ENVIRONMENTAL PRODUCT DECLARATION

according to ISO /14025/ and /EN 15804/

Holder of the declaration	**Swisspearl Group AG**
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Program holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-SWP-20180032-IAD1-EN EPD-SWP-20180031-IAD1-EN EPD-SWP-20180030-IAD1-EN
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Large-size fibre cement plates Swisspearl

Swisspearl Group AG

Institut Bauen und Umwelt e.V.

www.ibu-epd.com / https://epd-online.com

swiss pearl

1. General Information

Swisspearl Group AG	Swisspearl
Program holder IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany	**Holder of the declaration** Swisspearl Group AG Eternitstrasse 3 CH-8867 Niederurnen
Declaration number EPD-SWP-20180032-IAD1-EN EPD-SWP-20180031-IAD1-EN EPD-SWP-20180030-IAD1-EN	**Declared product/declared unit** Large-size fibre cement plates / t
This declaration is based on the product category rules: Fibre cement / Fibre concrete, 07.2014 (PCR tested and approved by the independent council of experts (SVR))	**Scope of application:** The EPD refers to three types of large-size fibre cement plates that are produced in the plants of Swisspearl Group AG in Switzerland Eternit (Schweiz) AG, Niederurnen, Austria Eternit Österreich GmbH, Vöcklabruck and FibreCem Deutschland GmbH Porschendorf. Proportionally, about 90 % of large-size fibre cement plates are produced in Switzerland and Austria. Three average products from the two plants are declared. Thus, the EPD is representative of the large-size plates of Swisspearl Group AG. The holder of the declaration is liable for the underlying information and evidence; liability of the IBU with regard to manufacturer information, LCA data and evidence is excluded.
Date of issue 03.05.2018	
Valid until 02.05.2023	
	Verification The CEN standard /EN 15804/ serves as PCR core Verification of the EPD by an independent third party according to /ISO 14025:2010/ ☐ internal ☒ external
Prof. Dr.-Ing. Horst J Bossenmayer (President of the Institut Bauen und Umwelt e.V.)	
Dr Burkhart Lehmann (Manager IBU)	Prof. Dr. Birgit Grahl, Independent verifier ordered by the SVR

2. Product

2.1 Product description/Product definition

Large-size, even plates based on grey or white fibre cement. The plates are:

- Pigmented plates (dyed) with a translucent or opaque coating
- Plates made of white cement with a translucent or opaque coating
- Grey plates with a translucent or opaque coating

The placing on the market of the product in the EU/EFTA (except for Switzerland) is governed by Regulation (EU) No. 305/2011 (/CPR/). The product requires a declaration of performance considering the /EN12467:2012+A1:2016/ and the CE labelling.

For use, the respective national regulations apply.

2.2 Application

Even plates for installation on the facade or on the roof on substructures made of wood or metal.
On the facade according to the principle of the curtain, ventilated facade.

2.3 Technical specifications

The following technical data are to be mentioned:

Structural data

Designation	Value	Unit
Heat conductivity	0.56	W/(mK)
Rated value Heat conductivity	0.56	W/(mK)
Water vapour diffusion resistance level	0.00328	-
Moisture expansion (air-dry to waterlogged)	0.5	mm/m
Raw density	1750 -	kg/m³

	1950	
Flexural strength Class 4	21	N/mm2
Pressure resistance	40	N/mm2
Tensile strength transverse/longitudinal Mean	6.0/9.3	N/mm2
Elastic modulus	13000 - 15000	N/mm2
Compensating moisture content at 23 °C, 80% humidity	7,0	M.-%
Temperature elasticity reciprocal value	10	$10\text{-}^{6}K\text{-}^{1}$
Chemical resistance	constant	-
Age resistance	according to /EN 12476/	-
Temperature durability	-40 to +80	°C
Frost resistance Category A	fulfilled	
Impermeability to water	fulfilled	

Performance values of the product according to the declaration of performance with regard to its essential characteristics according to /EN12467:2012+A1:2016/.

2.4 Condition on delivery

The large-size fibre cement plates are delivered on pallets with a maximum weight of up to 1900 kilograms.

The maximum formats are 3070 x 1250; the max. usable formats are 3040 x 1220 in thicknesses from 6 to 12 mm. For use, the plates can be drilled and cut to individual size.

2.5 Elements/Auxiliary materials

Large-size plates made of fibre cement consist of the following elements:

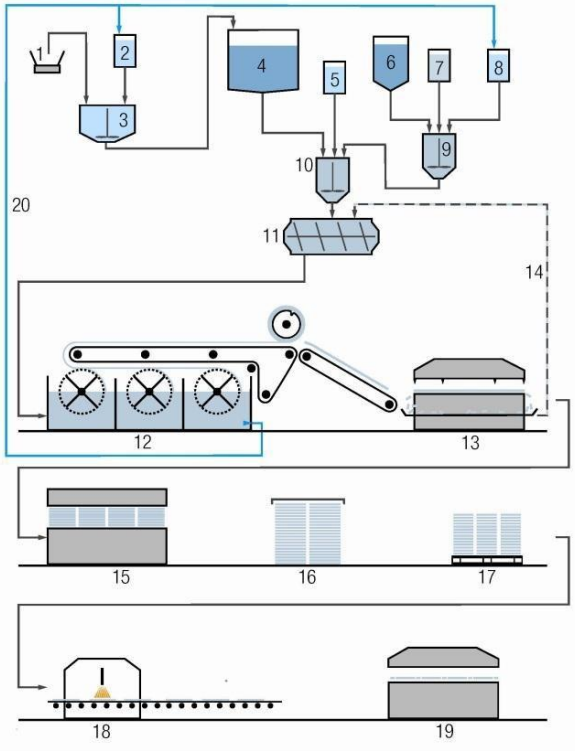
Designation	Value	Unit
Cement	57 to 78	%
Pulp	1 to 5	%
Polyethylene fibrids	1 to 4	%
Polyvinyl alcohol fibres	1 to 3	%
Silica fume/Limestone meal	5 to 11	%
Pigments	0.5 to 4	%
Acrylate for the coating	0.5 to 3	%
Water (chemically bound and free water)	13 to 17	%

The unbound water content at delivery is about 5-8%.

The elements are in % by mass in the cured product.

2.6 Production

The production of large-size plates made of fibre cement is carried out by an automated filament winding (see figure):
The raw materials are treated with water to a homogeneous mixture. The mixture is pumped into head boxes, in which sieve cylinders rotate, that are dewatered inside. Thereby the sieve surface is covered with a thin fleece of fibre cement, which is transferred to the endless circulating conveyor belt (transport felt). From there, the fleece of fibre cement reaches a format roller, which is gradually covered with a thickening layer of fibre cement. Once the desired material thickness is achieved, the still moist and mouldable layer of fibre cement (fleece) is separated and unrolled from the format roller.
In the next step, the layer of fibre cement (fleece) is punched, residual material is returned to the production process, so that no waste is left. The cut, not yet hardened, mouldable plate is stacked with intermediate layers and pressed.
Subsequently, the plates are stored for hardening, later stacked on pallets and stored for further hardening in a maturation store. The setting time is about four weeks. The visible side (upper side) is usually coated for which high-grade pure acrylate paint is twice applied in the brushing process and hot-filmed.
The back side gets a single or double coating which is usually rolled on. A quality management system according to the /EN ISO 9001:2015/ has been introduced and certified in the manufacturing plants.



1 Scales for process fibres (pulp)
2 Water
3 Pulper
4 Vat process fibres in water
5 Reinforcing fibres (synthetic fibres)
6 Portland cement
7 Admixed substances
8 Water
9 Intensive mixer 1
10 Intensive mixer 2
11 Horizontal mixer
12 Platen machine
13 Punching machine
14 Punching sections
15 Press
16 Setting
17 Half-finished products' warehouse
18 Coating
19 Punching
20 Water cycle

2.7 Environment and health during production

All manufacturing plants adhere to the national environment and health regulations. The necessary processes, monitoring and measurements are installed and implemented. Measurements in the past have shown that, in any case, the limit values are well below.

A safety system according to the /EKAS directive 6508/ has been introduced at the manufacturing plant in Switzerland.
Directive /2003/53/EC/ of the European Parliament and of the Council of 18 June 2003 for the 26th amendment of Directive /76/769 /EEC/ on restrictions regarding the placing on the market and use of certain dangerous substances and preparations (nonylphenol, nonylphenolethoxylat and cement) is considered and implemented in the manufacturing plants.
The preparation and processing of the substances takes place exclusively in closed rooms in order to keep the noise emissions as low as possible. The transport of raw materials is largely done by rail to keep emissions as low as possible there as well. The process water is kept in a closed circuit. Excess quantities are reprocessed and returned to public waters under the supervision of regional waste-water treatment sites. This minimises the environmental impact of waste-water.

2.8 Product processing/installation

Usually, the plates are factory-cut or drilled according to customer requirements by appropriately equipped suppliers. On the construction site, single fitting cuts are possible. Suitable portable circular saws or table saws with a saw blade suitable for fibre cement must be used for processing.
The installation on the facade is carried out according to the principle of the curtain, ventilated facade on substructures of wood or metal with the corresponding anchoring and fastening devices.
For mounting on the roof own systems in which the boards are screwed and/or mounted, are available.
In the case of machine cuts, the cutting dust must be removed by a suitable dust suction plant. Respirators are recommended and must be used in accordance with national regulations.
The basis is the technical documentation of the individual companies of Swisspearl Group AG. During transport, storage and assembly work, all measures must be taken which can prevent the risk of injury, property damage and consequential damage.
The moving of the pallet-bundled plates is allowed only if the plates are properly secured with security elements.
The relevant accident prevention measures to avoid injuries and material damage in accordance with the country-specific regulations must be followed.
Further extraordinary measures are not to be taken.

2.9 Packaging

For regional or intra-European shipment to dealers or directly to the construction site, the plates are bundled and tied to reusable pallets according to the format. These pallets are usually used multiple times.

Depending on the format, specific container pallets are used for overseas transport, which can be disposed of on site or sent for further use.

In addition, recyclable cardboard is used as edge protection and recyclable polyethylene film for weather protection.

2.10 Utilisation condition

The hardening (hydration) of the cement water mixture forms cement paste (calcium silicate hydrates) with embedded fibres and fillers as well as smallest air voids.
During the period of use, the cement paste reacts on the surface under the influence of CO2 (carbon dioxide) from the air and from moisture to calcium carbonate (carbonation).
Due to the material composition, there are no specific features to be considered during the use phase.

2.11 Environment and health during use

According to the current state of knowledge, no risks for the environment or health are given for the intended use of the products.

2.12 Reference service life

The use phase is not evaluated in this environmental product declaration.

Influences on aging when applied according to the rules of technology.

2.13 Extraordinary effects Fire

The large-size fibre cement plates have the following fire behaviour according to /DIN EN 13501-1/:

Fire protection

Designation	Value
Class of inflammability; non-combustible, with fractions of combustible building materials	A2
Smoke gas formation; no/little smoke development	s1
Burning dripping; no dripping/falling off	d0

Water

The ingredients are firmly embedded in the cement/fibre matrix after hardening. Due to the firm binding no ingredients that could be water-contaminating are flushed out in the event of extraordinary impacts by water.

Mechanical destruction

The product shows a brittle fracture behaviour under mechanical stress. It can cause chipping and rough edges.
The resistance to mechanical effects, according to /EN 12467/, corresponds to the classes A4.

2.14 Post utilisation phase

The large-size plates can be removed non-destructively by unscrewing. In undamaged form, the disassembled products can be used according to their original purpose.

2.15 Disposal

When fully separated, the said uncoated as well as coated fibre cement products can be comminuted and recycled as an additive in the production of cement (material recycling).
Furthermore, the said uncoated as well as coated fibre cement products are suitable for further use as filling and bulk material in civil engineering, in particular in road construction or for noise protection walls (material recycling).
Residues of the fibre cement products mentioned above as well as those from demolition can, if the above-mentioned recycling possibilities are not practicable, be easily deposited on disposal sites of Class Type B due to their predominantly mineral contents without pretreatment:

In the European countries and Switzerland according to the European Waste Catalogue Ordinance (/AVV/) according to waste classification 170107/170101 and the Regulation on Handling Waste (/VeVA/), in Austria according to the Austrian Landfill Ordinance 2008 (Federal Law Gazette No. BGBl. II No. 39/2008 Part II) under the key number 31409.

2.16 Further information

Further information can be found on the following websites:
www.eternit.ch
www.eternit.at
www.eternit.si
www.fibrecem.de
www.swisspearl.de
www.swisspearl.com

3 LCA: Calculation rules

3.1 Declared unit

The life-cycle assessment refers to 1 ton of fibre cement plates.
The declared indicators for the inventory and impact assessment indicators were calculated as an average, weighted by the production volumes, from the results of the life-cycle assessments of the production in the plants in Switzerland and Austria.

Declared unit

Designation	Value	Unit
Declared unit	1	t
Raw density	1850	kg/m^3
Conversion factor to 1 kg	0,001	-

3.2 System boundary

Type of the EPD: Cradle to factory gate
The LCA refers to the stage of product development in accordance with /EN 15804/ (information modules A1 to A3).
Other life-cycle phases such as processing, use and disposal have not been accounted for. The system boundary includes the provision and processing of raw materials. These include in particular cement, plastic fibres, pulp and packaging materials (A1). The transports to the manufacturer (A2) were specifically collected for all starting materials. The production (A3) includes also all in-plant energy consumption, the consumption of auxiliary materials, VOC emissions of the coating process as well as the treatment of the quantities of waste and waste-water. All material and energy input processes of modules A1 to A3 and the treatment of all waste are part of the system. A large part of the waste arises when cutting the plates. Some of the waste-water is treated in in-plant sewage treatment plants.

3.3 Estimates and assumptions

The VOC emissions of the coating process were estimated on the basis of formulations of the coatings. It was assumed that all organic solvents in the coating products are emitted into the environment.

3.4 Truncation rules

All collected data were taken into account in the LCA. No data was collected on the infrastructure. The production halls and warehouses as well as the administration buildings are already several decades old. Similarly, little has changed in the production process over the years, so that the machines are often older and are only partially replaced. According to the product category rules, the impact of the infrastructure per tonne of the product is expected to be less than 1% of the total use of primary energy (renewable and non-renewable) and less than 1% of the total mass of the stage of product development.

3.5 Background data

Data from /ecoinvent v3.1/ (data status 2014) was used to compile the LCA.

3.6 Data quality

The data collection was extensive and was carried out on the basis of a standardised questionnaire for 2016 directly at the various production sites. All data was checked for plausibility together with the manufacturers. Therefore, with regard to the foreground data, a very good data quality can be assumed.
Most input and output flows of the inventory could be displayed with corresponding data from the ecoinvent v3.1 database. Data developed by ESU-services as part of a project of the Swiss Federal Office of Energy (SFOE, Switzerland), was used for polyvinyl alcohol (PVA). The data was collected according to ecoinvent guidelines and recalculated with ecoinvent v3.1. Where possible, regionally specific data was used in the selection of background data.

3.7 Period under review

Data on total production for 2016 was collected at the production sites. In addition to large-size plates, the various plants of the Swisspearl Group also produce roof plates, medium- and small-size plates and corrugated sheets.

3.8 Allocation

Within the modules A1, A2 and A3, those inputs and outputs of the data collection that could not be directly assigned to a product were assigned via the production quantity to the individual products. For the production of fibre cement silica fume is used up to 7% by mass. Silica fume is a by-product of the production of silicon and ferrosilicon alloys. All environmental impacts have been assigned to the production of the alloys.

As a result, no environmental burdens have been recorded for the production of silica fume.

3.9 Comparability

Basically, a comparison or the evaluation of EPD data is possible only if all data records to be compared have been compiled in accordance with /EN 15804/ and the building context or product-specific performance characteristics are taken into account.
Background data from ecoinvent v3.1 (data status 2014) was used.

4 LCA: Scenarios and further technical information

No further information.

5 LCA: Results

The following tables show the results of life-cycle assessment indicators, resource use and waste related to 1 ton of large-size, coated fibre cement plates made of white cement.
The data is representative of the products of Swisspearl Group AG.

SPECIFYING THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

Production stage			Stage of construction of the structure		Use stage							Disposal stage				Credits and loads outside the system boundary
Raw material supply	Transport	Production	Transport from the manufacturer to the place of use	Assembly	Use / application	Maintenance	Repair	Replacement	Renovation	Energy input for operating the building	Water use for operating the building	Dismantling / demolition	Transport	Waste treatment	Elimination	Reuse, recovery or recycling potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	MND	MND	MND	MND	MND

RESULTS OF THE LCA ENVIRONMENTAL IMPACTS: 1 ton of large-size fibre cement plates

Parameter	**Unit**	Grey plate coated **A1-A3**	Pigmented plate coated **A1-A3**	Plate made of white cement coated **A1-A3**
Global warming potential	[kg CO_2-Eq.]	1,07E+3	1,28E+3	1,58E+3
Degradation potential of the stratospheric ozone layer	[kg CFC11-Eq.]	8,70E-5	1,56E-4	1,13E-4
Acidification potential of soil and water	[kg SO_2-Eq.]	2,83E+0	3,60E+0	3,54E+0
Eutrophication potential	[kg $(PO_4)3$--Eq.]	3,74E-1	4,90E-1	8,35E-1
Formation potential for tropospheric ozone	[kg Ethen-Eq.]	1,95E-1	2,45E-1	2,54E-1
Potential for the shortage of abiotic resources - not fossil resources	[kg Sb-Eq.]	2,67E-2	1,83E-2	1,38E-2
Potential for abiotic degradation of fossil fuels	[MJ]	9,50E+3	1,57E+4	1,50E+4

RESULTS OF THE LCA RESOURCE INPUT: 1 ton of large-size fibre cement plates

Parameter	**Unit**	Grey plate coated **A1-A3**	Pigmented plate coated **A1-A3**	Plate made of white cement coated **A1-A3**
Renewable primary energy as an energy source	[MJ]	1,88E+3	2,74E+3	1,99E+3
Renewable primary energy for material use	[MJ]	4,82E+2	8,31E+2	2,49E+2
Totally renewable primary energy	[MJ]	2,36E+3	3,57E+3	2,24E+3
Non-renewable primary energy as an energy source	[MJ]	1,10E+4	1,61E+4	1,40E+4
Non-renewable primary energy for material use	[MJ]	1,32E+3	9,79E+2	2,19E+3
Totally non-renewable primary energy	[MJ]	1,23E+4	1,71E+4	1,62E+4
Use of secondary materials	[kg]	0,00E+0	0,00E+0	0,00E+0
Renewable refuse-derived fuels	[MJ]	0,00E+0	0,00E+0	0,00E+0
Non-renewable refuse-derived fuels	[MJ]	0,00E+0	0,00E+0	0,00E+0
Use of freshwater resources	[m^3]	1,03E+1	1,10E+1	9,91E+0

RESULTS OF THE LCA OUTPUT FLOWS AND WASTE CATEGORIES: 1 ton of large-size fibre cement plates

Parameter	**Unit**	Grey plate coated **A1-A3**	Pigmented plate coated **A1-A3**	Plate made of white cement coated **A1-A3**
Hazardous waste to a disposal site	[kg]	2,77E-2	3,03E-2	2,01E-2
Disposed non-hazardous waste	[kg]	1,34E+2	2,01E+2	2,49E+2
Disposed radioactive waste	[kg]	6,37E-2	7,85E-2	4,36E-2
Components for reuse	[kg]	0,00E+0	0,00E+0	0,00E+0
Substances for recycling	[kg]	0,00E+0	0,00E+0	0,00E+0
Substances for energy recovery	[kg]	0,00E+0	0,00E+0	0,00E+0
Exported electrical energy	[MJ]	0,00E+0	0,00E+0	0,00E+0
Exported thermal energy	[MJ]	0,00E+0	0,00E+0	0,00E+0

6 LCA: Interpretation

The following figures show a dominance analysis for the most important impact assessment indicators. Regardless of the indicator, results of large-size plates are largely determined by the proportions of cement and plastic fibres in the base mix, of transports as well as electricity and natural gas consumption during manufacture. On the other hand, packaging, water consumption and waste only affect the overall results in the range of a few percent.

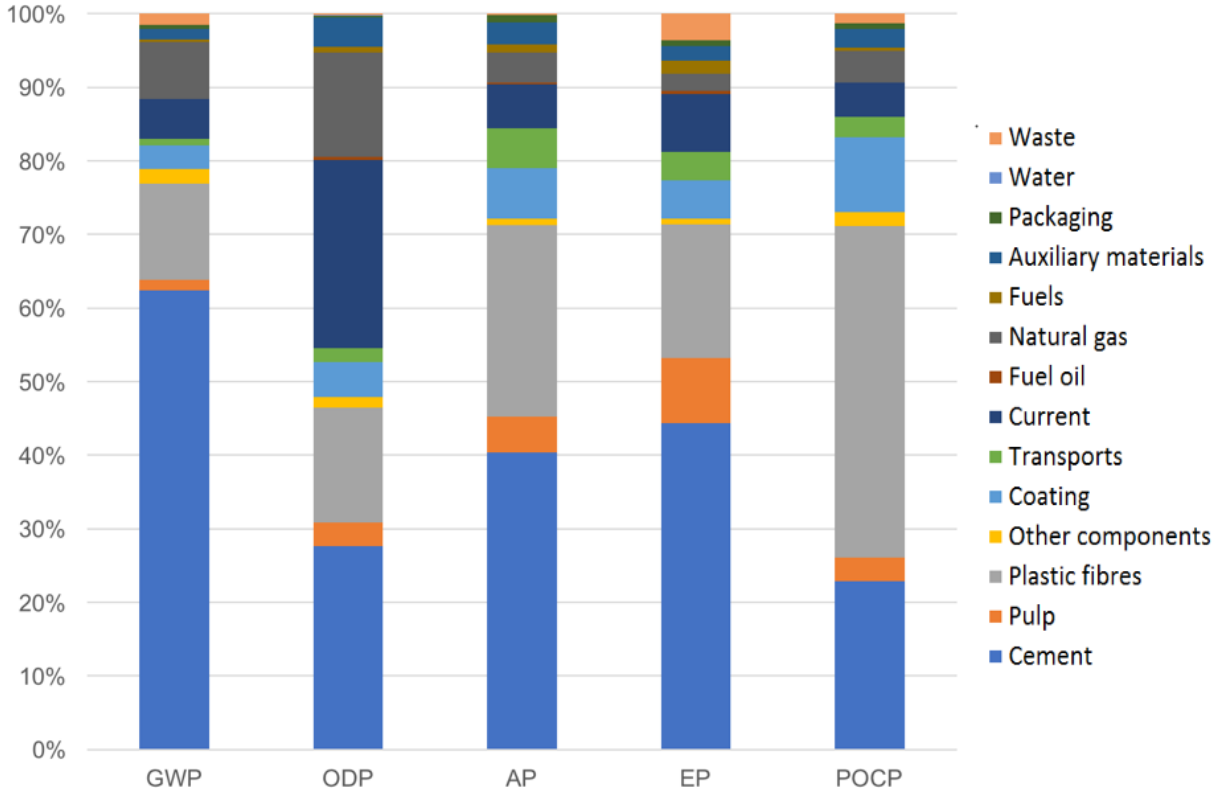


Figure 1: Dominance analysis grey plate

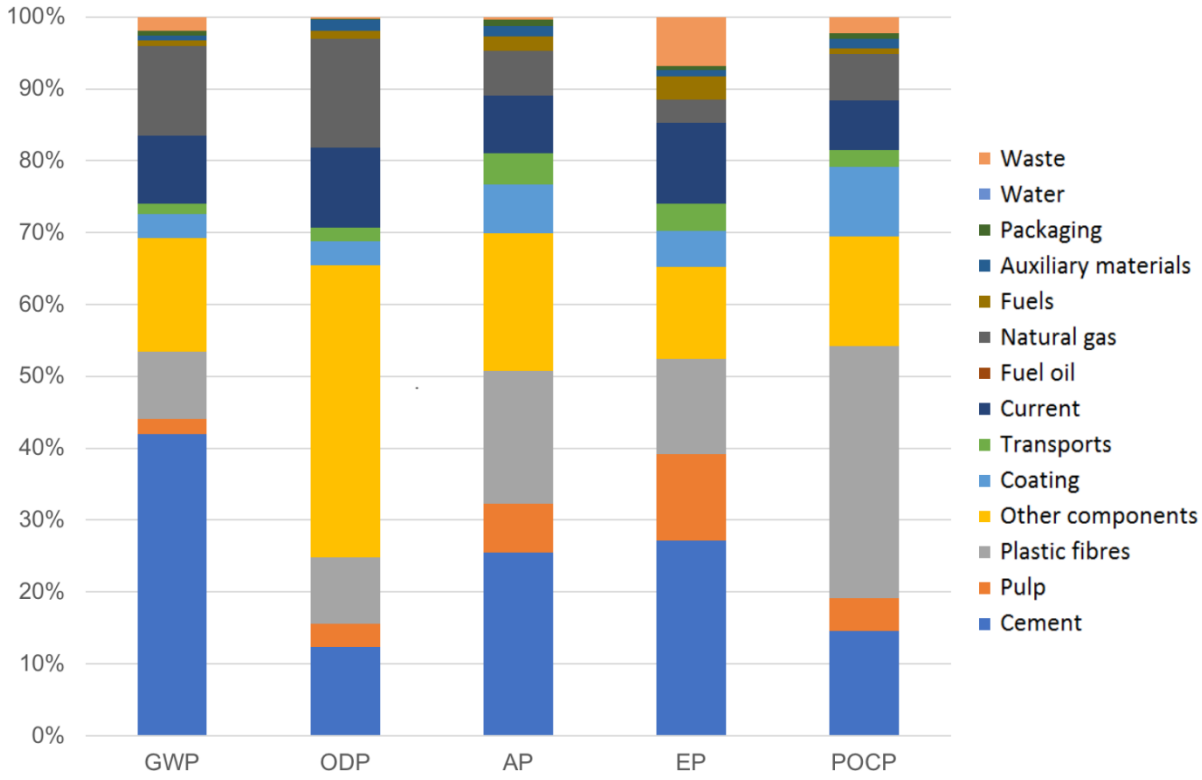


Figure 2: Dominance analysis pigmented plate

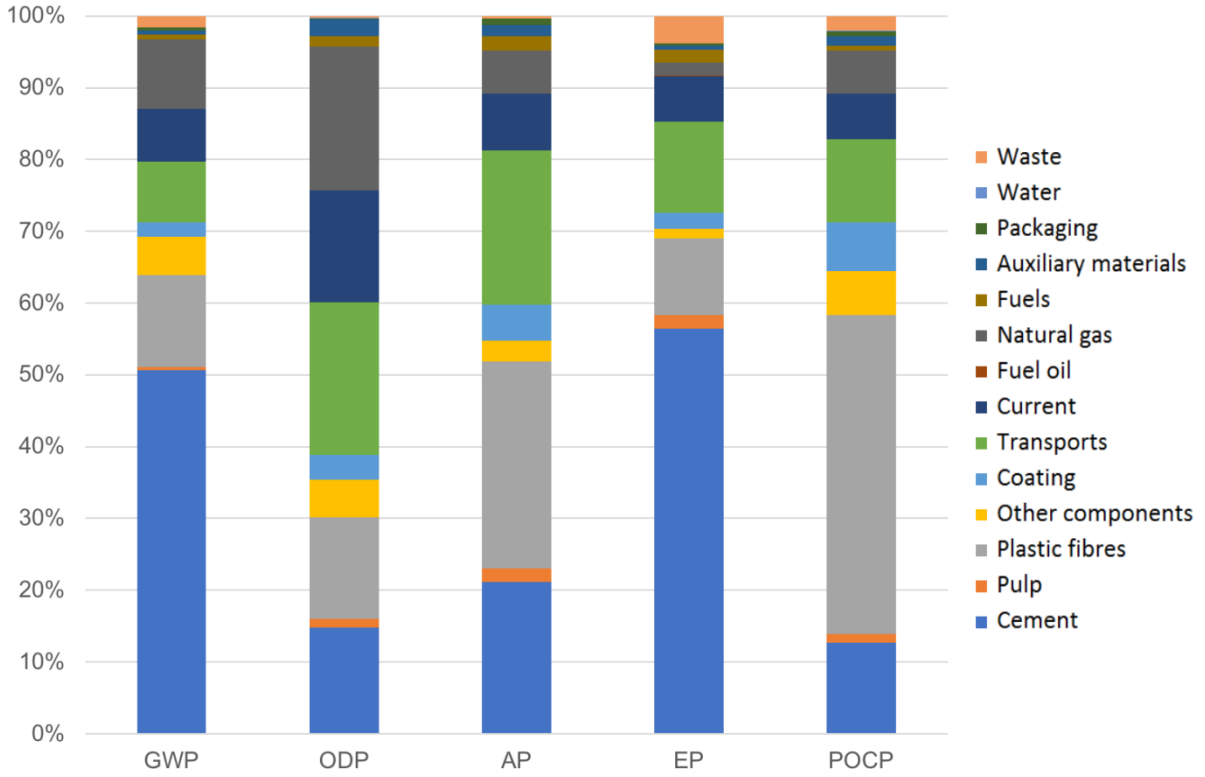


Figure 3: Dominance analysis facade plate with white cement

The environmental impact of the pulp in the base mix of the grey plate is relevant only in the eutrophication potential (EP). The share of the total load for this indicator is 9%. The influence of the coating is greatest at the formation potential for tropospheric ozone (POCP) and amounts to 10%. The share of transport in the environmental impact is less than 6% for all indicators. Depending on the indicator, the auxiliary materials contribute 1 to 4% to the environmental impact (see figure 1).
The declared average product differs from specific products only in terms of colour. As a result, LCA results for specific products are unlikely to differ much from the values declared here.
With regard to the production site, regarding the large-size, grey plates, the deviation of the plant-specific results for PENRT compared to the average value of the EPD is in the range of -1% to +2%.

The share of pigments of the pigmented plate in the overall result is mainly dominant at the degradation potential of the stratospheric ozone layer (**ODP**). The environmental impact of the pulp in the base mix is relevant only in the eutrophication potential (**EP**). The share of the total load for this indicator is 12%. The influence of the coating is greatest at the formation potential for tropospheric ozone (**POCP**) and amounts to 10%. The share of transport in the environmental impact is less than 5% for all indicators. Depending on the indicator, the auxiliary materials contribute 1 to 2 % to the environmental impact (see figure 2).
The declared average product differs from specific products in terms of pigmentation and colour scheme of the coating.
As a result, LCA results for specific products should differ by a few percent from the values declared here.
With regard to the production site, regarding the large-size, pigmented boards, the deviation of the plant-specific results for **PENRT** (totally non-renewable primary energy) compared to the average value of the EPD is in the range of -6% to +0%, thus, the declared value corresponds to the maximum.

For the plate with white cement, the white cement is transported by truck over 900 km. Accordingly, the transports accounted for 6 to 16% of the total load for the indicators tested. The share of pulp is very low (<2%) among the indicators tested. The influence of the coating is greatest at the formation potential for tropospheric ozone (**POCP**) and amounts to 7%. Depending on the indicator, the auxiliary materials contribute 1 to 2 % to the environmental impact (see figure 3).
The declared average product differs from specific products in terms of colour scheme of the coating. As a result, LCA results for specific products are unlikely to differ much from the values declared here.
With regard to the production site, regarding the large-size plates made of white cement, the deviation of the plant-specific results for **PENRT** (totally non-renewable primary energy) compared to the average value of the EPD is in the range of -4% to +2%.

7 Evidence

7.1 Radioactivity

According to /ÖNORM S 5200:2009/ (test 'A'), the material is to be classified as non-hazardous since the limit assessment factor (ÖNORM S5200 / level 'A') of 1 was clearly undercut with the evaluation factors of 0.09 to 0.016 +/- 0.02.
The measurements were carried out on material of each single manufacturing plant.

Measurement Institute/Report/Date:
Seibersdorf Laboratories, AT-2444 Seibersdorf / LA278-1/12, LA278-2/12, LA278-3/12, LA278-4/12 / 18.06.2012

7.2 Leaching

The examinations are within the scope of the accreditation according to ISO /IEC 17025 conforms to DIN 12457-4.
Analysis report 09.02.2018 (A18-00230) of the Arcadis (Schweiz) AG
Eluate solid matter M1802-00721
according to VVEA 'no limit exceeded'

7.3 VOC emissions

8 References

General principles for the EPD program of the Institut Bauen und Umwelt e.V. (IBU), 2016-03.
Product Category Rules for Construction Products Part A: Calculation rules for the LCA and requirements for the background report. Version 1.5, 11.08.2016
Product Category Rules for Construction Products Part B: Requirements for the EPD for fibre cement/fibre concrete. Version 1.3, 04.07.2014

Construction Regulation EU No. 305/2011 (/CPR/)

EN ISO 9001/2015 Quality management system

EN 12467: 2012+A1:2016 Fibre-cement panels - product specification and test methods
EN 13501-1:2007+A1:2009, Classification of construction products and types of fire behaviour – Part 1: Classification with the results of the fire behaviour tests of construction products

ÖNORM S 5200:2009 / Level A

European Waste Catalogue (EWC)

(Swiss) Ordinance of 22 June 2005 for handling waste (VeVA)

Austrian Landfill Ordinance 2008
(Federal Law Gazette No. BGBl. II No. 39/2008 Part II)

Data:
ecoinvent Centre, Swiss Centre for Life Cycle Inventories, ecoinvent v3.1, *www.ecoinvent.org*

N. Jungbluth et al., Life Cycle Inventories of Photovoltaics, ESU-services, 2012, http://www.esu-services.ch/data/public-lci-reports/

/IBU 2016/
IBU (2016):General programme guide of the Institut Bauen und Umwelt e.V. (IBU). Version 1.1, Institut Bauen und Umwelt e.V., Berlin.
/ISO 14025/
DIN EN /ISO 14025:2011-10/,
Eco-labelling and declarations - Type III environmental declarations - principles and procedures.

/EN 15804/
/EN 15804:2012-04+A1 2013/, Sustainability of buildings - Environmental product declarations - Basic rules for the product category construction products.

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