Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Reinforced concrete bench TWIG

EPD of multiple products, based on a representative product
from

Escofet by Molins

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	EPD-IES-0003992
Publication date:	2024-08-09
Valid until:	2029-08-07

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

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): *PCR 2019:14 Construction products, version 1.3.4 Published on 2024.04.30, valid until: 2025.06.20 & PCR-021 Furniture valid until 2024.10.01 adopted from NPCR 026:2022 Part B for Furniture del Global Program Operator EPD-Norway, valid until: 2024.07.01*
PCR review was conducted by: *The Technical Committee of the International EPD System. A full list of members available on www.environdec.com. The review panel may be conacted via info@environdec.com. No chair appointed.*
Life Cycle Assessment (LCA)
LCA accountability: *Anthesis Group*
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by accredited certification body Third-party verification: Tecnalia R&I Certificacion, SL, info@tecnaliacertificacion.com is an approved certification body accountable for the third-party verification The certification body is accredited by: ENAC nº125/C-PR283 accreditation.
Procedure for follow-up of data during EPD validity involves third party verifier: ☒ Yes ☐ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: Escofet 1886 S.A.

Contact: Ramón Muntadas - rmuntadas@escofet.com

Description of the organisation: Escofet is a company located in Barcelona with more than 135 years of history, which through the design and manufacture of urban elements and architectural concrete, transforms cities and enhances the use of public space.

Product-related or management system-related certifications: ISO 14001 Environmental Management System and ISO 9001 Quality Management System.

Name and location of production site(s): Escofet 1886 S.A., Montserrat 162, 08760 Martorell, Barcelona (Spain)

Product information

Product name: Escofet reinforced concrete bench TWIG

Product identification: This EPD covers a concrete family of 21 reinforced benches represented by the product TWIG produced at Martorell (Spain), which is the best-selling product of this family of products and represents 31% of the total production of this family.

This family covers solid seating elements, made of molded self-compacting concrete with reinforcement, are available in different colors and finishes from the standard menu. Its formulation allows excellent durability, high resistance and low maintenance, as well as blending in urban and rural environments.

The following table includes the multiple products that covers this EPD:

Product	Weight (kg)
ABRIL	1106
MAYO 296	906
BANCA LOSA	1114
LEVIT 400	1050
GEN (2 SOPORTE+BANCA)	540
BOOMERANG	1882
EQUAL 300 CONCRETE	1131
TRAM RECTO	638
LONGO BANCA	2562
FLOR GRANDE	1737
TWIG	**1768**
MILENIO RECTO	690
HEBI CURVO MACIZO	1680
HERBI CURVO FLOTANTE	974
ISLERO	3015
NGUISA R375B	2260
LUNGO MARE A	2837
SLOPE	1500
BINOCULAR	1960
BANCO BILBAO	723
WAVE	1104

Escofet produces the concrete that forms the family of benches, in their production plant located in Martorell, from Portland cement, sand and granite, combined with different additives and water.

Product description: The TWIG bench is a concrete modular element reinforced with steel, with a branched plan with three arms with an organic shape similar to an asymmetrical “Y”. It has an area of 237 x 193 x 46 cm and weights 1768 kg. The corners of the three arms have the same geometry and trapezoidal section, being narrower at the base and with rounded upper edges. This assists the organic aggregation combined with the model with and without support, branching out to create meeting places in the landscape, promoting connection and interactivity between its users. Element without base, the installation is supported on the floor without the need for anchors.

UN CPC code: 3811 Seats.

Geographical scope: All raw materials are provided by Spanish suppliers but the products under study can be sell at a global scale. The following table shows the sales of the family of concrete reinforced benches:

Country	Total sales (%)
Europe	92
America	7
Asia/Africa/Oceania	1

LCA information

Declared unit: One bench made of reinforced concrete.

Estimated service life: 30 years. This approach has been based on the experience provided by the service life of similar products made of reinforced concrete.

Time representativeness: All specific data related to the production plant and used for the study dates from 2023.

Database(s) and LCA software used: The primary inventory data has been obtained from Escofet corresponding to 21 different reinforced concrete benches produced at Martorell (Spain) for the year 2023. Data is for the representative product.

The secondary data has been extracted from the Ecoinvent v3.10 database, included in the SimaPro v9.6 software and internationally recognized. Wherever possible, inventory data relating to the specific study countries, or in its absence from Europe in general, has been selected. These have been used for the stage of production and transport of raw materials, as well as for electricity generation or waste management processes, over which the manufacturer has no direct influence.

Description of system boundaries:
This is a type 3 EPD. Therefore, this EPD report considers the scope “cradle to gate with options, modules C1–C4, module D and with optional modules A4 and A5”, covering the modules of extraction and processing of raw materials (A1), their transportation to the production plant (A2), the reinforced concrete bench manufacturing process (A3), the distribution to the final client (A4) and installation (A5), end of life (C1-C4) and potential benefits and loads from the reuse and recycling of the concrete and steel at its end of life (D).

The use of the reinforced concrete benches (B1-B7) does not require any maintenance, repair, replacement or refurbishment. Moreover, no operational energy or water use is necessary. Therefore, the use stage has not impact.

Applicable lifecycle stages with the system boundaries and processes are described below.

Product stage (A1-A3):

- Raw material supply (A1): This module considers the extraction and processing of raw materials used for the manufacture of the reinforced concrete bench. Likewise, the production of the energy necessary for the manufacturing process (electricity and diesel) is also taken into account.
  Regarding electricity consumption, a 100% renewable electrical mix of 100% hydraulic origin has been modelled corresponding to the energy consumed at the ESCOFET plant. The production of 1 kWh of electricity consumed by the ESCOFET manufacturing plant in Martorell (Barcelona) in 2023 generates 0.0128 kg CO2 eq.
- Transport of the raw materials (A2): This module consists of the transportation of all raw materials covered by module A1, from the extraction, production, and treatment site to the factory, considering the specific distances of each material supplier.
- Manufacturing of the reinforced concrete bench (A3): This module refers to the production process of the reinforced concrete bench in the production plant. It includes the combustion of diesel) and the water consumed during the manufacturing process. It also considers the waste generated from the production process: the treatment and transport from the production plant to the waste manager. Finally, it considers the packaging used for distribution: the production of the primary and secondary packaging of the product (film and wooden pallet), and the transport of this packaging from suppliers to the Escofet factory.
  Concrete is a material composed of cement, aggregates, water and specific additives. Self-compacting concrete H-35-45 made of gray or white Portland cement, with a minimum cement content of between 350-400 kg/m^3. Granite or crushed white marble aggregate with a maximum size of 15 mm and B500S steel reinforcement, properly shaped to the structure of the piece, in an amount of 60 kg/m^3 and at a minimum distance from the surface of 2.5 cm. Water/cement ratio: 0.4 to 0.5. Stripped and water-repellent finish on its exterior surfaces.

Installation stage (A4-A5):

- Transport to the installation site (A4): The bench is transported to the installation point by truck or ship depending on the destination. The distance included corresponds to the weighted average between sales and the distance to each installation site.

Scenario information	**Unit (expressed per declared unit)**
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat, etc.	Road transport by >32 metric tonne lorry (Euro VI) Sea freight transport by container ship
Distance (weighted average)	873.19 km by road and 4,041.05 km by sea
Capacity utilisation (including empty returns)	61% load factor including empty returns
Bulk density of transported products	2446 kg/m^3
Volume capacity utilisation factor (factor: =1 or <1 or ≥ 1 for compressed or nested packaged products)	Factor <1

- Installation (A5): For this stage is included the electricity and additional materials (epoxy resin) necessary to carry out the correct installation of the product at the installation site. The waste treatment of the product packaging is also included in this phase.

Scenario information	Unit (expressed per declared unit)
Ancillary materials for installation (specified by material)	0.18 kg of epoxy resin
Water use	0 m^3
Other resource use	No applicable
Quantitative description of energy type (regional mix) and consumption during the installation process	0.005 kWh, considering an allocation between the medium voltage residual mix of the countries where the product is sold
Waste materials on the building site before waste processing, generated by the product's installation (specified by type)	Wood waste: 48 kg Plastic waste: 0.86 kg
Output materials (specified by type) as result of waste processing at the building site e.g. of collection for recycling, for energy recovery, disposal (specified by route)	Wood for incineration: 11.04 kg Wood for recycling: 29.28 kg Wood to landfill: 7.68 kg Plastic for incineration: 0.22 kg Plastic for recycling: 0.43 kg Plastic to landfill: 0.21 kg
Direct emissions to ambient air, soil and water	0 kg

The following table presents the end-of-life scenario that has been considered for those wastes generated during the installation of the products at the construction site.

End of life	Plastic	Wood
Disposal – landfill	24%	16%
Disposal – incineration	26%	23%
Recycling	50%	61%

End of life stage (C1-C4):

- Deinstallation (C1): This includes the electricity necessary for the dismantling of the bench after its use with a screwdriver.

- Transport to the waste processing site (C2): This module considers a default distance of 50 km between the building site and the waste manager facility.

- Waste processing (C3): This module includes the process of treating concrete waste by crushing it and melting the steel, a fundamental procedure in sustainable waste management in the construction sector. This module includes an additional transport of 100 km to represent

the transport from the collection point to the location where the recycling of the material takes place.

- Disposal (C4): This module includes the final discharge of waste that has not been destined for recovery or treatment processes. The following table describes de disposal scenario for the declared unit 1 TWIG bench.

Units for declared unit (1 bench)					
Collection process specified by type	Collected separately			1768 kg	
	Collected with mixed construction waste			0 kg	
Material		**Concrete**		**Steel**	
		Kg	%	Kg	%
Waste recovery process	Reuse	0	0	0	0
	Recycling	1332.44 kg	76%	14.80 kg	100%
	Energy recovery	0	0	0	0
Waste disposal	Landfill	420.76 kg	24%	0	0
	Incineration without energy recovery	0	0	0	0
Assumptions for scenario development, e.g. transportation	Waste is transported 50 km to final disposal by lorry 16-32 tonnes (Euro VI) Waste is transported 100 km to recycling site by lorry >32 tonnes (Euro VI)				

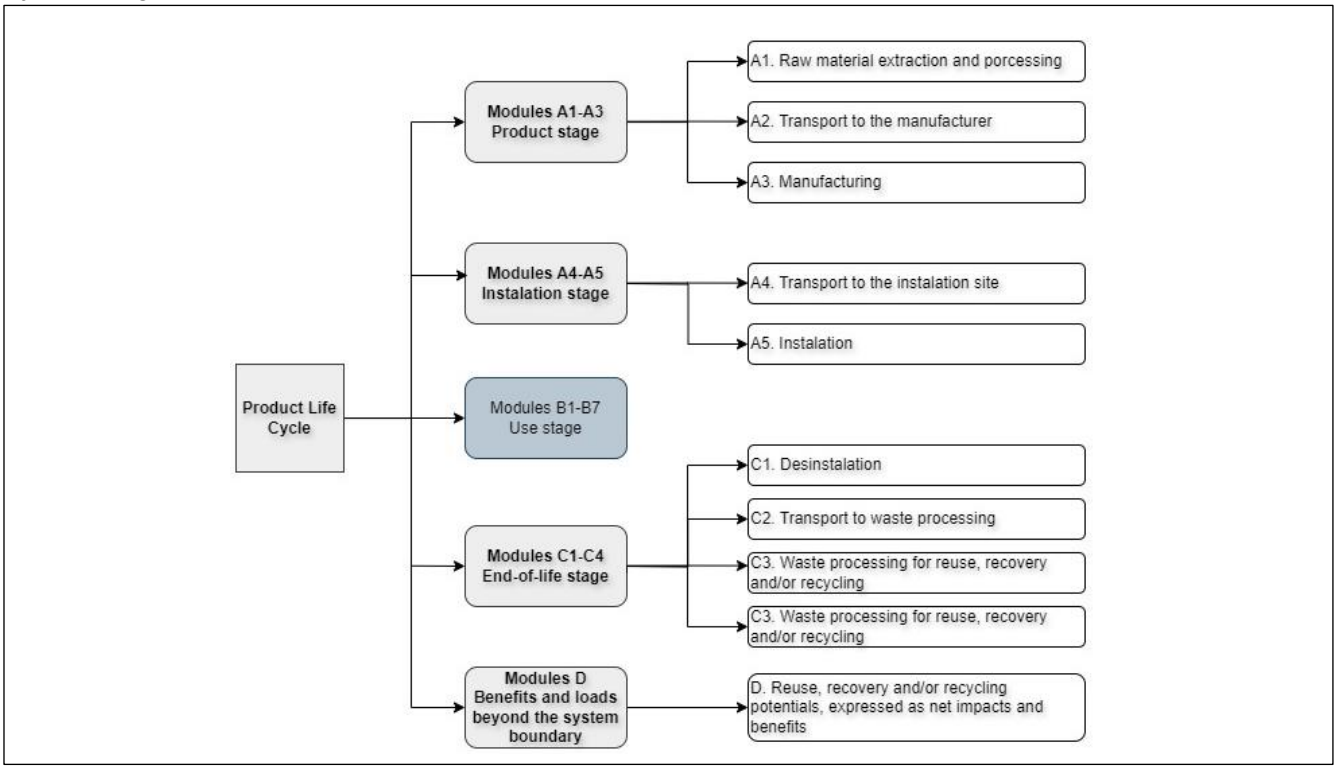
Benefits and loads beyond the system boundary (D): This module analyses the benefits and burdens related to the processes of recovery, reuse or recycling of waste from the product under study at their end of life, which could form part of the life cycle of a new product. Module D has been calculated using the protocols/formulae stated in UNE-EN 15804+A2 Annex D, section D.3.4.

	Units for declared unit (1 bench)	**Kg**	**%**
Benefits and loads beyond the system boundary (D)	Concrete for recycling	1332 kg	76%
	Steel for recycling	14.80 kg	100%

Material	$MMR\ out$ **(%)**	$MMR\ in$ **(%)**	**Quality factor**
Concrete	76	0	1
Steel	100	0	1

The scenarios for modules C1-C4 and D are realistic and representative of one of the most probable alternatives. The scenarios do not include processes or procedures that are not in current use or whose feasibility have not been demonstrated.

System diagram:



More information:

Company website for more information: escofet.com

Name and contact information of LCA practitioner:

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+34 938 515 055
www.anthesisgroup.com

Cut-off rules:

In accordance with the provisions of the PCR 2019:14 construction products, version 1.3.3 and the standard UNE-EN 15804:2012+A2:2020, 100% of total inflows (raw materials and energy) and outflows (including wastes) per module have been considered.

The following processes have not been included in the scope of the study:

- Manufacture of equipment used in production, buildings or any other assets.
- Business trips.
- Maintenance activities at the production plants and research and development.
- Transportation of personnel to and within the plants.
- Diffuse particle emissions during the transport and storage of raw materials.

Infrastructure and capital goods for upstream, core and downstream processes has been excluded.

Allocation procedures

- The electricity consumption of the product for been calculated using a mass allocation, by dividing the total electricity consumption of the production plant by the m3 of concrete contained in the product.
- For the rest of the production plant energy consumptions as well as for waste produced a mass allocation were used. It was calculated using the total units produced in 2023.

- For module C3 and C4, the end-of-life treatment of each material has been assigned according to the most common treatment of the materials that compose them among the European countries where the benches are distributed.

Data quality requirements: The quality of the data used to calculate this LCA meets the following requirements:

- Used background data are of recognised prestige and acceptance in the technical and scientific fields. In particular, the Ecoinvent v3.10 database, the most recent version existing at the time of the study, is considered to be of preferential use.

- Regionally specific datasets were used to model the energy consumption (electricity or diesel). For the processes of transport, production of raw materials or end-of-life, datasets were chosen according to their technological and geographical representation of the actual process.

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
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	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x
Geography	EU	EU	ES	EU	GLO	ND	ND	ND	ND	ND	ND	ND	EU	EU	EU	EU	EU
Specific data used	4.5%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	(-62/+227%)			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Content information

The following table describes the material content, including the biogenic, of the representative product TWIG of the family of reinforced concrete benches of ESCOFET.
The product does not have any dangerous substances from the candidate list of SVHC for Authorisation.

Product components	**Weight, kg**	**Post-consumer material, weight-%**	**Biogenic material, weight-%**	**Biogenic material, weight-kg**
Granite	700.80	0	0	0
Sand	438	0	0	0
Portland	292	0	0	0
Limestone	175.20	0	0	0
Additives	67.74	0	0	0
Water	79.44	0	0	0
Steel	14.82	0	0	0
TOTAL	1768	0	0	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/unit**	**Weight biogenic carbon dioxide, kg CO_2/unit**
Wood pallet	48	2.71	24	88
Low density polyethylene (LDPE)	0.856	0.04	0	

Results of the environmental performance indicators

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

It is discouraged the use of the results of modules A1-A3 without considering the results of module C. The EN reference packaged based on EF 3.1 has been used.

Mandatory impact category indicators according to EN 15804

Results per declared unit												
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	3.90E+02	6.47E+00	7.63E+00	4.04E+02	2.01E+02	2.08E+00	1.36E+01	1.41E+01	4.33E+01	1.14E+00	-1.97E+01
GWP-biogenic	kg CO_2 eq.	3.71E+00	2.29E-04	-8.80E+01	-8.43E+01	6.91E-03	8.84E+01	7.30E-03	4.81E-04	8.26E-03	8.46E-05	8.05E-03
GWP-luluc	kg CO_2 eq.	6.72E+00	1.64E-04	4.59E-03	6.73E+00	5.35E-03	6.12E-04	3.53E-03	3.46E-04	6.10E-03	4.67E-05	-6.08E-03
GWP-total	kg CO_2 eq.	4.00E+02	6.47E+00	-8.04E+01	3.26E+02	2.01E+02	9.05E+01	1.37E+01	1.41E+01	4.34E+01	1.14E+00	-1.97E+01
ODP	kg CFC 11 eq.	5.24E-06	1.37E-07	9.58E-08	5.47E-06	3.79E-06	4.43E-08	2.39E-07	2.87E-07	8.75E-07	1.69E-08	-6.58E-09
AP	mol H^+ eq.	1.48E+00	7.73E-03	5.65E-02	1.55E+00	2.44E+00	5.90E-03	3.56E-02	1.64E-02	1.48E-01	1.04E-02	-5.01E-02
EP-freshwater	kg P eq.	9.81E-03	5.61E-06	1.33E-04	9.95E-03	1.70E-04	2.91E-05	4.69E-04	1.18E-05	2.49E-04	4.11E-06	6.48E-04
EP-marine	kg N eq.	3.51E-01	1.70E-03	2.51E-02	3.78E-01	6.04E-01	1.97E-03	7.00E-03	3.64E-03	5.27E-02	4.72E-03	1.73E-04
EP-terrestrial	mol N eq.	4.78E+00	1.85E-02	2.76E-01	5.08E+00	6.70E+00	1.92E-02	7.66E-02	3.98E-02	5.76E-01	5.17E-02	-4.56E-02
POCP	kg NMVOC eq.	9.49E-01	1.68E-02	8.45E-02	1.05E+00	2.02E+00	7.74E-03	3.12E-02	3.56E-02	2.27E-01	1.56E-02	-1.49E-02

ADP-minerals&metals*	kg Sb eq.	1.30E-03	2.21E-07	5.43E-07	1.30E-03	5.17E-06	2.21E-07	7.30E-07	4.65E-07	2.06E-06	4.52E-08	-1.39E-04
ADP-fossil*	MJ	3.09E+03	8.84E+01	8.53E+01	3.26E+03	2.65E+03	2.67E+01	3.63E+02	1.86E+02	6.12E+02	1.47E+01	-1.73E+02
WDP*	m^3	1.11E+02	3.75E-02	1.96E+00	1.13E+02	1.09E+00	-9.65E-01	3.06E+00	7.90E-02	-2.97E+01	1.33E-02	-1.06E+01
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*

Additional mandatory and voluntary impact category indicators

Results per declared unit												
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	4.00E+02	6.47E+00	7.64E+00	4.14E+02	2.01E+02	2.51E+00	1.37E+01	1.41E+01	4.34E+01	1.14E+00	-1.97E+01
PM	disease inc.	1.20E-05	5.01E-07	1.52E-06	1.40E-05	1.16E-05	8.45E-08	9.80E-08	8.33E-07	1.42E-05	2.92E-07	7.05E-06
IRP[3]	kBq U-235 eq	8.16E+00	1.20E-02	1.04E-01	8.28E+00	3.11E-01	2.45E-02	3.33E+00	2.53E-02	4.17E-01	1.55E-03	-2.28E-01
ETP-fw[2]	CTUe	1.02E+03	2.67E-01	3.05E+00	1.03E+03	9.12E+00	2.22E+01	7.63E-01	5.59E-01	2.45E+00	1.09E-01	-5.39E+02
HTP-c[2]	CTUh	1.18E-06	4.83E-10	9.94E-09	1.19E-06	2.08E-08	1.09E-08	2.55E-09	9.81E-10	6.18E-09	2.49E-10	-2.35E-06
HTP-nc[2]	CTUh	2.53E-06	5.52E-08	1.47E-08	2.60E-06	1.24E-06	3.07E-08	4.36E-08	9.34E-08	3.03E-07	1.53E-09	1.10E-06
SQP[2]	Pt	6.57E+03	1.98E-01	2.70E+02	6.84E+03	5.36E+00	5.28E+00	1.47E+01	4.16E-01	1.33E+02	1.73E+01	-9.98E+01
Acronyms	GWP-GHG = Potential global warming - Greenhouse gases; PM = Particulate matter; IRP = Ionizing radiation. human health; ETP-fw = Ecotoxicity freshwater - organic; HTP-c = Human health. carcinogenic effects; HTP-nc = Human health. non-carcinogenic effects; SQP = Land use; NR = Non relevant											

[1]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.

[2]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

[3]This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents. occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil. from radon and from some construction materials is also not measured by this indicator

Resource use indicators

Results per declared unit												
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	4.97E+02	3.13E-01	-8.31E+02	-3.34E+02	7.94E+00	7.94E-01	1.28E+01	6.58E-01	1.27E+01	6.95E-02	-1.94E+01
PERM	MJ	0.00E+00	0.00E+00	8.84E+02	8.84E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	4.97E+02	3.13E-01	5.22E+01	5.50E+02	7.94E+00	7.94E-01	1.28E+01	6.58E-01	1.27E+01	6.95E-02	-1.94E+01
PENRE	MJ	1.28E+03	9.12E-01	-2.00E+01	1.26E+03	2.76E+01	5.11E+00	2.19E+02	1.92E+00	3.52E+01	6.95E-01	-1.95E+02
PENRM	MJ	0.00E+00	0.00E+00	3.70E+01	3.70E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.28E+03	9.12E-01	1.70E+01	1.30E+03	2.76E+01	5.11E+00	2.19E+02	1.92E+00	3.52E+01	6.95E-01	-1.95E+02
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	1.11E+02	3.75E-02	1.96E+00	1.13E+02	1.09E+00	-9.65E-01	3.06E+00	7.90E-02	-2.97E+01	1.33E-02	-1.06E+01
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 indicators

Results per declared unit											
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	6.62E-02	5.86E-04	1.31E-03	6.81E-02	1.60E-02	4.09E-04	7.41E-04	1.23E-03	3.88E-03	9.71E-05	-1.75E-03
Non-hazardous waste disposed	kg	1.13E+00	2.69E-03	3.19E-02	1.16E+00	6.80E-02	8.02E+00	7.37E-02	5.66E-03	2.32E+02	4.20E+02	2.29E-01
Radioactive waste disposed	kg	6.58E-03	8.30E-06	7.71E-05	6.67E-03	2.05E-04	1.82E-05	2.50E-03	1.75E-05	3.26E-04	8.98E-07	-1.54E-04

Output flow indicators

Results per declared unit											
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**A4**	**A5**	**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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	9.57E-02	9.57E-02	0.00E+00	2.97E+01	0.00E+00	0.00E+00	1.35E+03	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	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	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ENVIRONMENTAL CATEGORY AND INDICATOR	A1-A3 RAW MATERIALS SUPPLY & MANUFACTURING	A4 DISTRIBUTION	A5 INSTALATION	C1 DES INSTALATION	C2 TRANSPORT	C3 WASTE PROCESSING	C4 DISPOSAL
Global Warming Potential (GWP) kg CO_2 eq.	3.26+E02	2.01E+02	9.05E+01	1.37E+01	1.41E+01	4.34E+01	1.14E+00
Depletion of the ozone layer (ODP) kg CFC11 eq.	5.47E-06	3.79E-06	4.43E-08	2.39E-07	2.87E-07	8.75E-07	1.69E-08
Depletion of abiotic resources – materials and metals (ADP-minerals & metals) kg Sb eq	1.30E-03	5.17E-06	2.21E-07	7.30E-07	4.65E-07	2.06E-06	4.52E-08
Depletion of abiotic resources – fossil fuels (ADP-fossil) MJ	3.26E+03	2.65E+03	2.67E+01	3.63E+02	1.86E+02	6.12E+02	1.47E+01

Variation of the environmental performance of the reinforced concrete bench family of products from the representative product TWIG

The impact difference between the following benches from the reinforced concrete family is mainly due to the difference in size between them, as they share a very similar composition which includes the same raw materials.

Results per declared unit													
Indicator	Unit	TWIG	ABRIL	MAYO 296	BANCA LOSA	LEVIT 400	GEN	BOOMERANG	EQUAL 300 CONCRETE	TRAM RECTO	LONGO BANCA	FLOR GRANDE	MILENIO RECTO
GWP-total	kg CO_2 eq.	100%	-39%	-54%	-39%	-45%	-63%	12%	-38%	-58%	51%	0%	-62%
GWP-biogenic	kg CO_2 eq.	100%	-43%	-55%	-35%	-42%	-50%	16%	-33%	-50%	38%	-6%	-56%
GWP-fossil	kg CO_2 eq.	100%	-39%	-54%	-38%	-45%	-63%	13%	-38%	-58%	52%	0%	-62%
GWP-luluc	kg CO_2 eq.	100%	-31%	-33%	-75%	-76%	-56%	-20%	-27%	-68%	-17%	-16%	-53%
ODP	kg CFC 11 eq.	100%	-40%	-49%	-38%	-40%	-68%	13%	-36%	-64%	58%	-1%	-64%
AP	mol H+ eq.	100%	-31%	-30%	-28%	-20%	-65%	16%	-23%	-61%	41%	-2%	-58%
EP-freshwater	kg P eq.	100%	-33%	-27%	-32%	-16%	-53%	32%	-22%	-52%	42%	-8%	-62%
EP-marine	kg N eq.	100%	-35%	-44%	-36%	-38%	-63%	11%	-31%	-59%	44%	-1%	-59%
EP-terrestrial	mol N eq.	100%	-28%	-19%	-24%	-9%	-67%	16%	-17%	-63%	36%	-3%	-56%
POCP	kg NMVOC eq.	100%	-36%	-48%	-35%	-39%	-63%	12%	-33%	-58%	48%	0%	-59%
ADP-minerals&metals	kg Sb eq.	100%	15%	135%	34%	158%	-30%	100%	75%	-38%	-30%	-25%	-40%
ADP-fossil	MJ	100%	-38%	-51%	-37%	-42%	-62%	15%	-36%	-58%	54%	0%	-62%
WDP	m^3	100%	-23%	-9%	-28%	-5%	-57%	30%	-11%	-56%	38%	-4%	-60%
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												

Results per declared unit										
Indicator	**Unit**	**HEBI CURVO MACIZO**	**HEBI CURVO FLOTANTE**	**ISLERO**	**NAGUISA R375B**	**LUNGO MARE A**	**SLOPE**	**BINOCULAR**	**BANCO BILBAO**	**WAVE**
GWP-total	kg CO_2 eq.	-4%	-50%	75%	30%	91%	-5%	125%	-59%	-39%
GWP-biogenic	kg CO_2 eq.	-6%	-42%	55%	18%	150%	14%	307%	-57%	-36%
GWP-fossil	kg CO_2 eq.	-3%	-49%	77%	31%	91%	-5%	125%	-59%	-39%
GWP-luluc	kg CO_2 eq.	-74%	-83%	-47%	6%	28%	-66%	51%	-50%	-32%
ODP	kg CFC 11 eq.	-6%	-46%	91%	33%	90%	-13%	75%	-62%	-41%
AP	mol H+ eq.	-12%	-31%	66%	24%	70%	-14%	98%	-57%	-36%
EP-freshwater	kg P eq.	-17%	-31%	80%	32%	152%	7%	427%	-57%	-38%
EP-marine	kg N eq.	-9%	-44%	63%	25%	72%	-13%	80%	-57%	-37%
EP-terrestrial	mol N eq.	-16%	-23%	62%	21%	56%	-20%	58%	-55%	-34%
POCP	kg NMVOC eq.	-5%	-44%	70%	27%	75%	-9%	84%	-57%	-37%
ADP-minerals&metals	kg Sb eq.	-60%	98%	27%	8%	203%	32%	1160%	-35%	-20%
ADP-fossil	MJ	-4%	-47%	80%	31%	98%	-4%	147%	-59%	-39%
WDP	m^3	-27%	-26%	64%	28%	114%	-10%	294%	-55%	-36%
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									

References

- Environdec Programme: The International EPD System https://www.environdec.com/home
- General Programme Instructions (GPI) of the International EPD system. version 4.0.
- ISO/TR 14047: 2003 – Environmental management – Life Cycle Assessment – LCI application examples.
- ISO/TS 14048: 2003 – Environmental management – Life Cycle Assessment – Data inventory.
- ISO/TR 14049: 2000 – Environmental management – Life Cycle Assessment – Examples of application of objectives and scope and inventory analysis.
- NPCR 026 Part B for Furniture and components of furniture (references to EN 15804 +A2) published on 29 September 2022. valid until 1 July 2024.
- The Product Category Rules (PCR) "PCR 2019:14 Construction products. version 1.3.4 published on 30 April 2024. valid until 20 June 2025" based on the European standard UNE-EN 15804:2012+A2:2020.
- UNE-EN ISO 14040:2006 – Environmental management – Life Cycle Assessment – Principles and framework.
- UNE-EN ISO 14044:2006 – Environmental management – Life Cycle Assessment – Requirements.
- UNE-EN 15804:2012+A2: Sustainability in construction. Product environmental statements. Commodity category rules for construction products.

VERIFICATION STATEMENT CERTIFICATE

CERTIFICADO DE DECLARACIÓN DE VERIFICACIÓN

Certificate No. / Certificado nº: EPD11201

TECNALIA R&I CERTIFICACION S.L., confirms that independent third-party verification has been conducted of the Environmental Product Declaration (EPD) on behalf of:
TECNALIA *R&I CERTIFICACION S.L., confirma que se ha realizado verificación de tercera parte independiente de la Declaración Ambiental de Producto (DAP) en nombre de:*

ESCOFET 1886, S.A.
Montserrat 162
08760 MARTORELL (Barcelona) - SPAIN

for the following product(s):
para el siguiente(s) producto(s):

Reinforced concrete benches - TWIG
Bancos de hormigón armado - TWIG

with registration number **EPD-IES-0003992** in the International EPD® System *(www.environdec.com).*
*con número de registro **EPD-IES-0003992** en el Sistema International EPD® (www.environdec.com).*

it´s in conformity with:
es conforme con:

- **ISO 14025:2010 Environmental labels and declarations. Type III environmental declarations.**
- **General Programme Instructions for the International EPD® System v4.0.**
- **PCR 2019:14 Construction products (EN 15804:A2) v1.3.4**
- **c-PCR-021-Furniture (Adopted from EPD Norway).**
- **UN CPC 811 Seats.**

Issued date / *Fecha de emisión:*	08/08/2024
Update date / *Fecha de actualización:*	08/08/2024
Valid until / *Válido hasta:*	07/08/2029
Serial Nº / *Nº Serie:*	EPD1120100-E

Carlos Nazabal Alsua
Manager

CERTIFICACIÓN ISO 17065 Nº125 / C-PR283

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