

ENVIRONMENTAL PRODUCT DECLARATION

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

weberdry SS-8 extra
Cement based, two
component, full flexible,
CMO1P class waterproofing
slurry

Date of publication: 2023/03/27

Validity: 5 years

Valid until: 2028/03/26

Scope of the EPD®: Türkiye



Registration number
The International EPD® System:
S-P-06800
Programme Operator : EPD International AB
Local Operator : EPD Turkey



Production Plants:
İzmir, Türkiye
Gebze, Türkiye

General information

Company information

Manufacturer: Saint-Gobain WEBER (Turkey)

Saint-Gobain, the world leader in sustainable and light construction solutions, operates in 76 countries with 167,000 employees. Saint-Gobain designs, manufactures and distributes goods and services for the construction, mobility market and industrial markets. Saint-Gobain offers integrated solutions for the renovation of public and private buildings, light construction and the decarbonization of constructions and industry, developed through a continuous innovation process, in this way ensuring sustainability and performance. All activities and commitments of the Group also serve the purpose of existence: "MAKING THE WORLD A BETTER HOME"

Weber, the Saint-Gobain Group's brand as a world leader in mortar-based solutions and operating in the construction business, offers sustainable and performance-oriented solutions for buildings with nearly 200 production facilities and 10,000 employees in 60 countries. Combining its international R&D experience with its deep-rooted local knowledge Weber has a rich product range in Turkey consisting of tile fixing, facades, waterproofing, technical mortars and flooring. Weber, which produces solutions to different user needs have 6 factories, 8 regional directorates and a widespread dealer network in Türkiye.

Production plants:

İzmir Plant	Kemalpaşa OSB Mah. Kuyucak Yolu Sokak No:284 35730 Kemalpaşa / İzmir / Türkiye
Gebze Plant	GOSB Tembelova Kısmı Gençlik Cad. No:3006 41480 Gebze / Kocaeli / Türkiye

Management system :

- Quality management system : ISO 9001:2015
- Environment management system : ISO 14001:2015
- Health and Safety management system : ISO 45001:2018

Framework: The LCA is based on 2021 production data for two sites in Türkiye.

Geographical scope : Türkiye

Program used: The International EPD® System. More information at

www.environdec.com

EPD Turkey, managed and run by:

SÜRATAM

Süratam Sustainability Services, www.suratam.org

Nef 09 B Blok No:7/15 34415 Kagithane/Istanbul, Turkey

www.epdturkey.org, info@epdturkey.org

PCR identification: 2019:14 Version 1.2.5, 2024-12-20, Construction Products and CPC 54 Construction Services, EN 15804:2012 + A2:2019 Sustainability of Construction Works.

Prepared by: IVL Swedish Environmental Research Institute, EPD International Secretariat

UN CPC CODE: 37510 Non-refractory mortars and concretes

Owner of the declaration: SG WEBER YAPI - Kemalpaşa OSB Mah. Kuyucak Yolu Sok. No:284
ve 289 - İzmir - Türkiye

Product name and manufacturer represented: This EPD describes the environmental impacts of 1kg of weberdry SS-8 extra Cement based, two component, full flexible, CMO1P class waterproofing slurry – manufactured in Türkiye.

EPD® prepared by: Metsims Sustainability Consulting (info@metsims.com)
TR: Sanayi Mah. NEF09 B Blok No:7 Daire:46-47 34415 Kağıthane/İstanbul/Türkiye
UK: 4 Clear Water Place Oxford OX2 7NL
www.metsims.com

Geographical scope of the EPD®: Türkiye

EPD® registration number: S-P-06800

Declaration issued: 2023/03/27, **Valid until:** 2028/03/26

Demonstration of verification: an independent verification of the declaration was made, according to ISO 14025:2010. This verification was external and conducted by a third party, based on the PCR mentioned above (see information below).

PROGRAMME:	The International EPD® System
ADDRESS:	EPD International AB - Box 210 60 - SE-100 31 Stockholm - Sweden
WEBSITE:	www.environdec.com
E-MAIL:	info@environdec.com

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

EPD process certification EPD verification

Third party verifier: Prof. Vladimír Kocí, Vlad.Koci@vscht.cz
In case of recognized individual verifiers: 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 programmes 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

Polymer emulsion modified, cement based, two component, full flexible waterproofing slurry.

Advantages:

- Safe to use on wet areas, balcony terraces and private swimming pools
- Enables quick switching to tiling application
- Broad range of application with extra elastic structure
- Easy and practical application

Range of Application: Used as under-tiling waterproofing material in all buildings; especially in wet areas like balconies, bathrooms, toilets and kitchens; terrace roofs and private swimming pools.

Technical data/physical characteristics :

- Product structure: Two components
- Colour: Grey
- Mortar density : $1.85 \pm 0.05 \text{ g/cm}^3$
- Mixing ratio: 5 : 2 (weberdry SS-8 extra powder : liquid)
- Applicable coats: 2-3 coats
- Time to wait for tiling application: Min. 1 day
- Time to gain mechanical resistance: 2 days
- Time to waterproof: 7 days
- Drying time: Min. 48 hours
- Water impermeability: (15 m depth) $\geq 1,5 \text{ bar}$
- Crack bridging ability: ($+20^\circ\text{C}$) $\geq 0,75 \text{ mm}$
- Crack bridging ability: (-5°C) $\geq 0,75 \text{ mm}$
- Tensile adhesion strength: $\geq 0,5 \text{ N/mm}^2$
- Tensile adhesion strength after water contact: $\geq 0,5 \text{ N/mm}^2$
- Tensile adhesion strength after contact with heat: $\geq 0,5 \text{ N/mm}^2$
- Tensile adhesion strength after freeze-thaw cycles: $\geq 0,5 \text{ N/mm}^2$
- Tensile adhesion strength after contact with pure water: $\geq 0,5 \text{ N/mm}^2$
- Tensile adhesion strength after contact with chlorinated water: $\geq 0,5 \text{ N/mm}^2$
- Capillary water absorption (TSEN 1062-3): $\leq 0,10 \text{ kg/m}^2\text{h}0,5$

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 program operator do not make any claim nor have any responsibility of the legality of the product .

These values were obtained as a result of laboratory tests and they are valid for performance of finished applications at the end of drying time. Values may vary due to differences in ambient of jobsites.

Reference standards : TS 7847, G marking, Public Works Pos No: 04.476/A

Declaration of the main product components and/or materials

PARAMETER	VALUE
Packaging for the transportation and distribution	Polypropylene 48,5 g/kg Polyethylene Sheet: 8,8 g/kg Pallet: 0,0013 p/kg
Product used for the Installation	Energy: 0,013 MJ/kg

All raw materials contributing more than 5% to any environmental impact are listed in the following table.

PRODUCT COMPONENTS	WEIGHT (%)	POST-CONSUMER MATERIAL WEIGHT (%)	RENEWABLE MATERIAL WEIGHT (%)
Standard Product	100%	0 %	0 %
Binders	10-25 %	0 %	0 %
Fillers	40-90 %	0 %	0 %
Additives	0-5%	0 %	0 %
Water	10-25 %	0 %	0 %

LCA calculation information

FUNCTIONAL UNIT	1 kg of weberdry SS-8 extra Cement based, two component, full flexible, CMO1P class waterproofing slurry
SYSTEM BOUNDARIES	Cradle to grave
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. The construction of plants, production of machines and transportation systems are excluded.
ALLOCATIONS	Based on mass repartition. Water consumption, energy consumption and raw material transportation were weighted according to 2021 production figures of plants. In addition, hazardous and non-hazardous waste amounts were also allocated from 2021 total waste generation. The polluter pays and modularity principles have been followed.
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Data included is collected from 2 production sites in Türkiye. Production year from 2021 Background data: Ecoinvent V3.8 LCA Software: SimaPro

EPD of construction products may not be comparable if they do not comply with EN 15804. Environmental product declarations within the same product category from different programs may not be comparable.

LCA scope

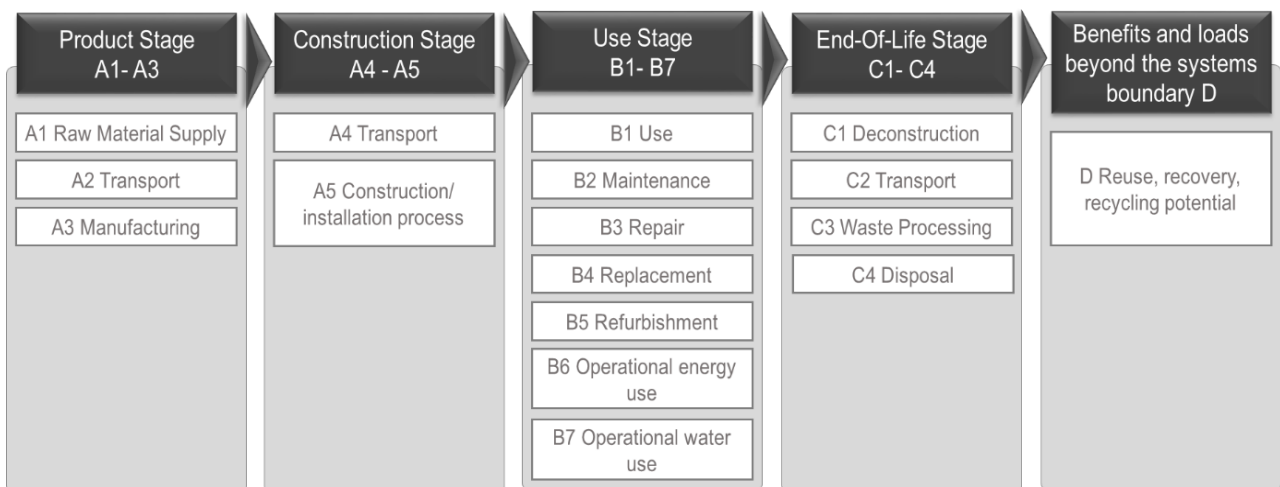
System boundaries (X=included. MND=module not declared)																	
	PRODUCT STAGE			CONSTRUCTION STAGE		USE STAGE						END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY	
	Raw material supply	Transport	Manufacturing	Transport	Construction-Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing		Disposal
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	TR	TR	TR	TR	TR	-	-	-	-	-	-	-	TR	TR	TR	TR	TR
Specific data used	>90% GWP- GHG																
Variation products	<10%																
Variation sites	<10%																

Life cycle stages

Figure 1: Cradle to grave analysis taking into account all stages of the Life Cycle product



Figure 2. Flow diagram of the Life Cycle



A1-A3, Product 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 15 804 standard. This rule is applied in this EPD.

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

A2, Transport to the manufacturer

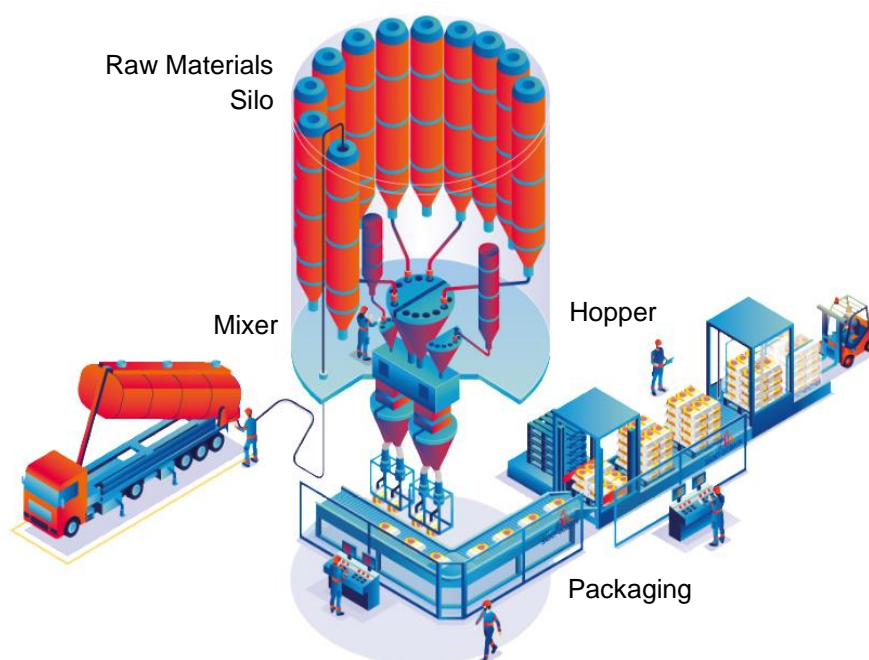
The raw materials are transported to the manufacturing site. In this case, the modelling includes road and boat transportation (weighted average values) of each raw material.

A3, Manufacturing

This module includes manufacturing of products but also on-site activities such as grinding, storing, mixing, packing and internal transportation. 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:



A4-A5, Construction process stage

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	Road: 16-32 metric ton, fuel consumption: 0,037 L/tkm, EURO6 Diesel Engine Sea: Container ship, DWT:43000 tonnes, fuel consumption: 0,0025 kg/tkm, heavy fuel oil
Distance	Road: 327,6 km (weighted average distance) Sea: 113,66 km (weighted average distance)

A5, Installation in the building:

For the implementation of the product, mixer pump equipment is generally used for high volume purposes. Smaller volumes are mixed and applied according to local circumstances. A pump is generally used.

The energy to run different equipment has been accounted for in relation to the product type and different uses. During installation and construction, 5 % of the material amount is estimated to be wasted through excess preparation and cleaning processes. The losses are considered as landfilled.

Within module A5, site-related packaging waste processing is included in the LCA. End-of-life of packaging materials is reported and allocated to the module where it arises. Packaging materials and leftovers are considered 100 % collected and recycled.

PARAMETER	VALUE/DESCRIPTION
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	0,05 kg (5%)
Energy Use	0,013MJ/kg
Other resource use	None
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)	Polypropylene 48,5 g/kg Polyethylene Sheet: 8,8 g/kg Pallet: 0,0013 p/kg It is assumed that packaging and pallets are sent for recycling.

B1-B7, Use stage (excluding potential savings)

The use stage is divided into the following modules:

- B1: Use
- B2: Maintenance
- B3: Repair
- B4: Replacement
- B5: Refurbishment
- B6: Operational energy use
- B7: Operational water use

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. 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

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, the environmental impact is assumed to be very small and can be neglected.

C2, Transport to waste processing

This stage includes the transportation effects of demolished waste to a waste processing area. 50 km distance is assumed that the distance between demolishing area to a waste processing area.

C3, Waste processing for reuse, recovery and/or recycling

The product is considered to be landfilled without reuse, recovery or recycling. It is classified as 'nonhazardous waste' in the European list of waste products. The effects of any treatment process to the demolished waste is included in this stage. It is assumed that no treatment is needed as 100 % of the material goes to a landfill.

C4, Disposal

The impact of landfill is taken into account according to available data.

End of life:

PARAMETER	VALUE/DESCRIPTION
Collection process specified by type	1 kg collected with mixed construction waste
Recovery system specified by type	0% of waste
Disposal specified by type	100 % (1 kg) product to municipal landfill
Assumptions for scenario development (e.g. transportation)	16-32 metric ton, fuel consumption: 0,037 L/tkm, EURO6 Diesel Engine. Distance covered is 50 km.

D, Reuse/recovery/recycling potential

100% of wastes are landfilled. There is no reuse, nor recovery, nor recycling of this product. Hence, no recycling benefits are reported on stage D.

LCA results















As specified in EN 15804:2012+A2:2019 and the PCR 2019:14 Construction Products, version 1.25. The environmental impacts are declared and reported using the baseline characterization factors from the ILCD. Raw materials and energy consumption, as well as transport distances have been taken directly from the manufacturing plant.

According to the EN 15804:2012+A2:2019 standard, the LCIA results are relative expressions translating impacts into environmental themes such as climate change, ozone depletion, etc. (midpoint impact categories). Thus, the LCIA results do not predict impacts on category endpoints such as impact on the extinction of species or human health. In addition, the results do not provide information about the exceeding of thresholds, safety margins or risks.

The results of the LCA with the indicators as per EPD requirement are given in the LCA result tables. According to the PCR, all energy calculations were obtained using Cumulative Energy Demand (LHV) methodology, while freshwater use is calculated with selected inventory flows in SimaPro. There are no co-product allocations within the LCA study underlying this EPD.











All emissions to air, water, and soil, and all materials and energy used have been included.

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.]	972E-3	54.5E-3	21.99E-3	0	0	0	0	0	0	0	6.44E-3	8.15E-3	0	5.28E-3	0
 Climate Change (fossil) [kg CO2 eq.]	1E+0	54.4E-3	22.75E-3	0	0	0	0	0	0	0	6.44E-3	8.14E-3	0	5.27E-3	0
 Climate Change (biogenic) [kg CO2 eq.]	-41.3E-3	46.0E-6	-801E-6	0	0	0	0	0	0	0	2.27E-6	7.03E-6	0	5.22E-6	0
 Climate Change (land use change) [kg CO2 eq.]	1E-3	22.1E-6	44.3E-6	0	0	0	0	0	0	0	642E-9	3.26E-6	0	4.97E-6	0
 Ozone depletion [kg CFC-11 eq.]	30.8E-9	12.6E-9	719E-12	0	0	0	0	0	0	0	1.38E-9	1.89E-9	0	2.13E-9	0
 Acidification terrestrial and freshwater [Mole of H+ eq.]	2.93E-3	186E-6	74.2E-6	0	0	0	0	0	0	0	66.9E-6	23.1E-6	0	49.5E-6	0
 Eutrophication freshwater [kg P eq.]	102.9E-6	3.53E-6	4.44E-6	0	0	0	0	0	0	0	199E-9	534E-9	0	482E-9	0
 Eutrophication freshwater [kg (PO4) ³ eq.]	315E-6	10.81E-6	13.6E-6	0	0	0	0	0	0	0	610E-9	1.63E-6	0	1.48E-6	0
 Eutrophication marine [kg N eq.]	615E-6	39.3E-6	14.96E-6	0	0	0	0	0	0	0	29.6E-6	4.70E-6	0	17.2E-6	0
 Eutrophication terrestrial [Mole of N eq.]	6.20E-3	431E-6	148.3E-6	0	0	0	0	0	0	0	325E-6	51.2E-6	0	188E-6	0
 Photochemical ozone formation - human health [kg NMVOC eq.]	2E-3	154E-6	54.7E-6	0	0	0	0	0	0	0	89.3E-6	19.7E-6	0	54.8E-6	0
 Resource use, mineral and metals [kg Sb eq.] ¹	1.97E-6	191E-9	43.4E-9	0	0	0	0	0	0	0	3.31E-9	28.9E-9	0	12.0E-9	0
 Resource use, energy carriers [MJ] ¹	18.24E+0	823E-3	393E-3	0	0	0	0	0	0	0	88.3E-3	123E-3	0	147E-3	0
 Water deprivation potential [m ³ world equiv.] ¹	481.0E-3	2.49E-3	10.5E-3	0	0	0	0	0	0	0	138E-6	376E-6	0	6.62E-3	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

Resources Use indicators	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				D 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
 Use of renewable primary energy (PERE) [MJ]	1E+0	11.6E-3	26.8E-3	0	0	0	0	0	0	0	496E-6	1.76E-3	0	1.25E-3	0
 Primary energy resources used as raw materials (PERM) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
 Total use of renewable primary energy resources (PERT) [MJ]	1E+0	11.6E-3	26.8E-3	0	0	0	0	0	0	0	496E-6	1.76E-3	0	1.25E-3	0
 Use of non-renewable primary energy (PENRE) [MJ]	12.86E+0	823E-3	393E-3	0	0	0	0	0	0	0	88.3E-3	123E-3	0	147E-3	0
 Non-renewable primary energy resources used as raw materials (PENRM) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
 Total use of non-renewable primary energy resources (PENRT) [MJ]	12.86E+0	823E-3	393E-3	0	0	0	0	0	0	0	88.3E-3	123E-3	0	147E-3	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]	5.29E-3	137E-6	116E-6	0	0	0	0	0	0	0	7.76E-6	20.7E-6	0	161E-6	0

Waste Category & Output flows



Waste Category & Output Flows	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				D 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
 Hazardous waste disposed (HWD) [kg]	5.42E-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
 Non-hazardous waste disposed (NHWD) [kg]	1.73E-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
 Radioactive waste disposed (RWD) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
 Material for Energy Recovery (MER) [kg]	0	0	57.3E-3	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)

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
 GWP-GHG [kg CO2 eq.] ²	979E-3	54.0E-3	22.1E-3	0	0	0	0	0	0	0	6.37E-3	8.08E-3	0	5.18E-3	0

² The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Information on biogenic carbon content

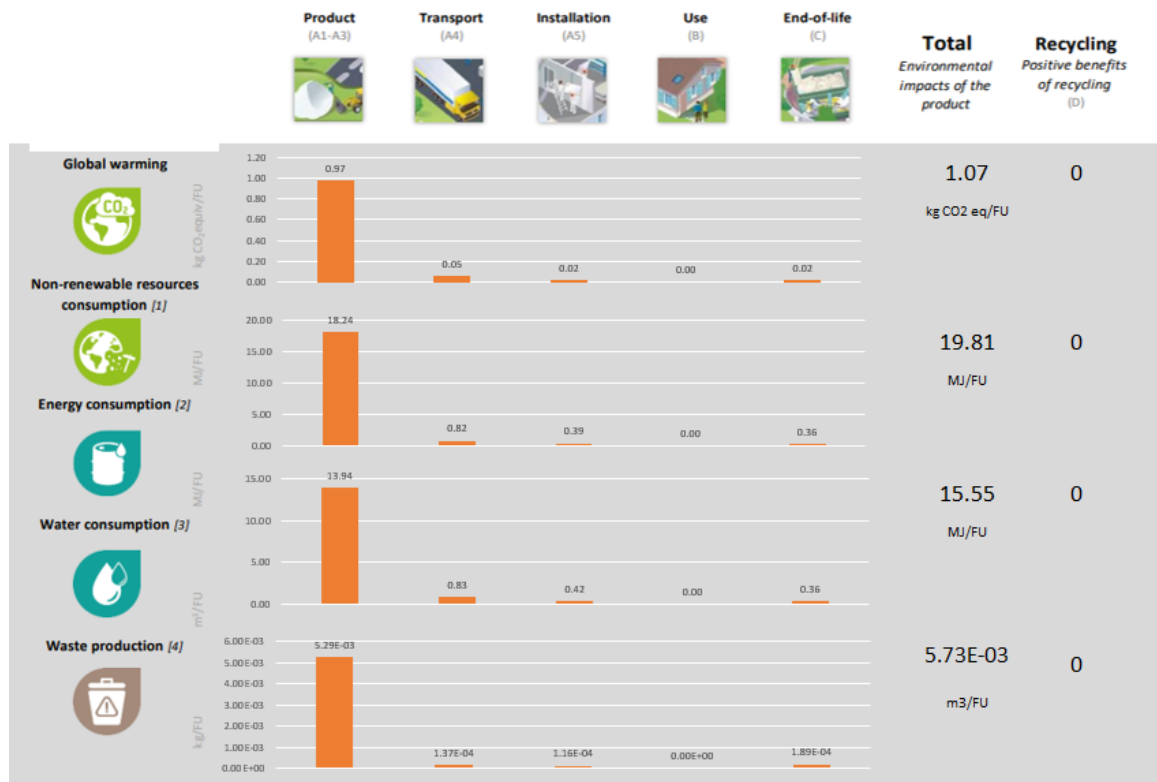
		PRODUCT STAGE
Biogenic Carbon Content		A1 / A2 / A3
	Biogenic carbon content in product [kg]	1E-3
	Biogenic carbon content in packaging [kg]	12.57E-3

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

The biogenic carbon content in the product, is due to the production of biobased materials. On the other hand, the biogenic carbon content for packaging is quantified for the cardboard, the craft paper and the pallet.

LCA interpretation

The following figure refers to a declared unit of 1 kg product to use in the regularization of pavements.



[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.

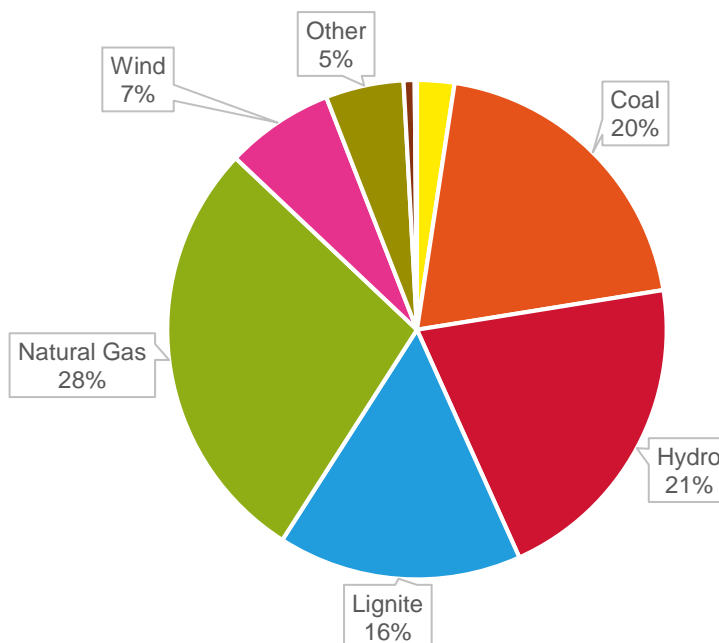
With the graphic views above, it is possible to assess which steps of the LCA are the most impacting for the chosen indicators.

- 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 91% 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.
- The raw material stage is more dominant than the transportation and manufacturing stages.
- As expected, waste production is mainly generated during installation due to products packaging and at the end-of-life stage with building demolition.

Appendix:

Electricity information

TYPE OF INFORMATION	DESCRIPTION
Location	Türkiye
Geographical representativeness description	Split of energy sources in Turkey <ul style="list-style-type: none"> - Natural gas, 28% - Hydro, 21% - Coal, 20% - Wind, 7% - Other, 5% - Geothermal, 2% - Biogas, <1% - Biomass, <1%
Reference year	2018
Type of dataset	Cradle to gate, Ecoinvent
Source	IEA (International Energy Agency), 2018
CO ₂ emission kg CO ₂ eq. / kWh	0,626 (Medium Voltage)



Energy Sources for Türkiye Electricity Country Mix

Data quality

Scope: Türkiye
Time Period : 2021

Ecoinvent V3.8. was used for secondary data.

Raw Materials	Generic database, plant specific data
Transport	Generic database, plant specific data
Production	Generic database, plant specific data
Installation	Generic database, product specific data
Use Phase	Generic database
End of Life	Generic database, generic data

References

1. ISO 14040:2006: Environmental Management-Life Cycle Assessment-Principles and framework.
2. ISO 14044:2006: Environmental Management-Life Cycle Assessment-Requirements and guidelines.
3. ISO 14025:2006: Environmental labels and Declarations-Type III Environmental Declarations-Principles and procedures.
4. EN ISO 9001/ Quality Management Systems – Requirements
5. EN ISO 14001/ Environmental Management Systems – Requirements
6. ISO 45001 Health and Safety Management
7. EN 15804:2019+A2 - Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
8. European Chemical Agency, Candidate List of substances of very high concern for Authorization.
http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp
9. The general program instructions (GPI) for the international EPD® (version 4.0: 2021)
10. The International EPD® System/ The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. www.environdec.com
11. Ecoinvent / Ecoinvent Centre, www.ecoinvent.org
12. PCR for Construction Products and CPC 54 Construction Services/ Prepared by IVL Swedish Environmental Research Institute. Swedish Environmental Protection Agency. SP Trä. Swedish Wood Preservation Institute. Swedisol. SCDA. Svenskt Limträ AB. SSAB. The International EPD System. 2019:14 Version 1.2.5 DATE 2024-12-20
13. SG Weber, www.tr.weber