33E-04	3,23E-04	7,82E-06	9,73E-06	0,00E+00	ND	ND	ND	ND	ND	ND	3,77E-07	4,44E-07	3,40E-07	4,33E-08	-1,26E-06
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,95E-01	0,00E+00	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	1,65E+01	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,23E-01	0,00E+00	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,57E-01	0,00E+00	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

- HWD = Hazardous Waste Disposed
- NHWD = Non Hazardous Waste Disposed
- RWD = Radioactive Waste Disposed
- CRU = Components for reuse
- MFR = Materials for recycling
- MER = Materials for energy recovery
- EEE = Exported Electrical Energy
- ETE = Exported Thermal Energy

## RESOURCE USE per functional unit or declared unit (A1 and A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1,54E+01	5,20E-01	8,98E+00	2,49E+01	4,83E-01	7,50E-01	0,00E+00	INA	INA	INA	INA	INA	INA	1,96E-02	2,74E-02	2,96E-02	2,90E-03	-6,63E-02
PERM	MJ	8,13E+00	0,00E+00	2,39E-02	8,15E+00	0,00E+00	2,45E-01	0,00E+00	INA	INA	INA	INA	INA	INA	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,35E+01	5,20E-01	9,01E+00	3,31E+01	4,83E-01	9,95E-01	0,00E+00	INA	INA	INA	INA	INA	INA	1,96E-02	2,74E-02	2,96E-02	2,90E-03	-6,63E-02
PENRE	MJ	1,20E+02	1,56E+01	2,72E+01	1,63E+02	3,42E+01	5,08E+00	0,00E+00	INA	INA	INA	INA	INA	INA	3,44E+00	1,94E+00	3,53E-01	1,70E-01	-8,94E-01
PENRM	MJ	0,00E+00	0,00E+00	1,72E+00	1,72E+00	0,00E+00	5,16E-02	0,00E+00	INA	INA	INA	INA	INA	INA	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,20E+02	1,56E+01	2,89E+01	1,64E+02	3,42E+01	5,13E+00	0,00E+00	INA	INA	INA	INA	INA	INA	3,44E+00	1,94E+00	3,53E-01	1,70E-01	-8,94E-01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	INA	INA	INA	INA	INA	INA	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	INA	INA	INA	INA	INA	INA	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NSRF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	INA	INA	INA	INA	INA	INA	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	1,03E-01	3,59E-03	8,61E-02	1,93E-01	8,26E-03	5,82E-03	0,00E+00	INA	INA	INA	INA	INA	INA	2,70E-04	4,69E-04	9,76E-05	-9,73E-05	-2,39E-02

- PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials
- PERM = Use of renewable primary energy resources used as raw materials
- PERT = Total use of renewable primary energy resources
- PENRE = Use of non-renewable primary energy resources excluding non-renewable energy resources used as raw materials
- PENRM = Use of non-renewable primary energy resources used as raw materials
- PENRT = Total use of non-renewable primary energy resources
- SM = Use of secondary materials
- RSF = Use of renewable secondary fuels
- NSRF = Use of non-renewable secondary fuels
- FW = Use of net fresh water

## CALCULATION RULES

Primary data at the production location was collected for the base year 2022.

The materials or processes that have been excluded from the study (cut-of rule is well below 1%), are wooden pallets and the waste processing of packaging on incoming materials. The wooden pallets are assumed to be reused at least 5 to 10 times as is standard in Europe. Furthermore the pallets can carry multiple fibre cement boards, significantly reducing the impact per product.

The program PCR used is the Bepalingsmethode Milieuprestatie bouwwerken, december 2024, also called the Dutch Assessment method. The environmental interventions have been determined using the methods described in the Assessment Method (Bepalingsmethode Milieuprestatie bouwwerken, december 2024). The LCA calculations are performed in accordance with EN 15804:2012+A2:2019 with the EF 3.1 characterization factor method. When calculating the energy flows, the fuels and electricity sources used, extraction and transport of the fuels, efficiency of the conversion and distribution of the energy flow are taken into account. The calorific net value (LHV) has also been calculated.

The rules for allocation for multi-input, -output, recycling and reuse processes from the Assessment Method have been followed for all materials. Ecoinvent processes are calculated including the infrastructure processes (capital goods). Ecoinvent processes for landfill are calculated excluding long-term emissions.

Conversion factor and grammage		
Product grammage	17,37	kg/m2
Conversion factor to kg	0,058	

### Background data and data quality

All primary and secondary data are modelled to be specific to the technology, geographical region and period under study. Proxy data are used where technology-specific data are unavailable. Where country-specific data was unavailable, proxies were chosen in the geographical area that includes the specific region. The technological, geographical and temporal representativeness are considered to be good. In the table below more details are given of the processes that contribute the most to GWP. Together these processes are responsible for more than 80% of the GWP.

Process	Source type	Source	Reference year	Data category
Cement	Database	Ecoinvent 3.9.1	2022	Primary data
Transport to installation site	Collected data + Database	Ecoinvent 3.9.1	2022	Primary data
Energy use	Collected data + Database	Ecoinvent 3.9.1	2022	Primary data

## SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

This calculation of the production includes everything needed to procure the raw materials needed in the production of these products. This includes extraction, treatment, processing, electricity and heat consumption. Wooden pallets were omitted from the final analysis, since it was assumed, they would be reused and have a minimal impact.

The transport for the wooden pallets has been added. Transport of the raw material was done mostly by truck. Some raw materials were partially transported by ship and train. The waste processing of production waste was also taken into account into the calculation.

Transport	Process
Truck	Transport, freight, lorry, unspecified {GLO}  market group for transport, freight, lorry, unspecified   Cut-off, U
Ship	Transport, freight, sea, container ship {GLO}  market for transport, freight, sea, container ship   Cut-off, U
Train	Transport, freight train {GLO}  market group for   Cut-off, U

Transport to the construction site uses a standard transport as described in the Assessment Method.

The distance to the construction site is calculated from the factory to Utrecht, which is 849 km. At the construction site, there is no additional transport included in the model since the fiber cement boards have a relatively low weight. The fiber cement boards are mounted on either a wood or steel construction with the aid of small electrical tools. The estimated energy for the hand tool is very low and is therefore left out of the model. The wood, steel or another construction to install the boards on is not considered, since they can vary significantly and can not be influenced by Swisspearl. Materials for attachment were considered, only if they are added to the product by Swisspearl during production. More information about the design and installation can be found in the online manual: [https://www.swisspearl.com/media/13616/download/Global\\_Swisspearl\\_Facade\\_LargoGravial\\_DIM\\_EN\\_2026\\_02.pdf?v=7&inline=true](https://www.swisspearl.com/media/13616/download/Global_Swisspearl_Facade_LargoGravial_DIM_EN_2026_02.pdf?v=7&inline=true)

Waste treatment and transportation of the packaging waste (plastic and cardboard) from the construction site to the municipal waste incinerator is included in this module.

The distance to the waste treatment facility is assumed to be 50 km. The standard process from the Assessment Method is used for truck transport. Additionally, according to the Assessment Method there is a loss of 3% of material for pre-fab products on the construction site. This means that extra material must be added to account for the loss of product. Disposal of losses as well as additional production in A5 were considered.

During the 50-year application period, no maintenance is normally required. B1 is included in the LCA, but no environmental impact has been deliberately included.

An excavator was modeled to demolish and transport the waste on the demolition site from the fiber cement boards. After being demolished on the building site, the material is transported to waste processing. All the material gets processed before getting recycled or landfilled.

End of life scenario	Percentage	Transport distance (km)	Process
Waste processing	100%	50	0270-reC&Breken, per kg steenachtig (o.b.v. SBK Breken steenachtig MRPI) - NMDv3.9
Landfill	1%	100	Waste cement-fibre slab {RoW}  market for waste cement-fibre slab   Cut-off, U
Recycling	99%	0	0271-reD&Module D, grind, per kg NETTO geleverd granulaat/grind (vermeden: Gravel, round {RoW}  gravel and sand quarry operation   Cut-off, U) - NMDv3.9

Biogenic carbon content	Unit (expressed per functional unit or per
Biogenic carbon content in product	0,473
Biogenic carbon content in accompanying packaging	0,00061
Note: 1 kg biogenic carbon (C) is equivalent to 44/12 kg CO2	

## DECLARATION OF SVHC



## REFERENCES

