

Environmental Product Declaration



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

1000 kg of precast concrete products

CPC 3754-Tiles, flagstones, bricks and similar articles, of cement, concrete or artificial stone

from

PREFABRICADOS ETXEBERRIA S.A.



Prefabricados Etxeberria S.A.
Pol. Industrial Agote, 9
20740 Zestoa, Gipuzkoa (Spain)

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-02473
Publication date:	2021-01-20
Valid until:	2026-01-20

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



General information

Programme information

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

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14Construction products, version 1.1
PCR review was conducted by: The Technical Committee of the International EPD®System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact .
Independent third-party verification of the declaration and data, according to ISO 14025:2006: <input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification
Third party verifier: Tecnalia R&I Certificacion, SL Auditor: Maria Feced info@tecnaliacertificacion.com Accredited by: ENAC nº125/C-PR283 accreditation.
Procedure for follow-up of data during EPD validity involves third party verifier: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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.

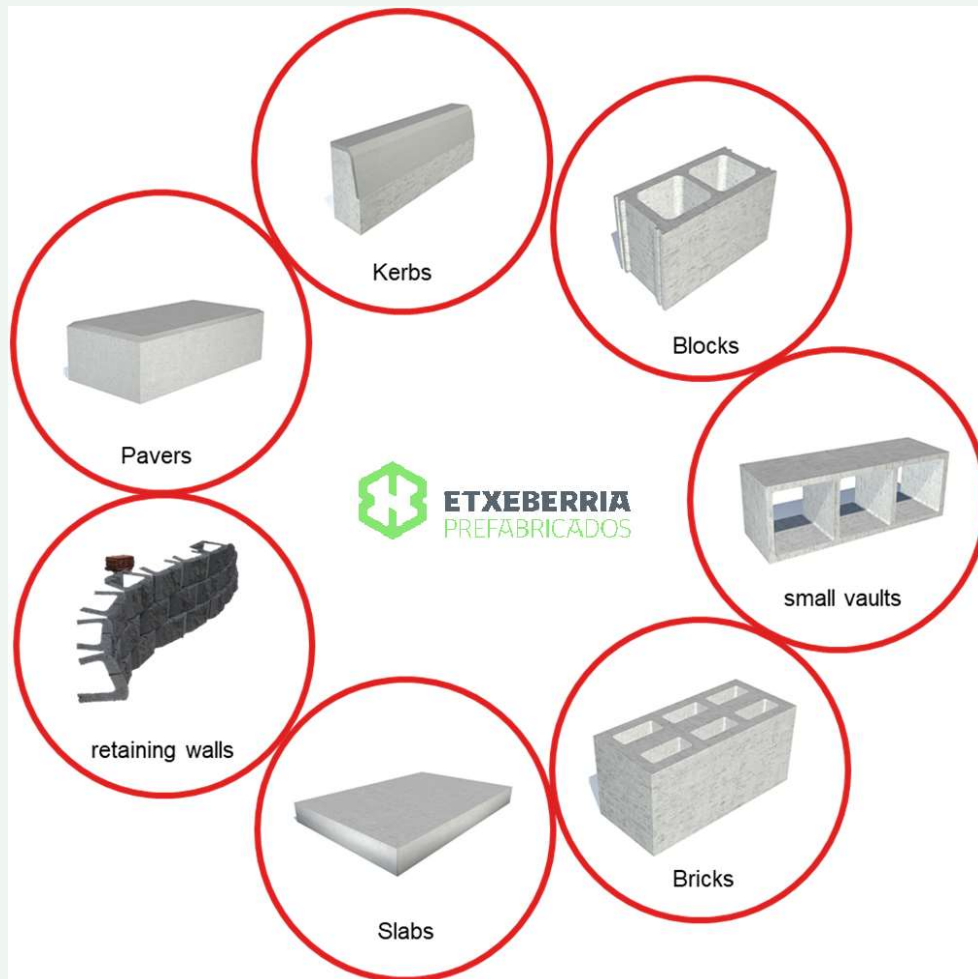
The verifier and the program operator do not have any claim nor have any responsibility of the legality of the product.

Product information

Product name: Precast concrete products.

Product description:

The products analysed are small-sized precast concrete elements for satisfying a wide array of building and civil engineering applications. Precast concrete is a construction product produced by casting concrete in a reusable mold which is cured in a controlled environment. The concrete is obtained through the homogenization of cement, aggregates, water and additives. The aggregates used in these products are of recycled origin, from the iron and steel industry and foundry.



- Pavers: Pavers can be placed in heavy traffic locations, parking lots, avenues, streets, esplanades, highways, gardens, and in other urban development architectural applications.
- Kerbs: Kerbs are elements created for road traffic, parking areas and roads, to isolate sidewalks with topsoil, delimitation of different heights, etc.
- Blocks: Concrete blocks are primarily used as a building material in the construction of walls.
- Small vaults: For the execution of slabs.
- Bricks: Used in facades, separation of houses, stairs, elevators, premises, etc.
- Slabs: for the execution of pavements.
- Retaining walls: Hollow blocks for the execution of retaining walls.

UN CPC code: 3754- Tiles, flagstones, bricks and similar articles, of cement, concrete or artificial stone.

LCA information

Declared unit: 1000 kg of precast concrete products.

Reference service life: RSL is not relevant for this EPD.

Time representativeness: 2019.

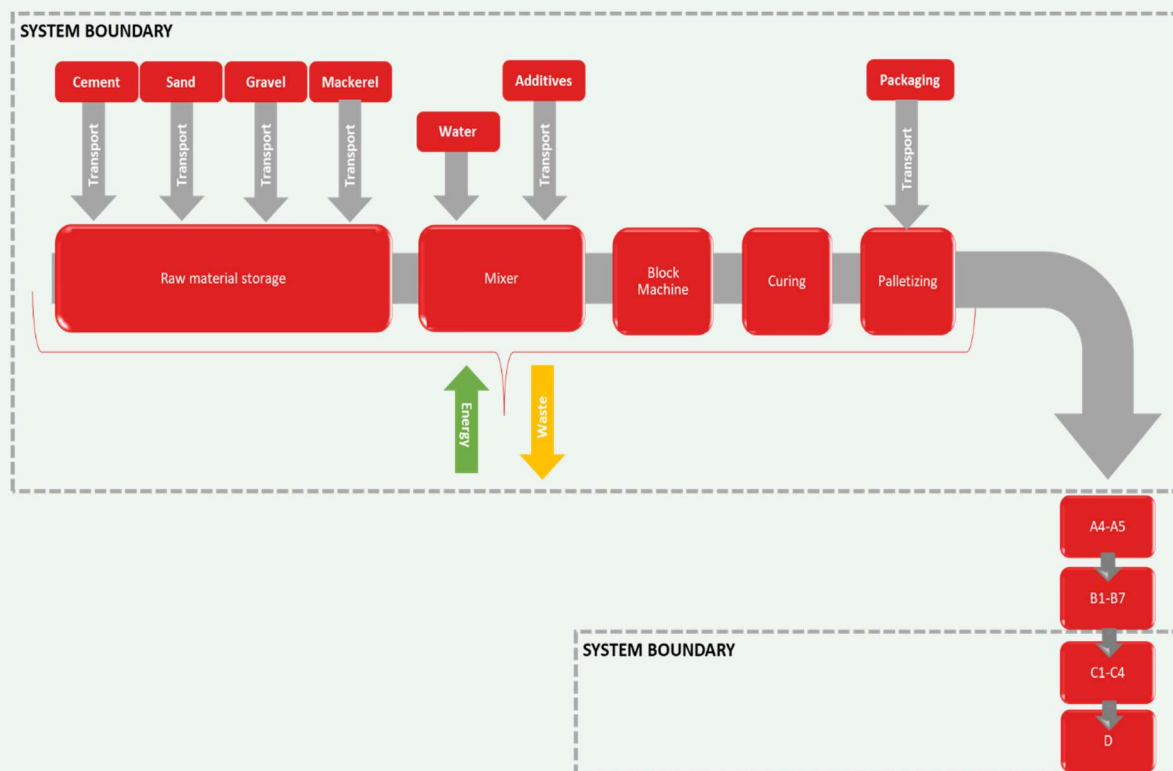
Database(s) and LCA software used:

All the data used to model the process and obtain the Life Cycle Inventory are specific data and have been obtained by measurements made during the year 2019. They are representative of the different processes implemented during the manufacturing process. The data has been measure directly at the company's own premises. In addition, the most complete and highest quality European life cycle inventory database, Ecoinvent 3.6, has been used, as this database contains the most extensive and updated information and its scope coincides with the geographical, technological and temporal area of the project. The LCA was modelled with SimaPro 9.1.1.1.

Description of system boundaries:

Cradle to gate with modules C1–C4 and module D (A1-A3 + C + D). The life cycle stages A4-A5, B1-B7 were excluded from the LCA study.

System diagram:



Manufacturing process:

The choice of raw materials for its manufacture is one of the basic factors for obtaining a good material. The sand, gravel and mackerel are stored outside in piles and are transferred in the plant as they are needed. The cement is stored outside in large vertical silos to protect it from moisture.

The required amounts of sand, gravel, mackerel and cement are transferred by gravity to a weigh batcher. The dosage of its components is carried out with an electromechanical and electronic weighing system.

The dry materials then flow into a stationary mixer. After the dry materials are blended, water and additives are added to the mixer. Once the concrete mix is completely mixed it is dumped into a block machine. In the block machine, the concrete is forced downward into molds. When the molds are full, the concrete is compacted by a press.

The compacted blocks are pushed down and out of the molds onto a pallet. The pallet and blocks are pushed out of the machine and onto a chain conveyor. Block pallets are transported to the curing place.

Curing is a very important operation that is carried out, which is called "natural drying" which consists of allowing the material to harden spontaneously without subjecting it to any procedure, putting it in curing chambers, thus avoiding drafts, sudden changes in temperature, maintaining adequate humidity to avoid possible cracks.

Finally the products are strapped and packed in the packing machine and are stored until dispatching.

More information: For more information please visit <http://www.grupoetxeberria.com/>

Author of the Life Cycle Assessment:

IK ingenieria

Av. Cervantes 51, Edif. 10, planta 5, dpto.

748970 Basauri, Bizkaia (Spain)

Data quality:

The environmental impact of the steel profiles and accessories has been calculated based on the international standards established for the development of environmental product declarations, such as ISO 14025 for the preparation of the environmental product declaration, ISO 14040 and ISO 14044 for the preparation of the life cycle analysis, UNE-EN 15804:2012+A2:2020 (MARCH 2020) and the Product Category Rules PCR - "2019:14 Construction products " (Version 1.1) of the CPC 3754.

Data has been collected in 2019 and is representative of that year. Data for raw material supply, transport to fabrication plant and production (A1-A3) is based on specific consumption data for the factory at Zestoa. Generic background datasets were used for the upstream and downstream processes. SimaPro v9.1.1.1. software was used to prepare the life cycle analysis together with the Ecoinvent 3.6 database. Characterization factors from EN 15804:2012 + A2:2019.

The geographical coverage is Europe. Technological coverage is typical or average.

Assumptions:

The following assumptions have been made in this EPD:

- It does not include the manufacturing processes of the capital goods or spare parts and/or maintenance with a life of more than three years.
- The environmental impact of infrastructure for general management, office, and headquarters operations is not included.
- The impact caused by people (common activities, travel for work...) will not be considered.
- The processes associated with fuel production are intrinsically included in the indicators in Ecoinvent's database used in carrying out the LCA.

- The environmental impact of external transport has been calculated using lorries from the ECOINVENT 3.6 database. These lorries have been selected to reflect the most realistic scenario possible.

Cut-off rules:

The standard ISO 14025 and the PCR - "2019:14 Construction products" indicate that the life cycle inventory data should include a minimum of 95% of the total inputs (materials and energy) for each stage. No such cut-off rules have been taken into account in this study.

Allocation:

The consumption of cement and aggregates have been allocated by the total tons of precast concrete products. Likewise, the consumption of energy has been allocated by the power of the machines and the operating hours.

Greenhouse gas emission from the use of electricity in the manufacturing phase:

In 2019 Prefabricados Etxeberria obtained the electricity supply from three different marketers, medium voltage (production of transmission lines, in addition to direct emissions and losses in grid). Therefore, the weighted electricity mix for the analyzed period is as follows:

Electricity mix	Amount	Units
Electricity weighted average	0,310	kg CO ₂ -eq./kWh

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Aggregates from steelmaker	7,26E+02	100%	0%
Limestone aggregates	1,48E+02	0%	0%
Silica aggregates	3,76E+00	0%	0%
Cement	7,40E+01	0%	0%
Water	4,81E+01	0%	0%
Additives	9,20E-02	0%	0%
TOTAL	1,00E+03	72,57%	0%
Packaging materials	Weight, kg	Weight-% (versus the product)	
Strap	1,14E-02	0,0011%	
Plastic film	3,42E-02	0,0034%	
Pallet	9,62E+00	0,9616%	
TOTAL	9,66E+00	0,9661%	

Packaging: The product is transported to the customers in with straps and plastic packing film.

Recycled material: A share of 72,57% of the products corresponds to post-consumer material (aggregates from steelmaker).

No substances included in the Candidate List of Substances of Very High Concern for authorization under REACH Regulations are present in the precast concrete products manufactured by Prefabricados Etxeberria, either above the threshold for registration with the European Chemicals Agency or above 0,1% (wt/wt).

Environmental Information

Potential environmental impact – mandatory indicators according to EN 15804

Results per functional or declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	6,76E+01	0,00E+00	8,33E+00	1,59E+00	1,27E+00	-5,16E-02
GWP-biogenic	kg CO ₂ eq.	-1,78E+01	0,00E+00	4,45E-03	3,45E-02	2,53E-03	-1,80E-03
GWP-luluc	kg CO ₂ eq.	5,16E-02	0,00E+00	2,91E-03	1,13E-03	3,55E-04	-5,18E-05
GWP-total	kg CO ₂ eq.	4,98E+01	0,00E+00	8,34E+00	1,62E+00	1,28E+00	-5,35E-02
ODP	kg CFC 11 eq.	3,53E-06	0,00E+00	1,89E-06	3,46E-07	5,25E-07	-2,99E-09
AP	mol H ⁺ eq.	1,93E-01	0,00E+00	3,41E-02	1,03E-02	1,21E-02	-5,85E-04
EP-freshwater	kg P eq.	9,10E-04	0,00E+00	6,54E-05	4,31E-05	1,43E-05	-2,05E-06
EP-freshwater	kg PO ₄₃ - eq.	2,79E-03	0,00E+00	2,01E-04	1,32E-04	4,39E-05	-6,29E-06
EP-marine	kg N eq.	5,15E-02	0,00E+00	1,01E-02	3,41E-03	4,16E-03	-1,32E-04
EP-terrestrial	mol N eq.	6,05E-01	0,00E+00	1,12E-01	3,83E-02	4,59E-02	-2,17E-03
POCP	kg NMVOC eq.	1,63E-01	0,00E+00	3,42E-02	1,07E-02	1,33E-02	-4,29E-04
ADP-minerals&metals*	kg Sb eq.	2,85E-04	0,00E+00	2,26E-04	3,37E-05	1,17E-05	-2,73E-05
ADP-fossil*	MJ	3,98E+02	0,00E+00	1,26E+02	3,29E+01	3,56E+01	-4,72E-01
WDP	m ³	6,34E+00	0,00E+00	3,50E-01	1,73E-01	1,60E+00	-2,55E-02
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption						

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit						
Indicator	A1-A3	C1	C2	C3	C4	D
GWP-GHG ¹	4,98E+01	0,00E+00	8,34E+00	1,62E+00	1,28E+00	-5,35E-02

Use of resources

Results per functional or declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	7,04E+01	0,00E+00	1,77E+00	9,19E+00	2,88E-01	-6,92E-02
PERM	MJ	1,83E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,53E+02	0,00E+00	1,77E+00	9,19E+00	2,88E-01	-6,92E-02
PENRE	MJ	3,96E+02	0,00E+00	1,26E+02	3,29E+01	3,56E+01	-4,72E-01
PENRM	MJ.	2,12E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	3,98E+02	0,00E+00	1,26E+02	3,29E+01	3,56E+01	-4,72E-01
SM	kg	7,26E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	2,04E-01	0,00E+00	1,32E-02	3,18E-02	3,81E-02	-1,04E-02
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water						

Waste production and output flows

Waste production

Results per functional or declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	4,74E-04	0,00E+00	3,29E-04	5,65E-05	5,32E-05	-5,15E-06
Non-hazardous waste disposed	kg	4,38E+00	0,00E+00	6,01E+00	1,04E+00	2,42E+02	1,79E-02
Radioactive waste disposed	kg	2,14E-03	0,00E+00	8,57E-04	2,87E-04	2,34E-04	-1,47E-06

¹The 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 equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Output flows

Results per functional or declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	1,24E+00	0,00E+00	0,00E+00	7,58E+02	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Information on biogenic carbon content

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	UNIT	QUANTITY
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in packaging	kg C	1,13E-02

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

Additional information

No additional information is provided.

Information related to Sector EPD

This is an individual EPD®

Differences versus previous versions

This is the first version of the EPD®.

References

- ✓ General Programme Instructions of the International EPD® System. Version 3.01.
- ✓ ISO14040:2006. Environmental management. Life cycle assessment. Principles and framework.
- ✓ ISO14044:2006. Environmental management. Life cycle assessment. Requirements and guidelines.
- ✓ ISO 14020:2000 Environmental labels and declarations - General principles.
- ✓ ISO 14025:2010 Environmental labels and declarations -Type III Environmental Declarations - Principles and procedures.
- ✓ PCR - "2019:14 Construction products" (Version 1.1)
- ✓ UNE-EN 15804:2012+A2:2020. Sustainability of construction works - Environmental product declarations -Core rules for the product category of construction products

