SWISSPEARL

Environmental
Product
Declaration

According to ISO14025+EN15804+A2

This declaration is for:
Swisspearl Gottardo Dachschiefer

Provided by:
Swisspearl Group AG

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MRPI® REGISTRATION

1.1.00908.2025

DATE OF THIS ISSUE

20-7-2025

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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 'MRPI®-EPD verification protocol November 2020.v4.0'. 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
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Amsterdam

PRODUCT

Swisspearl Gottardo Dachschiefer

DECLARED UNIT / FUNCTIONAL UNIT

1 Productiveness (m2)

DESCRIPTION OF PRODUCT

Gottardo Dachshiefer is a fiber cement roof slate with a thickness of 4 mm.

VISUAL PRODUCT

MORE INFORMATION

https://www.swisspearl.com/de-ch/produkte/roof/dachschiefer-eternit

Ing. L. L. Oosterveen MSc. MBA Managing Director MRPI	DEMONSTRATION OF VERIFICATION
	CEN standard EN15804 serves as the core PCR [1]
	Independent verification of the declaration an data according to ISO14025+EN15804+A2 Internal: External: X
	Third party verifier: Mantijn van Leeuwen, Nibe
	[1] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION (PART 1)

The Gottardo Dachschiefer is a fiber cement roof slate.

The fiber cement products 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 further 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 trimming, cutting, painting, after which it is weighed, quality controlled and packaged. The thickness of the roof slate is 4 mm.

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 fiber cement products have a reference service lifetime of 50 years according to the BBSR.

DETAILED PRODUCT DESCRIPTION (PART 2)

The energy processes used in the calculation are listed in the table below.

Global warming potential (GWP) of 1 kWh energy	Process	GWP (kg CO2eq)
Electricity Switserland	Electricity, low voltage {CH}| market for electricity, low	0,0573
Electricity Switserland solar panels	Electricity, low voltage {CH}| electricity production,	0,0806

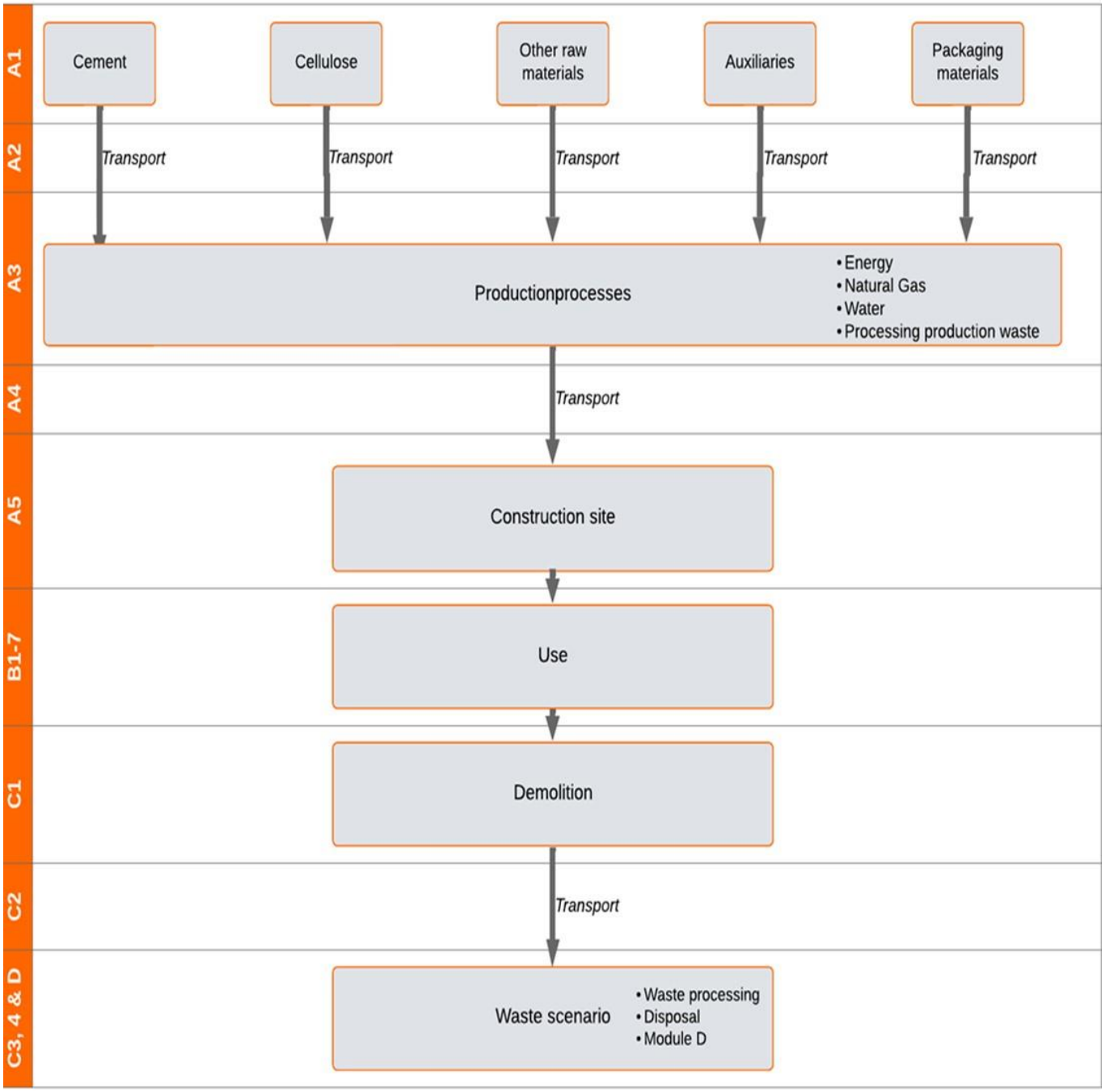
SCOPE AND TYPE

The product was made in Switserland, Niederurnen. The calculations were done for the Dutch 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. For some basic processes, the SimaPro file of the National Environmental Database version 3.9 were also use. This EPD is product specific.

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



REPRESENTATIVENESS

The product is only produced at one production site in Switzerland. This EPD is representative for 1 m2 of Gottardo Dachschiefer.

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.	5,62E+00	4,25E-01	5,68E-01	6,61E+00	7,66E-01	2,65E-01	0,00E+00	ND	ND	ND	ND	ND	ND	8,75E-02	4,39E-02	5,87E-01	9,93E-03	-2,34E-02
GWP-fossil	kg CO2 eq.	6,17E+00	4,25E-01	6,00E-01	7,20E+00	7,63E-01	2,30E-01	0,00E+00	ND	ND	ND	ND	ND	ND	8,75E-02	4,38E-02	8,36E-03	4,08E-03	-2,34E-02
GWP-biogenic	kg CO2 eq.	-5,78E-01	0,00E+00	-3,22E-02	-6,10E-01	0,00E+00	3,47E-02	0,00E+00	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	5,79E-01	5,84E-03	0,00E+00
GWP-luluc	kg CO2 eq.	1,89E-02	6,93E-04	7,83E-04	2,04E-02	2,72E-03	6,18E-04	0,00E+00	ND	ND	ND	ND	ND	ND	9,85E-06	1,56E-04	1,88E-06	6,84E-06	-2,78E-05
ODP	kg CFC11 eq.	3,70E-08	5,99E-09	3,52E-08	7,82E-08	1,36E-08	2,46E-09	0,00E+00	ND	ND	ND	ND	ND	ND	1,39E-09	7,79E-10	1,88E-10	6,95E-11	-2,47E-10
AP	mol H+ eq.	1,91E-02	4,60E-03	1,76E-03	2,54E-02	3,65E-03	8,06E-04	0,00E+00	ND	ND	ND	ND	ND	ND	8,11E-04	2,10E-04	5,27E-05	2,63E-05	-1,61E-04
EP-fresh water	kg PO4 eq.	1,65E-04	6,98E-06	1,53E-05	1,87E-04	7,59E-06	5,66E-06	0,00E+00	ND	ND	ND	ND	ND	ND	3,16E-07	4,36E-07	1,65E-07	5,03E-08	-7,90E-07
EP-marine	kg N eq.	4,71E-03	1,53E-03	3,26E-04	6,57E-03	1,39E-03	2,16E-04	0,00E+00	ND	ND	ND	ND	ND	ND	3,76E-04	7,97E-05	2,23E-05	1,08E-05	-4,82E-05
EP-terrestrial	mol N eq.	5,09E-02	1,68E-02	3,72E-03	7,14E-02	1,48E-02	2,35E-03	0,00E+00	ND	ND	ND	ND	ND	ND	4,09E-03	8,50E-04	2,45E-04	1,16E-04	-5,54E-04
POCP	kg NMVOC eq.	1,46E-02	4,87E-03	1,46E-03	2,09E-02	5,06E-03	6,88E-04	0,00E+00	ND	ND	ND	ND	ND	ND	1,21E-03	2,90E-04	7,27E-05	3,64E-05	-1,66E-04
ADP-minerals & metals	kg Sb eq.	2,40E-05	1,02E-06	1,07E-05	3,57E-05	2,39E-06	1,08E-06	0,00E+00	ND	ND	ND	ND	ND	ND	3,05E-08	1,37E-07	3,38E-08	8,53E-09	-1,14E-07
ADP-fossil	MJ, net calorific value	4,18E+01	5,47E+00	1,28E+01	6,01E+01	1,09E+01	1,87E+00	0,00E+00	ND	ND	ND	ND	ND	ND	1,15E+00	6,27E-01	1,14E-01	5,50E-02	-2,89E-01
WDP	m3 world eq. Deprived	1,47E+00	3,26E-02	2,06E-01	1,71E+00	5,97E-02	5,24E-02	0,00E+00	ND	ND	ND	ND	ND	ND	2,47E-03	3,43E-03	6,28E-04	-1,63E-03	-1,39E-02

GWP-total	=	Global Warming Potential total
GWP-fossil	=	Global Warming Potential fossil fuels
GWP-biogenic	=	Global Warming Potential biogenictotal
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 inci-dence	1,19E-07	4,74E-08	1,73E-08	1,84E-07	7,54E-08	6,56E-09	0,00E+00	ND	ND	ND	ND	ND	ND	2,26E-08	4,32E-09	1,28E-09	2,84E-09	-3,00E-09
IRP	kBq U235 eq.	8,78E-02	4,46E-03	1,70E-01	2,63E-01	4,26E-03	7,91E-03	0,00E+00	ND	ND	ND	ND	ND	ND	2,34E-04	2,45E-04	1,31E-04	2,32E-05	-6,40E-04
ETP-fw	CTUe	1,80E+01	3,15E+00	2,68E+00	2,39E+01	8,07E+00	7,96E-01	0,00E+00	ND	ND	ND	ND	ND	ND	5,48E-01	4,63E-01	3,84E-02	3,56E-02	-1,08E-01
HTP-c	CTUh	1,28E-09	3,19E-10	5,94E-10	2,19E-09	4,04E-10	7,02E-11	0,00E+00	ND	ND	ND	ND	ND	ND	2,68E-11	2,32E-11	2,70E-12	5,20E-12	-1,84E-11
HTP-nc	CTUh	4,70E-08	3,57E-09	1,22E-08	6,27E-08	8,78E-09	2,00E-09	0,00E+00	ND	ND	ND	ND	ND	ND	1,86E-10	5,04E-10	5,33E-11	1,28E-10	-2,36E-10
SQP	-	1,12E+01	3,29E+00	2,07E+00	1,66E+01	8,63E+00	5,24E-01	0,00E+00	ND	ND	ND	ND	ND	ND	7,72E-02	4,95E-01	1,54E-02	4,08E-02	-3,62E-01

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	9,72E-05	3,09E-05	5,96E-05	1,88E-04	6,97E-05	6,09E-06	0,00E+00	ND	ND	ND	ND	ND	ND	7,71E-06	4,00E-06	5,90E-07	3,33E-07	-1,24E-06
NHWD	kg	2,98E-01	1,51E-01	7,53E-02	5,25E-01	7,22E-01	1,88E-02	0,00E+00	ND	ND	ND	ND	ND	ND	1,64E-03	4,15E-02	1,71E-02	2,71E-03	-3,26E-03
RWD	kg	6,60E-05	2,84E-06	9,21E-05	1,61E-04	2,50E-06	4,84E-06	0,00E+00	ND	ND	ND	ND	ND	ND	1,26E-07	1,44E-07	1,10E-07	1,40E-08	-4,09E-07
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	1,60E-01	0,00E+00	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	5,34E+00	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	8,31E-02	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	1,43E-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

SWISSPEARL

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	5,89E+00	1,70E-01	8,21E+00	1,43E+01	1,55E-01	4,29E-01	0,00E+00	INA	INA	INA	INA	INA	INA	6,52E-03	8,87E-03	9,56E-03	9,40E-04	-2,15E-02
PERM	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
PERT	MJ	5,89E+00	1,70E-01	8,21E+00	1,43E+01	1,55E-01	4,29E-01	0,00E+00	INA	INA	INA	INA	INA	INA	6,52E-03	8,87E-03	9,56E-03	9,40E-04	-2,15E-02
PENRE	MJ	4,19E+01	5,47E+00	1,28E+01	6,02E+01	1,09E+01	1,88E+00	0,00E+00	INA	INA	INA	INA	INA	INA	1,15E+00	6,28E-01	1,14E-01	5,50E-02	-2,89E-01
PENRM	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
PENRT	MJ	4,19E+01	5,47E+00	1,28E+01	6,02E+01	1,09E+01	1,88E+00	0,00E+00	INA	INA	INA	INA	INA	INA	1,15E+00	6,28E-01	1,14E-01	5,50E-02	-2,89E-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	4,40E-02	1,27E-03	7,61E-02	1,21E-01	2,64E-03	3,68E-03	0,00E+00	INA	INA	INA	INA	INA	INA	9,00E-05	1,52E-04	3,16E-05	-3,15E-05	-7,75E-03

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

BIOGENIC CARBON CONTENT 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
BBCpr	kg C	1,67E-01	ND	ND	1,67E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BCCpa	kg C	ND	ND	8,77E-03	8,77E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

BCCpr = Biogenic carbon content in product
BCCpa = Biogenic carbon content in packaging

CALCULATION RULES

Primary data at the production location was collected for the base year 2024.

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 environmental interventions have been determined using the methods described in the Determination Method. The LCA calculations are performed in accordance with EN 15804:2012+A2:2019. 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.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION (PART 1)

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

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION (PART 2)

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

The distance is to the construction site is calculated from the factory to Utrecht. At the construction site, there is no additional transport included in the model since the fiber cement board 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. Waste treatment and transportation of the packaging waste 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 Assesment Metod 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.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION (PART 3)

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

DECLARATION OF SVHC

The product does not contain any substances of very high concern (SVHC) at concentrations greater than 0.1% of the product mass, in accordance with Regulation (EC) No. 1907/2006 (REACH), as of 20-07-2025

REFERENCES

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ISO 14040, “Environmental management - Environmental management -- Life cycle assessment - Principles and framework”, ISO14040:2006

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