ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN 15804 for:

Weberjoint Thin

Version 1

Date of publication: 2023-10-01

Validity: 5 years

Valid until: 2028-10-01

Scope of the EPD®: Kuwait

THE INTERNATIONAL EPD® SYSTEM

MENA EPD THE INTERNATIONAL EPD SYSTEM

Registration number
The International EPD® System:
S-P-10304

Production plant: Weber-Sodamco, Kuwait W.L.L. (Factory),

Bloc 1, Street #:28, Division n.1381, Unit 6,
Al Rai Area, Kuwait, PO. Box 496-20005

We care about people and their environment

At Weber, we believe that what matters most in the construction industry is to care about people and their environment. Weber is a world leader in industrial mortars with expertise and knowledge throughout the world. Weber is made up of 10,000 people in 62 countries supported by almost 200 production units with an annual turnover over €2 billion. Weber's services and solutions aim to help customers save time, feel confident and comfortable, be successful in their work and grow their business.

Our brand promises:

- **Well-being:** We care for the safety and benefit of all. Making lives easier, more convenient and more comfortable.
- **Empathy:** We care about people. Listening to what matters to people and taking into account theirs needs. Helping everyone to grow. Responding to the multiplicity of challenges in today's world, and adapting to the diversity of the lives that populate it.
- **Long-lasting:** We care about today. But also for the future. Taking responsibility to lead the change and build a tomorrow that is in harmony with its environment.

Our commitments:

Develop sustainable and comfortable solutions that guarantee the wellbeing of both individuals and society as a whole, these are the fundamentals of the Saint-Gobain brand promise. They are also the basis of the Group’s Corporate Social Responsibility (CSR), through commitments made to our teams, customers and local communities.

Site-related information: Weber-Sodamco, Kuwait W.L.L. (Factory)

Quality management system: ISO 9001:2015 IND17.6181 U/Q 1-2

- Environment management system: ISO 14001:2015 IND18.5154 U/E 1-2
- Health and Safety management system: OHSAS 18001:2007 IND17.6180 U/HS 1-2

General information

Manufacturer: Weber-Sodamco, Kuwait W.L.L. (Factory), Bloc 1, Street #:28, Division n.1381, Unit 6,

Al Rai Area, Kuwait, PO. Box 496-20005

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: (C-PCR) TO PCR 2019:14 Version 1.3.0, date 2023-06-20
c-PCR-003 Concrete and concrete elements
Prepared by: IVL Swedich Environmental Research Institute, EPD International Secretariat

UN CPC Code: 37510 Non-refractory mortars and concretes

Owner of the declaration: Weber-Sodamco, Kuwait Factory for Building Materials

Product / product family name and manufacturer represented: This EPD describes the environmental impacts of 1kg of cement based mortar - manufactured at Sodamco reference mass 1 kg.

EPD® prepared by: Nahla Neeme (Saint-Gobain EMME), Yves Coquelet (Saint-Gobain LCA central team).
Contact: Nahla Neeme, Nahla.Neeme@saint-gobain.com

Declaration issued: 2023-10-01, **valid until:** 2028-10-01

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).

EPD Program	International EPD System http://www.environdec.com/
EPD Registration Nº	S-P-10304
Date of publication	2023-10-01
EPD validity	5 years
EPD valid within the following geographical area	Kuwait
PCR review conducted by	The Technical Committee of the International EPD® System. Chair: Massimo Marino. Contact via info@environdec.com
Independent verification of the declaration and data, according to ISO 14025	Internal ☐ External ☒
Third party verifier	Andrew Norton Renuables Ltd www.renuables.co.uk Email: a.norton@renuables.co.uk
Accredited or approved by	The International EPD System

Product description

Product description and description of use:

Weberjoint is cement-based pre-mixed compressible grouts used for filling tile joints in wet and dry areas. They are water resistant, easy to apply, and can be cleaned easily. They are thixotropic, crack-free, non-slump grouts that only need to be mixed with water and have good adhesion to tile's sides. Available in a wide range of attractive colors.

Technical data/physical characteristics	
Compressive strength as per EN 12808-3:2002 Flexural strength as per EN 12808-3:2002	> 15 N/mm^2 at 28 days > 3.5 N/mm^2 at 28 days
Water absorption after 30 min as per EN 12808-5 Water absorption after 240 min as per EN 12808-5	≥ 5 g at 28 days ≥ 10 g at 28 days
VOC and formaldehyde content ISO/FDIS 11890-2/GC-MS	None (<5g/l)
Resistance to fire as per BS EN 998 -2, 2003	Class A1

Description of the main product components and/or materials:

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

Component Category	Component specification	Amount (%)
Mineral content	Dolomite	**60-70%**
Powder Additives	Chemical component	**0-5%**
Binder	Cement	**30-40%**
Pigments	Iron oxide	**0-5%**

PARAMETER	VALUE (expressed per declared unit)
Quantity of mortar	1 kg
Packaging for the transportation and distribution	Polyethylene film: 0.1g/kg Composite bag: 4 g/kg Pallet: 10 g/kg
Product used for the installation	Energy: 0.0072MJ/kg Water: 0.3 l/kg

LCA calculation information

DECLARED UNIT	1 kg of Weberjoint
SYSTEM BOUNDARIES	Cradle to Gate with options and Module D
REFERENCE SERVICE LIFE (RSL)	60 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
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Data included is collected from one production site Weber-Sodamco, Kuwait Production year from 2021 Background data: Ecoinvent 3.8 and GaBi 10
PRODUCT CPC CODE	37510 Non-refractory mortars and concretes

According to EN 15804, EPD of construction products may not be comparable if they do not comply with this standard. According to ISO 21930, EPD might not be comparable if they are from different programmes.

Life cycle stages

Flow diagram of the Life Cycle

Figure 1: Life Cycle illustration of a product for construction

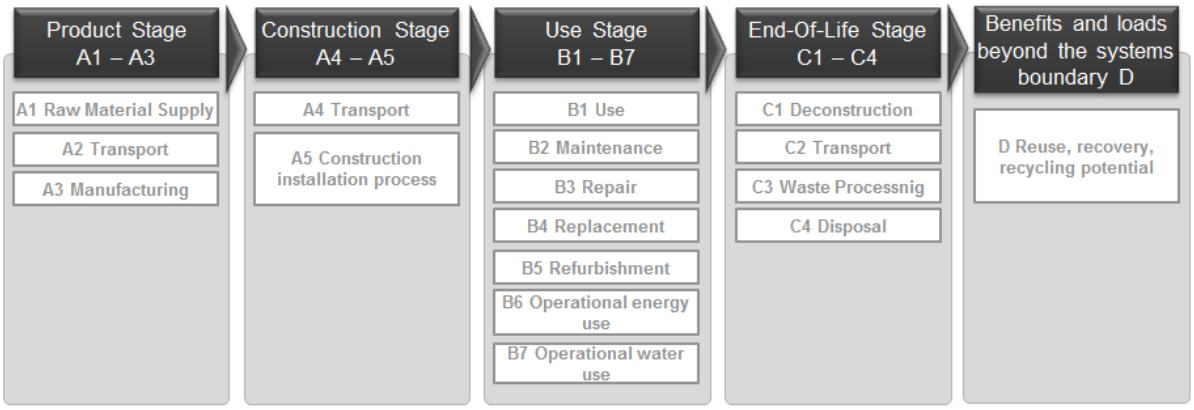


Figure 2: Cradle to gate with option analysis taking into account all stages of the Life Cycle product

Product stage, A1 - A3

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 15 804 standard. This rule is applied in this EPD.

Raw material supply – A1

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).

Transport to manufacturer – A2

The raw materials are transported to the manufacturing site. In this case, the modelling include road transportations (average values) of each raw material.

Manufacture – A3

This module includes manufacturing of products but also besides on-site activities such as 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.

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.

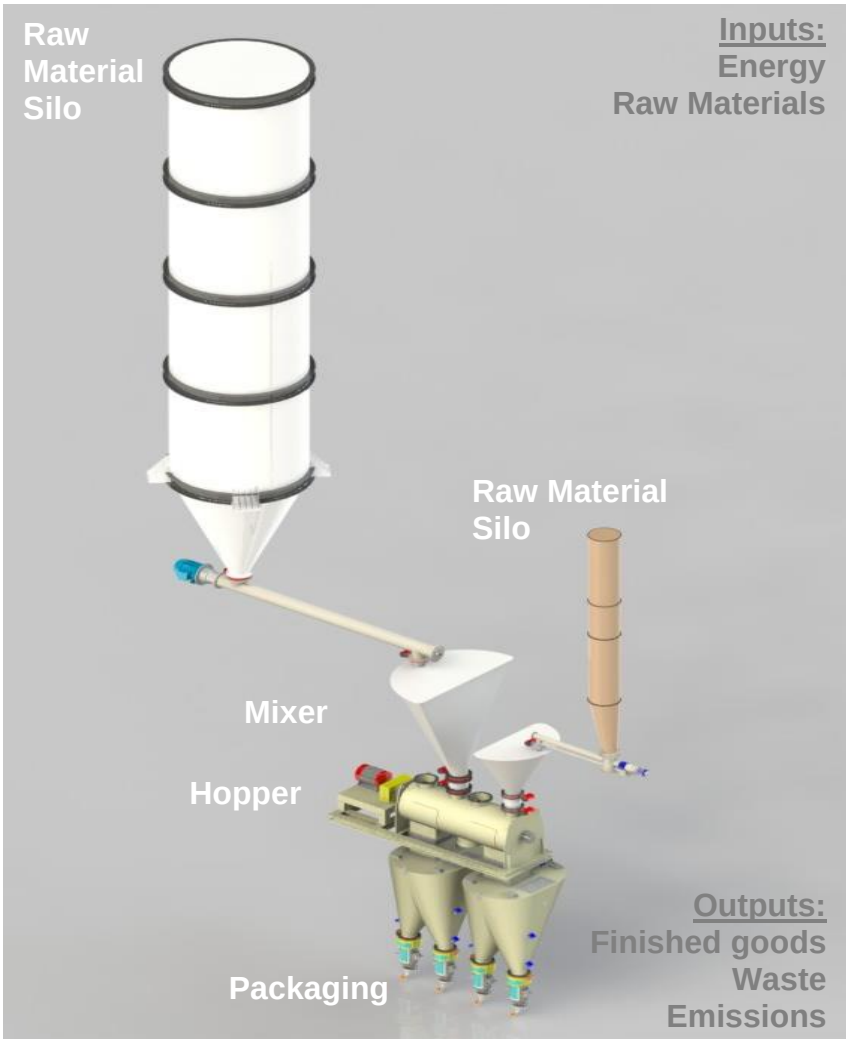
Packaging-related flows in the production process and all up-stream packaging are included in the manufacturing module, i.e. wooden pallets, paper sack and LDPE film.

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.

[1] **Included Transport**

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



Construction process stage, A4 - A5

Description of the stage:

Transport – A4

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.

Transport to the building site:

PARAMETER	VALUE (expressed per declared unit)
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat, etc.	17t payload/truck for 16.5 real load Fuel consumption 20l/100km
Distance	60 km
Capacity utilisation (including empty returns)	97 % for lorries 90% of empty returns
Bulk density of transported products	1.3 kg/lit
Volume capacity utilisation factor	1 (by default)

Construction installation process – A5

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.

As no factual data on waste treatment of packaging materials and leftovers of installation products from construction sites are available, they are considered 100 % collected and recycled. Wooden pallets are considered recycled in established systems.

Installation in the building:

PARAMETER	VALUE (expressed per declared unit)
secondary materials for installation (specified by materials)	none
Water use	0.25 to 0.32 liters/kg
Other resource use	none
Quantitative description of energy type (regional mix) and consumption during the installation process	0.0075 MJ/kg
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	0.05 kg (5%)
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 film: 0.1 g/kg PE Paper bag: 4.5 g/kg Pallet: 10 g/kg Packaging are landfilled and pallets are reuse 7 time and after considered as landfill
Direct emissions to ambient air, soil and water	none

Use stage (excluding potential savings), B1 - B7

Description of the stage:

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 Weberjoint. 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.

End-of-life stage C1 - C4

Description of the stage:

Landfill is considered to be the worst scenario.

The end-of-life stage is divided into the following modules:

Deconstruction – C1

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.

Transport to waste processing – C2

The model use for the transportation is applied (cf. table below).

Waste processing – C3

The product is considered to be landfilled without reuse, recovery or recycling. It is classified as 'non-hazardous waste' in the European list of waste products.

Disposal –C4

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

Additional technical information of End-of-life:

PARAMETER	VALUE (expressed per declared unit) / 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)	Average truck trailer with 27t payload, diesel consumption 38L/100km ; 50km distance to landfill

Reuse/recovery/recycling potential, D

As 100% of the mortar is considered Landfilled, the modulus D is considered as zero.

LCA results

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

CML 2001 has been used as the impact model. Specific data has been supplied by the plant, and generic data come from GABI and Ecoinvent databases.

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

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

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	Reuse-recovery
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

ENVIRONMENTAL IMPACTS

	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery, recycling
Impacts 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
Climate Change - total [kg CO2 eq.]	6.62E-01	3.88E-03	6.97E-02	0	0	0	0	0	0	0	4.93E-03	3.32E-03	0	7.49E-02	0
Climate Change, fossil [kg CO2 eq.]	6.56E-01	3.81E-03	6.22E-02	0	0	0	0	0	0	0	4.92E-03	3.29E-03	0	1.67E-02	0
Climate Change, biogenic [kg CO2 eq.]	5.35E-03	4.90E-05	7.49E-03	0	0	0	0	0	0	0	6.42E-06	1.38E-05	0	5.81E-02	0
Climate Change, land use and land use change [kg CO2 eq.]	4.58E-04	2.14E-05	5.20E-05	0	0	0	0	0	0	0	6.34E-08	2.25E-05	0	4.80E-05	0
Ozone depletion [kg CFC-11 eq.]	1.45E-08	2.30E-16	1.45E-09	0	0	0	0	0	0	0	2.93E-16	3.28E-16	0	6.18E-17	0
Acidification [Mole of H+ eq.]	2.29E-03	5.07E-06	1.90E-04	0	0	0	0	0	0	0	7.65E-06	4.58E-06	0	1.20E-04	0
Eutrophication, freshwater [kg P eq.]	1.54E-04	1.15E-08	1.46E-05	0	0	0	0	0	0	0	9.30E-10	1.19E-08	0	2.86E-08	0
Eutrophication, marine [kg N eq.]	5.31E-04	1.85E-06	8.34E-05	0	0	0	0	0	0	0	2.63E-06	1.65E-06	0	3.08E-05	0
Eutrophication, terrestrial [Mole of N eq.]	5.46E-03	2.18E-05	4.32E-04	0	0	0	0	0	0	0	2.90E-05	1.93E-05	0	3.38E-04	0
Photochemical ozone formation, human health [kg NMVOC eq.]	1.79E-03	4.45E-06	1.54E-04	0	0	0	0	0	0	0	7.98E-06	3.98E-06	0	1.07E-04	0
Resource use, mineral and metals [kg Sb eq.]	1.96E-06	3.21E-10	1.79E-07	0	0	0	0	0	0	0	1.96E-10	3.36E-10	0	1.50E-09	0
Resource use, fossils [MJ]	1.11E+01	5.14E-02	1.04E+00	0	0	0	0	0	0	0	6.47E-02	4.38E-02	0	2.19E-01	0
Water use [m³ world equiv.]	3.68E-01	3.45E-05	4.54E-02	0	0	0	0	0	0	0	1.32E-05	3.74E-05	0	1.75E-03	0

Resources Use indicators

	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery, recycling
Ressources 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]	1.09E+00	2.92E-03	9.23E-02	0	0	0	0	0	0	0	2.56E-04	3.04E-03	0	2.86E-02	0
Primary energy resources used as raw materials (PERM) [MJ]	3.67E-01	0	2.98E-02	0	0	0	0	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT) [MJ]	1.46E+00	2.92E-03	1.22E-01	0	0	0	0	0	0	0	2.56E-04	3.04E-03	0	2.86E-02	0
Use of non-renewable primary energy (PENRE) [MJ]	1.11E+01	5.15E-02	1.04E+00	0	0	0	0	0	0	0	6.49E-02	4.40E-02	0	2.19E-01	0
Non-renewable primary energy resources used as raw materials (PENRM) [MJ]	3.70E+00	0	3.68E-01	0	0	0	0	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources (PENRT) [MJ]	1.48E+01	5.15E-02	1.41E+00	0	0	0	0	0	0	0	6.49E-02	4.40E-02	0	2.19E-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]	8.69E-03	3.30E-06	1.07E-03	0	0	0	0	0	0	0	4.79E-07	3.51E-06	0	5.52E-05	0

Output Flows and waste category

	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery, recycling
Output Flows and waste category	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]	4.77E-11	2.47E-13	1.69E-10	0	0	0	0	0	0	0	2.55E-13	2.33E-13	0	3.33E-09	0
Non-hazardous waste disposed (NHWD) [kg]	3.34E-03	7.38E-06	5.52E-02	0	0	0	0	0	0	0	1.36E-05	7.17E-06	0	1.10E+00	0
Radioactive waste disposed (RWD) [kg]	6.80E-05	6.34E-08	3.57E-06	0	0	0	0	0	0	0	7.24E-08	8.17E-08	0	2.49E-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]	1.58E-03	0	7.92E-05	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)

Environmental indicator	Product stage	Construction stage		Use stage							End of life stage			
	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
GWP-GHG [kg CO2 eq.][2]	6.60E-01	3.84E-03	6.54E-02	0	0	0	0	0	0	0	4.92E-03	3.32E-03	0	6.79E-02

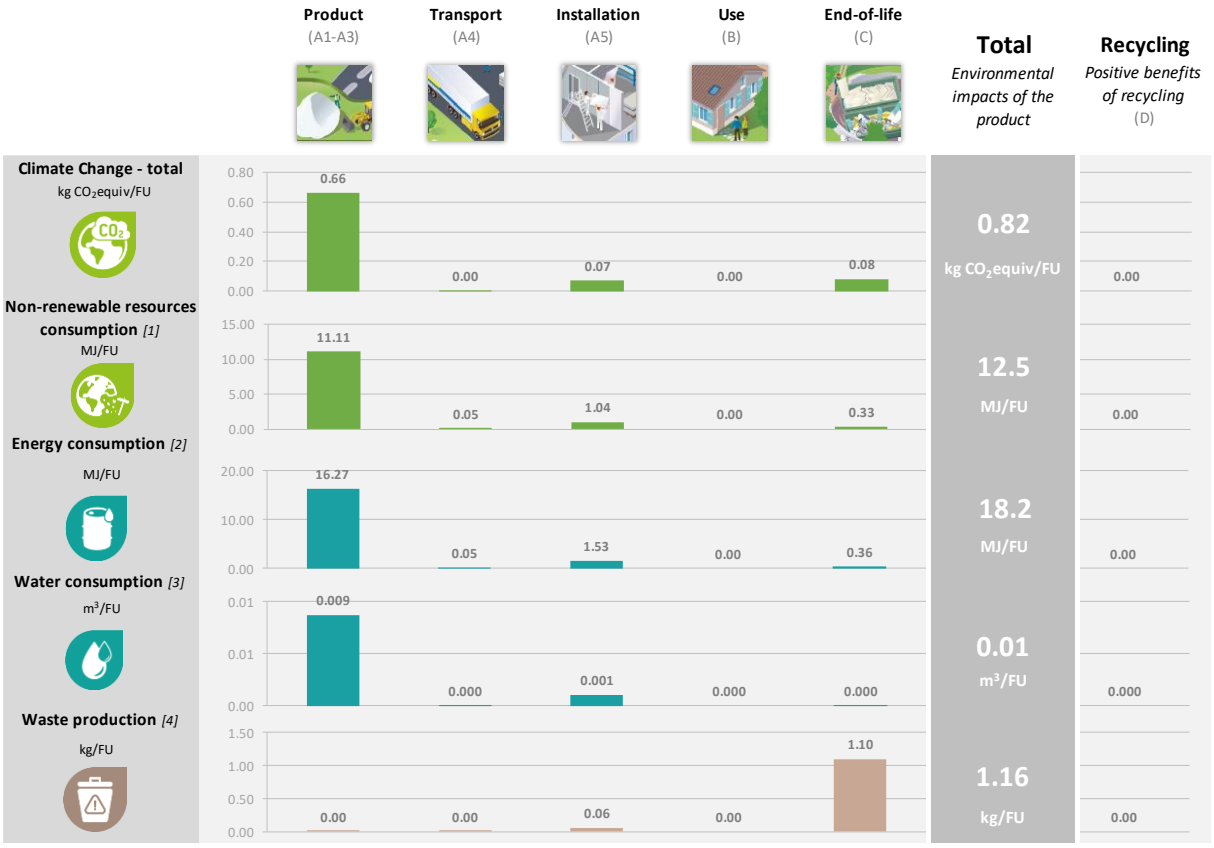
[2] *This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.*

Biogenic carbon content

	Product stage
Biogenic Carbon Content	A1 / A2 / A3
Biogenic carbon content in product [kg]	3.98E-03
Biogenic carbon content in packaging [kg]	7.56E-03

LCA results interpretation

The following figure refers to a declared unit of 1kg of Weberjoint.



[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.

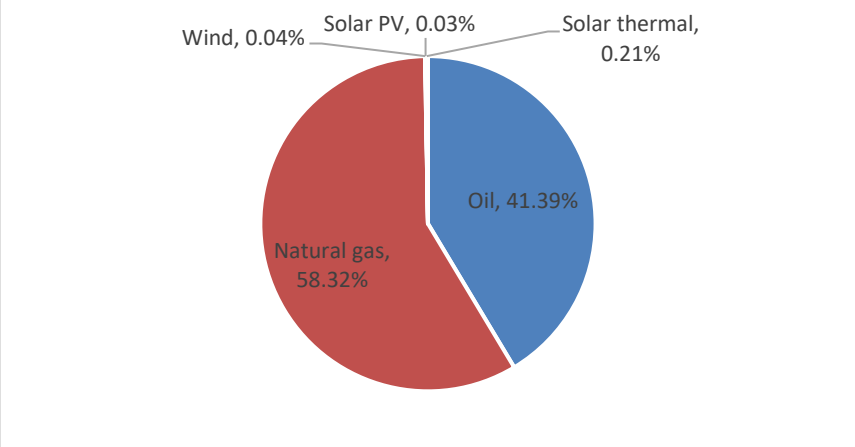
Comments:

With the graphic view 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: Global Warming, Non-renewable resources consumption, Energy consumption and Water consumption.
- As expected, waste production is mainly generated (over 95 %) during the end-of-life stage with building demolition.
- Water is added at installation.
- The formula mix and distribution pattern have identifiable impacts on the total.

Electricity description

TYPE OF INFORMATION	DESCRIPTION
Location	Representative of average production KUWAIT (2020)
Geographical representativeness description	Split of energy sources in Kuwait -Fuel oil 41.4% -Natural gas 58.3% -Photovoltaics 0.04 % -Solar thermal 0.02% -Wind power 0.2%
Reference year	2020
Type of data set	Cradle to gate from Thinkstep
Source	International Energy Agency -2020



Data Quality

Scope: Kuwait

Period: 2021

Background information is taken from the GaBi or Ecoinvent database, trade association or suppliers data.

Raw Materials	Generic database, trade association and supplier data
Production	Own specific data
Transport	Generic and specific data
Application	Generic and specific data
Life in Use	Generic data
End of Life	Generic data
Energy	Generic average country

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 14025: 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. Saint-Gobain Environmental Product Declaration Methodological Guide for Construction Products, Version 3.0.1 (2013)