ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

weber.xerm 840

Version 1
Date of publication: 2023/08/10
Validity: 5 years
Valid until: 2028/08/10
Scope of the EPD®: Germany

THE INTERNATIONAL EPD® SYSTEM
Registration number
The International EPD® System:
S-P-10301

Production plant: Weilerswist

General information

Company information

Manufacturer: Saint-Gobain Weber GmbH, Schanzenstraße 84, 40549 Düsseldorf

Production plant: Weilerswist
Management system - related certifications: DIN EN ISO 9001 – 42-Z-06 QMS e

Programme used: EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declaration - core rules for the product category of construction product and The International EPD® System
PCR identification: PCR 2019:14 version 1.3 for Construction products and Construction services
Prepared by: IVL Swedich Environmental Research Institute, EPD International Secretariat
UN CPC CODE: 37510 Non-refractory mortars and concretes

Owner of the declaration: Saint-Gobain Weber GmbH, Schanzenstraße 84, 40549 Düsseldorf
Product name and manufacturer represented: This EPD describes the environmental impact of weber.xerm 840
EPD® prepared by: Yves Coquelet, (yves.coquelet@saint-gobain.com)
and Sophia Stark ,(sophia.stark@saint-gobain.com)
Geographical scope of the EPD®: Germany
EPD® registration number: S-P-10301
Declaration issued: 2023/08/10, valid until: 2028/08/10 **Demonstration of verification:** An independent verification of the declaration was made, according to EN ISO 14025:2010. This verification was external and conducted by a third party, based on the PCR mentioned above (see information below).

Programme information

PROGRAMME:	The International EPD® System
ADDRESS:	EPD International AB - Box 210 60 - SE-100 31 Stockholm - Sweden
WEBSITE:	www.environdec.com
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CEN standard EN 15804:2012 + A2:2019 serves as the Core Product Category Rules (PCR)

Product category rules (PCR): PCR 2019:14 Construction Products, version 1.3.0

PCR review was conducted by: The Technical Committee of the International EPD® System

President: Massimo Marino

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

☐ EPD process certification ☒ EPD verification

Third party verifier: Dr Andrew NORTON

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Approved by: The International EPD© System

Procedure for follow-up of data during EPD validity involves third part verifier: ☒ Yes ☐ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.
EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

Product description

Product description and description of use

The product family considered in this study is cement-based. The tile installation system of the BlueComfort family can be used in new construction as well as renovation in both, living and wet rooms.
Our tiling system enables waterproofing, bonding and grouting of tiles and natural stone coverings on all types of interior and exterior surfaces.

This EPD applies for one specific product manufactured by Saint-Gobain Weber GmbH in the plant located in Weilerswist, Germany.

All technical characteristics and properties for any product can be found on the website

Technical data/physical characteristics:

Technical data/physical characteristics	
Reaction to fire	A1
Maturation time	3 Min.
Processing time	3 h
Open time/Insertion time	30 Min.
Thickness (mm)	1-10 mm
Fully loadable	> 7 d

Declaration of the main product components and/or materials

PRODUCT	WEIGHT (KG)	Post-consumer recycled material, weight %	Biogenic material weight kg C/kg
Weber.xerm 840	1 kg	1 - 5 %	1.12E-03 kg C/kg
PRODUCT COMPONENTS	**WEIGHT (%)**	**Post-consumer recycled material, weight %**	**Biogenic material weight kg C/kg**
Inert fillers	55 - 70 %	0 %	< 1 %
Mineral and organic binders	30 - 35 %	5 - 15 %	< 1 %
Additives	1 - 2 %	0 %	< 1 %
PACKAGING MATERIALS	**WEIGHT kg**	**WEIGHT (%) Vs the product**	**Biogenic material weight kg C/kg**
Foil bag	0,0036 kg	0,36 %	<< 0,01 kg C/kg
Pallet	0,021	2,1 %	1,07E-02 kg C/kg

During the life cycle of the product any hazardous substance listed in the “Candidate List of Substances of Very High Concern (SVHC) for authorization” has been used in a percentage higher than 0.1% of the weight of the product. The verifier and the PROGRAMM E operator do not make any claim nor have any responsibility of the legality of the product.

LCA calculation information

TYPE OF EPD	Cradle to grave and module D
DECLARED UNIT	1 kg of dry mortar
SYSTEM BOUNDARIES	Mandatory Stages = A1-A3 ; B1-B7 ; C1-C4 and D
REFERENCE SERVICE LIFE (RSL)	50 years
CUT-OFF RULES	Life Cycle Inventory data for a minimum of 99% of total inflows to the upstream and core module shall be included. Flows related to human activities such as employee transport are excluded. Transportation in-site is excluded The construction of plants, production of machines and transportation systems are excluded
ALLOCATIONS	Allocation criteria are based on mass. The polluter pays and modularity principles have been followed.
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Scope: Germany Data is collected from 1 production site Weilerswist located in Germany Data collected for the year 2022 Cradle to grave study
BACKGROUND DATA SOURCE	The databases Gabi 2022 and ecoinvent v.3.8
SOFTWARE	GaBi 10

According to EN 15804:2012+A2:2019, EPDs of construction products may not be comparable if they do not comply with this standard.
According to ISO 21930:2017, EPDs might not be comparable if they are from different programmes.

LCA scope

System boundaries (X=included. MND=module not declared)

	PRODUCT STAGE			CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM
	Raw material supply	Transport	Manufacturing	Transport	Construction-Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-recovery
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	DE	DE	DE	DE	DE	DE	DE	DE	DE	DE	DE	DE	DE	DE	DE	DE	DE

Specific data used	12 % GWP- GHG
Variation products	< 10%
Variation sites	< 10 %

Life cycle stages

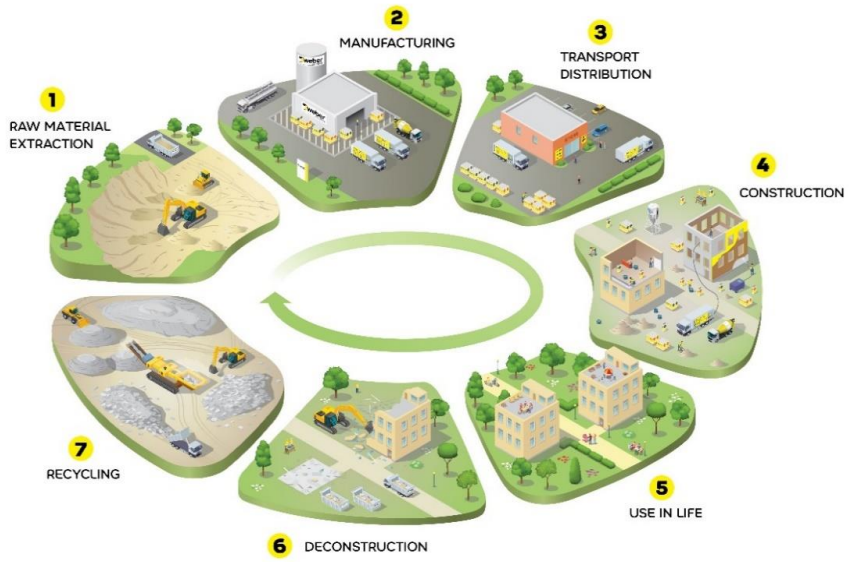


Figure 1.Flow diagram of the Life Cycle

A1-A3, Product stage

Description of the stage:
The product stage of the Weber products is subdivided into 3 modules A1, A2 and A3 respectively “Raw material supply”, “transport” and “manufacturing”.
The aggregation of the modules A1, A2 and A3 is a possibility considered by the EN 15804 standard. This rule is applied in this EPD.

Description of the scenarios and other additional technical information:
A1, Raw materials supply

This part takes into account the extraction and processing of all raw materials and energy which occurs upstream to the studied manufacturing process.

Specifically, the raw material supply covers sourcing (quarry) and production of all binder components and additives (e.g. sand, cement, rheology agent and others).

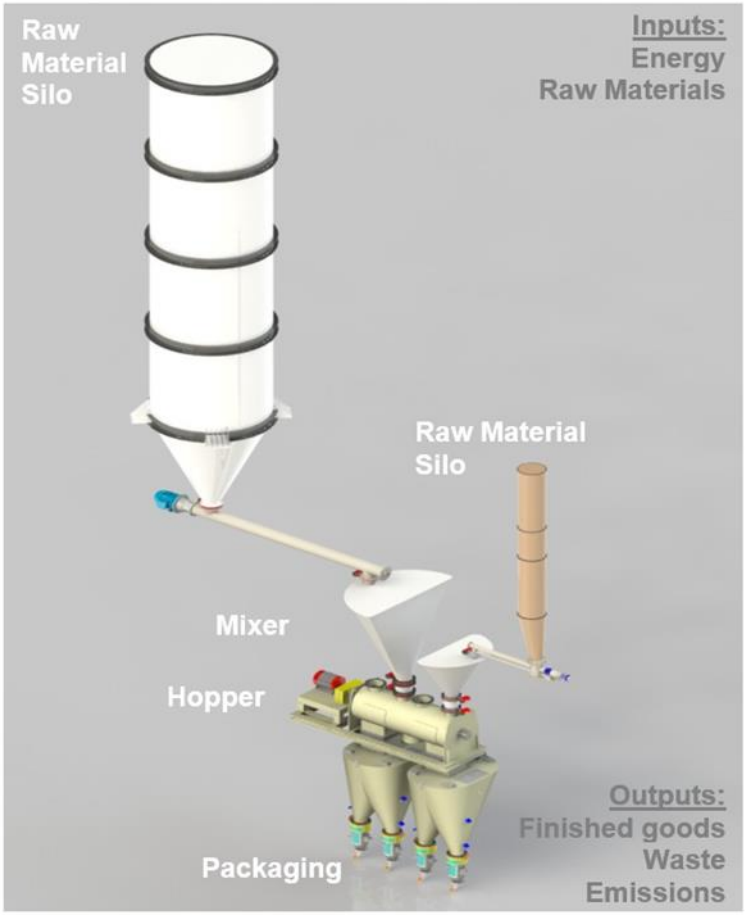
Use of electricity, fuels and auxiliary materials in the production is taken into account too. The environmental profile of these energy carriers is modeled for local conditions.

A2, Transport to the manufacturer
The raw materials are transported to the manufacturing site. In this case, the modelling includes road and boat transportations (average values) of each raw material.

A3, Manufacturing
This module includes manufacturing of products but also besides on-site activities such as grinding, drying, storing, mixing, packing and internal transportation.
The manufacturing process also collect data on the combustion of refinery products, such as diesel and gasoline, related to the production process.
Packaging-related flows in the production process and all up-stream packaging are included in the manufacturing module, i.e. wooden pallets, paper sack and LDPE film.
Apart from production of packaging material, the supply and transport of packaging material are also considered in the LCA model. They are reported and allocated to the module where the packaging is applied. Data on packaging waste created during this step are then generated. It is assumed that packaging waste generated in the course of production and up-stream processes is 100% collected and either recycled or incinerated with energy recovery.

Manufacturing process flow diagram

System diagram:
Manufacturing process flow diagram: Basic scheme of a Mortar Production line



A4-A5, Construction process stage

Description of the stage: The construction process is divided into 2 modules: A4, transport to the building site and A5, installation in the building

A4, Transport to the building site:
This module includes transport from the production gate to the building site. Transport is calculated on the basis of a scenario with the parameters described in the following table.

PARAMETER	VALUE
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat, etc.	Freight truck trailer 15,2 t payload, diesel consumption 38 liters for 100 km
Distance	335 km
Capacity utilisation (including empty returns)	44,4% of the capacity in mass 21% of empty returns
Bulk density of transported products*	1526 kg / m³
Volume capacity utilisation factor	1 (by default)

A5, Installation in the building: this module includes:

No additional accessory was taken into account for the implementation phase insulation product.
No energy is needed to install the product (manual installation without tool)

PARAMETER	VALUE (expressed per declared unit)
secondary materials for installation (specified by materials)	none
Water use	0.3 l / FU
Other resource use	None
Quantitative description of energy type (regional mix) and consumption during the installation process	0.0396 MJ/m^2
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	5% losses during installation
Output materials (specified by type) as results of waste processing at the building site e.g. of collection for recycling, for energy recovering, disposal (specified by route)	Polyethylene bag: 0.0036 kg to landfill Polyethylene film: <0.01 kg to landfill Wooden pallet: 0,0027 kg to landfill Wooden pallet: 0,019 kg reused
Direct emissions to ambient air, soil and water	None

B1-B7, Use stage (excluding potential savings)

Description of the stage: the use stage is divided into the following modules:

- The use stage is divided into the following modules: Use – B1, Maintenance – B2, Repair – B3,
- Replacement – B4, Refurbishment – B5, Operational energy and water use – B6 and B7

- Once installation is complete, no actions or technical operations are required during the use stages until the end of life stage. The product does not require any energy, water or material input to keep it in working order. Furthermore, it is not exposed to the indoor atmosphere of the building, nor is it in contact with the circulating water or the ground.

- The product covered by this EPD does not require any maintenance as it is aimed for pavements regularization. In addition, due to the product durability; maintenance, repair, replacement or restoration are irrelevant in the specified applications. Declared product performances therefore assume a working life that equals the building's lifetime. For this reason, no environmental loads are attributed to any of the modules between B1 and B5.

C1-C4, End of Life Stage

Description of the stage: Landfill is considered to be the worst scenario.
The end-of-life stage is divided into the following modules:

C1, Deconstruction, demolition
The de-construction and/or dismantling of the product take part of the demolition of the entire building. In our case, a small amount of energy is considered 0.05 MJ/m²

C2, Transport to waste processing
The model use for the transportation is applied

C3, Waste processing for reuse, recovery and/or recycling
The product is considered to be landfilled without reuse, recovery or recycling. No environmental loads are attributed to this stage.

C4, Disposal
The product is considered to be landfilled

Description of the scenarios and additional technical information for the End of life:

PARAMETER	VALUE/DESCRIPTION
Collection process specified by type	1,09 kg collected with mixed construction waste (1 kg of dry powder + 0,09 kg of water content linked to hydraulic binder) .
Recovery system specified by type	0% of Waste
Disposal specified by type	100 % to municipal landfill
Assumptions for scenario development (e.g. transportation)	Average truck trailer with 27t payload, diesel consumption 38L/100km ; 100km distance to landfill

D, Reuse/recovery/recycling potential

Packaging could be partly reuse recycle or landfill, The D module contains the benefits or load linked to the future use of recycled packaging

100% of wastes are landfilled, so no recycling, recovery or reuse has been considered.

LCA results

As specified in EN 15804:2012+A2:2019 and also the Product-Category Rules, the environmental impacts are declared and reported using the baseline characterization factors from EC-JRC. Specific data has been supplied by the plant, and generic data come from GABI and Ecoinvent databases.

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.
All emissions to air, water, and soil, and all materials and energy used have been included.

LCA data results are detailed on the following tables and they refer to a declared unit of 1 kg of weber.xerm 840.

Description of the system boundary, X = Included in LCA, MND = Module Not Declared

Environmental Impacts

Environmental indicators	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				REUSE, RECOVERY RECYCLING
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
Climate Change [kg CO2 eq.]	3,29E-01	8,65E-03	2,74E-02	0	0	0	0	0	0	0	4,89E-03	5,27E-05	0	6,28E-02	0
Climate Change (fossil) [kg CO2 eq.]	3,24E-01	8,62E-03	2,05E-02	0	0	0	0	0	0	0	4,88E-03	5,28E-05	0	1,65E-02	0
Climate Change (biogenic) [kg CO2 eq.]	5,45E-03	-1,19E-05	6,90E-03	0	0	0	0	0	0	0	6,37E-06	-5,20E-07	0	4,62E-02	0
Climate Change (land use change) [kg CO2 eq.]	2,08E-04	4,79E-05	2,38E-05	0	0	0	0	0	0	0	6,29E-08	3,58E-07	0	4,76E-05	0
Ozone depletion [kg CFC-11 eq.]	1,31E-08	5,15E-16	7,24E-10	0	0	0	0	0	0	0	2,91E-16	5,22E-18	0	6,13E-17	0
Acidification terrestrial and freshwater [Mole of H+ eq.]	9,00E-04	5,53E-05	6,67E-05	0	0	0	0	0	0	0	7,59E-06	3,04E-07	0	1,19E-04	0
Eutrophication freshwater [kg P eq.]	3,26E-03	7,89E-08	1,65E-04	0	0	0	0	0	0	0	2,83E-09	5,83E-10	0	8,72E-08	0
Eutrophication freshwater [kg $(PO_4)^3$ eq.]	1,06E-03	2,57E-08	5,37E-05	0	0	0	0	0	0	0	9,23E-10	1,90E-10	0	2,84E-08	0
Eutrophication marine [kg N eq.]	4,34E-04	2,72E-05	3,22E-05	0	0	0	0	0	0	0	2,61E-06	1,48E-07	0	3,05E-05	0
Eutrophication terrestrial [Mole of N eq.]	2,57E-03	3,02E-04	2,09E-04	0	0	0	0	0	0	0	2,88E-05	1,64E-06	0	3,35E-04	0
Photochemical ozone formation - human health [kg NMVOC eq.]	7,22E-04	5,12E-05	5,46E-05	0	0	0	0	0	0	0	7,92E-06	2,79E-07	0	1,06E-04	0
Resource use. mineral and metals [kg Sb eq.][1]	1,21E-06	7,19E-10	6,88E-08	0	0	0	0	0	0	0	1,95E-10	5,36E-12	0	1,48E-09	0
Resource use. energy carriers [MJ][1]	3,70E+00	1,15E-01	2,51E-01	0	0	0	0	0	0	0	6,42E-02	6,98E-04	0	2,17E-01	0
Water deprivation potential [m^3 world equiv.][1]	7,71E-02	7,71E-05	1,81E-02	0	0	0	0	0	0	0	1,31E-05	5,94E-07	0	1,73E-03	0

[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 experienced with the indicator

Resources Use

	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				D REUSE. RECOVERY. RECYCLING
Resources Use indicators	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse. recovery. recycling
Use of renewable primary energy (PERE) [MJ]	4,69E-01	6,53E-03	3,26E-02	0	0	0	0	0	0	0	2,54E-04	4,83E-05	0	2,84E-02	0
Primary energy resources used as raw materials (PERM) [MJ]	2,86E-01	0	2,73E-02	0	0	0	0	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT) [MJ]	7,55E-01	6,53E-03	6,00E-02	0	0	0	0	0	0	0	2,54E-04	4,83E-05	0	2,84E-02	0
Use of non-renewable primary energy (PENRE) [MJ]	3,70E+00	1,15E-01	2,52E-01	0	0	0	0	0	0	0	6,44E-02	7,00E-04	0	2,17E-01	0
Non-renewable primary energy resources used as raw materials (PENRM) [MJ]	6,45E-01	0	4,15E-02	0	0	0	0	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources (PENRT) [MJ]	4,34E+00	1,15E-01	2,93E-01	0	0	0	0	0	0	0	6,44E-02	7,00E-04	0	2,17E-01	0
Input of secondary material (SM) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of renewable secondary fuels (RSF) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels (NRSF) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of net fresh water (FW) [m3]	1,88E-03	7,39E-06	4,28E-04	0	0	0	0	0	0	0	4,75E-07	5,58E-08	0	5,47E-05	0

Waste Category & Output flows

	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				D REUSE. RECOVERY. RECYCLING
Waste Category & Output Flows	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse. recovery. recycling
Hazardous waste disposed (HWD) [kg]	8,34E-11	5,52E-13	1,70E-10	0	0	0	0	0	0	0	2,53E-13	3,71E-15	0	3,31E-09	0
Non-hazardous waste disposed (NHWD) [kg]	2,35E-02	1,65E-05	5,58E-02	0	0	0	0	0	0	0	1,35E-05	1,14E-07	0	1,09E+00	0
Radioactive waste disposed (RWD) [kg]	4,60E-05	1,42E-07	2,48E-06	0	0	0	0	0	0	0	7,18E-08	1,30E-09	0	2,47E-06	0
Components for re-use (CRU) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for Recycling (MFR) [kg]	1,01E-02	0	5,05E-04	0	0	0	0	0	0	0	0	0	0	0	0
Material for Energy Recovery (MER) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported electrical energy (EEE) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported thermal energy (EET) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Additional voluntary indicators from EN 15804 (according to ISO 21930:2017)

	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				REUSE. RECOVERY RECYCLING
Environmental indicators	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse. recovery. recycling
GWP-GHG [kg CO2 eq.][2]	3,24E-01	8,62E-03	2,05E-02	**0**	**0**	**0**	**0**	**0**	**0**	**0**	4,88E-03	5,28E-05	0	1,65E-02	0

[2] *This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.*

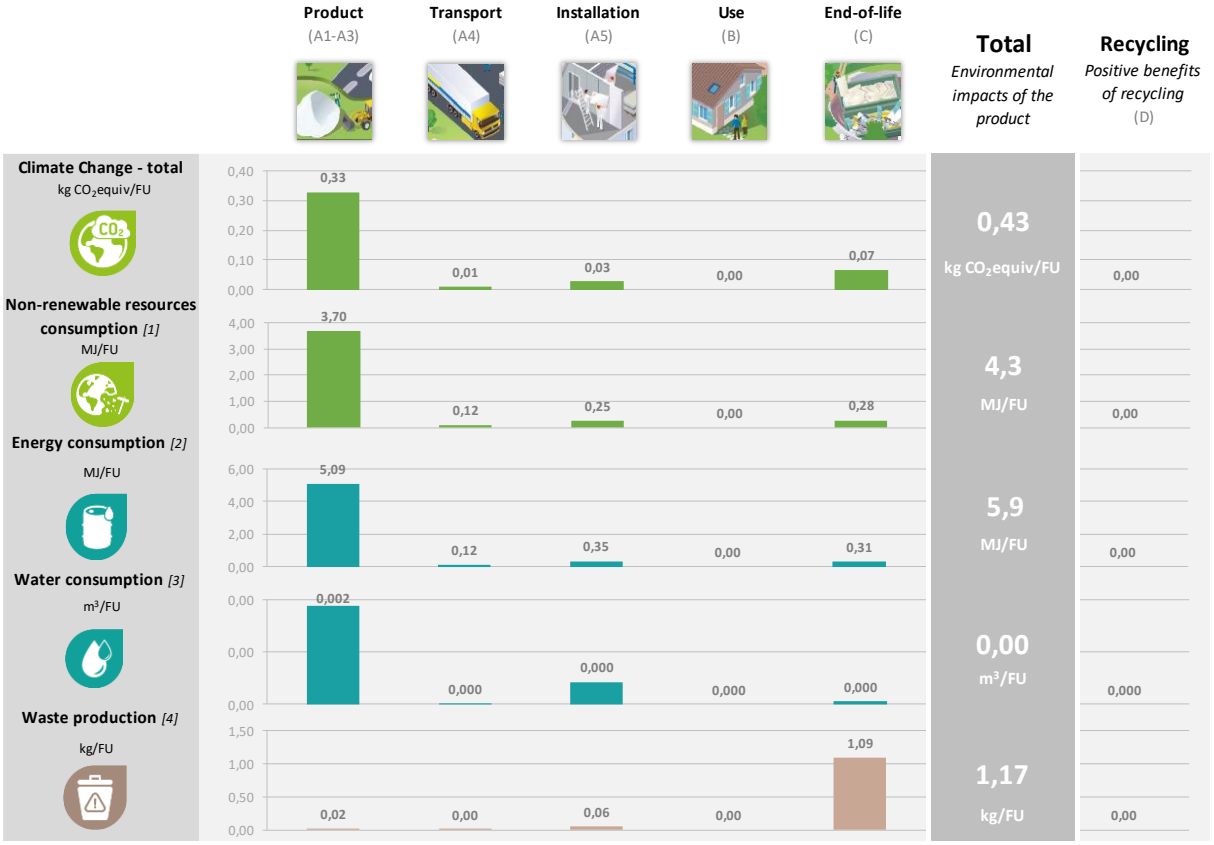
Information on biogenic carbon content

		PRODUCT STAGE
Biogenic Carbon Content in kg C		**A1 / A2 / A3**
	Biogenic carbon content in product [kg]	**1.12E-03**
	Biogenic carbon content in packaging [kg]	**1.07E-02**

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2.

LCA interpretation

The following figure refers to a declared unit of weber.xerm 840



[1] This indicator corresponds to the abiotic depletion potential of fossil resources.
[2] This indicator corresponds to the total use of primary energy.
[3] This indicator corresponds to the use of net fresh water.
[4] This indicator corresponds to the sum of hazardous, non-hazardous and radioactive waste disposed.

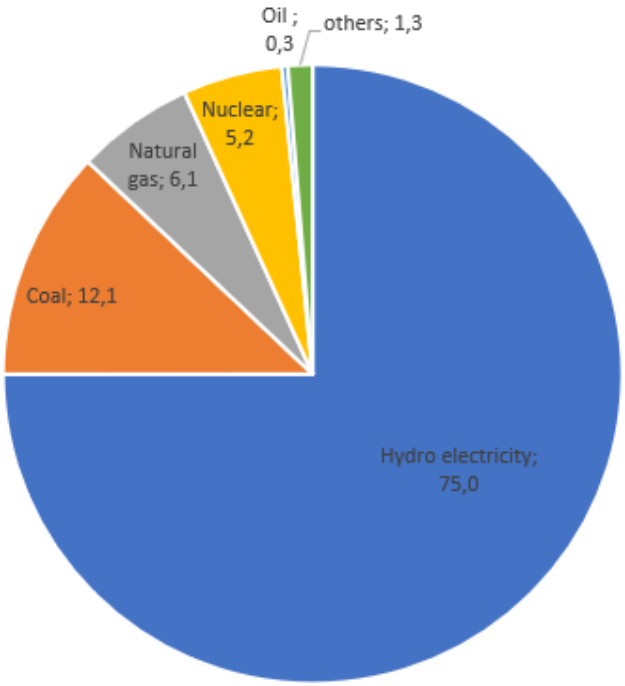
With the graphic views above. it is possible to assess which steps of the LCA are the most impacting for the chosen indicators

The main environmental impacts of the product life cycle come from extraction and processing of raw materials (A1-A3). The Product stage is responsible for over 75% of the impact for following indicators: Climate Change. Ozone depletion. Acidification terrestrial and freshwater. Eutrophication freshwater. Eutrophication marine. Eutrophication terrestrial. Photochemical ozone formation - human health. Resource use. mineral and metals. Resource use. energy carriers and Water scarcity.

Additional information:

Electricity information

TYPE OF INFORMATION	DESCRIPTION
Location	Representative of Electricity purchased by Saint-Gobain Weber GmbH
Geographical representativeness description	Split of residual mix in Germany 25 % of total: Coal 48,24 % Natural gas 24,56 % Nuclear 20,80 % Oil 1,3 % others 5,11 % } 25 % Hydro electricity 75 %
Reference year	2021
Type of dataset	Cradle to gate from Gabi database
Source	IAE Electricity Information 2022. Association of Issuing Bodies 2020
CO_2 emission kg CO_2 eq. / kWh	0,163 kg of CO2 eq /kWh (based on Climate Change (fossil) indicator)



Data quality

Inventory data quality is judged by geographical. temporal. and technological representativeness. To cover these requirements and to ensure reliable results. first-hand industry data crossed with LCA background datasets were used. The data was collected from internal records and reporting documents from Saint-Gobain Weber GmbH. After evaluating

the inventory. according to the defined ranking in the LCA report. the assessment reflects a good inventory data quality.

References

1. EPD International (2021) General Programme Instructions for the International EPD® System. Version 4.0. www.environdec.com.
2. The International EPD System PCR 2019:14 version 1.3 0 Construction products
3. EN 15804:2012 + A2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products
4. ISO 14 025: environmental labels and declarations – type III Environmental Declarations Principles and procedure (2009)
5. ISO 14 040: Environmental management – Life Cycle Assessment – Principles and framework (2006)
6. ISO 14 044: Environmental management – Life Cycle Assessment – Requirements and guidelines (2006)
7. ISO 14020:2000 Environmental labels and Declarations - General principles
8. EN 15978 Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method
9. EN 998-1:2016 Specification for mortar for masonry Rendering and plastering mortar
10. FprEN 16757:2016 Sustainability of construction works - Environmental product declarations - Product Category Rules for concrete and concrete elements