ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Aggregates from Tecnovia Indústria SA - Vale da Vaca Quarry – Barbeita, Viseu, Portugal

EPD HUB, HUB-4409
Published on 10.11.2025, last updated on 10.11.2030

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Tecnovia Indústria SA
Address	Rua António Variações, N.º 5, 2740-315 Porto Salvo
Contact details	geral@tecnovia.pt ; geral@tecnovia-industria.pt
Website	https://tecnovia.pt/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025 EN 16757 Product Category Rules for concrete and concrete elements
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD author	Ricardo Mateus, Cláudia Jacinto - Greenlab
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Sarah Curpen, as an authorised verifier acting for EPD Hub Limited

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Aggregates
Additional labels	Granite
Place(s) of raw material origin	Portugal
Place of production	Vale da Vaca Quarry – Barbeita, Viseu, Portugal
Place(s) of installation and use	Portugal
Period for data	July of 2022 to June of 2023
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	-
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	63,6

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 tonne
Declared unit mass	1000 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	6,31E+00
GWP-total, A1-A3 ($kgCO_2e$)	6,32E+00
Secondary material, inputs (%)	0
Secondary material, outputs (%)	90
Total energy use, A1-A3 (kWh)	22,1
Net freshwater use, A1-A3 (m^3)	-0,26

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Tecnovia Indústria, a Tecnovia Group company that stands at the forefront of construction material production in mainland Portugal. With an extensive network of quarries, concrete and asphalt plants, we lead the industry in providing high-quality aggregates, asphalt mixtures, and ready-mix concrete. With decades of experience in aggregate production, we are recognized for our in-depth expertise and commitment to leveraging cutting-edge technologies to deliver products that excel in durability, quality, and sustainability.

PRODUCT DESCRIPTION

The granitic aggregates covered by this EPD consist of sand, gravel, crushed stone or continuously graded materials, 100% natural and of granitic origin. These materials are classified based on their particle size and are generally supplied as a homogeneous bulk product. Their characteristics are standardised to ensure appropriate levels of reliability.
Sand/gravel is composed of fine rock and mineral particles: 0/4 mm or 0/6 mm.
screening of rock, producing aggregates with the following size fractions: 2/6 mm, 4/12 mm, 10/16 mm, 12/20 mm, 20/32 mm, 0/32 mm, 90/180 mm.
Aggregates have a wide range of applications in the construction industry. They are essential components in the production of concrete and asphalt mixtures and can also be used as infill material, in hydraulic engineering, for drainage, as sub-base and base layers in road construction, and in general civil engineering works.

Further information can be found at:
https://tecnovia.pt/

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	-	-
Minerals	100	Portugal
Fossil materials	-	-
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 tonne
Mass per declared unit	1000 kg
Functional unit	-
Reference service life	-

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	ND	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = ND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

A location-based approach is used in modelling the electricity mix utilized in the factory.

The aggregate production process begins with the excavation and blasting of rock masses. This initial stage involves the controlled use of explosives to break the rock into smaller, manageable fragments suitable for transport and further processing. Once fragmented, the material is loaded onto hauling equipment and transported to the processing plant.
At the plant, the material undergoes crushing and sieving. Crushing reduces the size of the rock, while sieving separates it according to particle size. This stage results in different types of materials, including unwashed aggregates. The unwashed aggregates can be used directly in certain applications or proceed to the next phase for further refinement.
The next stage is washing, where the aggregate is cleaned to remove fines, dust, and other impurities. This process improves the quality of the final product and ensures it meets specific standards required for construction use. Finally, the washed aggregates are transported to stockpiles, where they are sorted and stored according to their size and characteristics, ready for commercial distribution or use in construction and infrastructure projects.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Module A4 was not evaluated. The transport of the products included in this study in the construction sector is extremely varied, making it impossible to estimate a representative figure.
Module A5 was also not evaluated. The means of application of the products included in this study in the construction sector are varied, making it impossible to define a scenario to be analyzed.

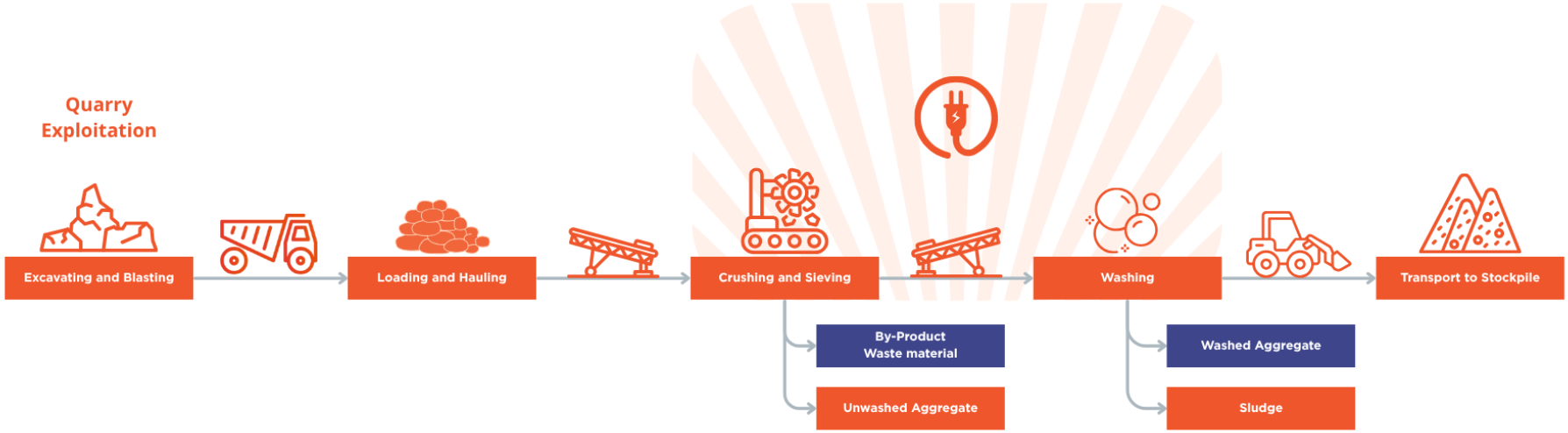
PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

Depending on their use, aggregates can have different types of end-of-life. To be conservative, we adopted a scenario where aggregates are incorporated into concrete; therefore, the end-of-life calculation will be based on EN 16757.
In the demolition phase (C1), 100% of the waste is assumed to be collected as separate construction waste. The demolition process consumes energy in the form of diesel fuel used by building machines. Energy consumption of a demolition process is on average 10 kWh/m2. An average mass of a reinforced concrete building is about 1000 kg/m2, and the mass of aggregates in a piece of concrete has an average proportion of 70% (Bozdağ, Ö & Seçer, M. 2007). Therefore, energy consumption demolition is assumed to be 10 [kWh/m²] / (1000 [kg/m²] * 0.7) = 0.014 kWh/kg.
The demolished concrete pieces are delivered to the nearest construction waste treatment plant. It is estimated that there is no mass loss during the use of the product; therefore, the end-of-life product is assumed to have the same weight as the declared product. The transportation distance to the closest disposal area is estimated to be 50 km, and the transportation mode is a lorry, which is the most common (C2).
It can be assumed that 100% of the concrete products are transported to a waste treatment plant, where the products are crushed and separated. According to the RCD 2022 Community Report from the Portuguese Environment Agency (APA), 90% of construction and demolition waste is recycled in Portugal (C3). The process losses of the waste treatment plant are assumed to be negligible. The remaining 10% are assumed to be sent to the landfill (C4).
Due to the recycling potential of concrete, it can be utilised as a secondary raw material, thereby reducing the need for virgin raw materials. 90% of construction and demolition waste is converted into secondary raw materials after recycling (D).

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

All known flows were included, since the company provided all the information. However, the following processes were not considered in this study:
infrastructures, manufacturing and replacement of equipment and machinery;
manufacturing, road maintenance) associated with the transportation of pre-products and raw materials;
• Environmental loads related to consumables or waste produced in administrative areas and laboratories, since they are not directly associated with the production process.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	Not applicable
Ancillary materials	No allocation
Manufacturing energy and waste	No allocation

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	-

This EPD is product and factory specific.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology ‘allocation, Cut-off, EN 15804+A2‘.

ENVIRONMENTAL IMPACT DATA

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

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	0,00E+00	1,97E+00	4,36E+00	6,32E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	5,05E+00	5,38E+00	3,94E+00	2,23E+00	-7,62E+00
GWP – fossil	kg CO_2e	0,00E+00	1,97E+00	4,34E+00	6,31E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	5,05E+00	5,38E+00	3,94E+00	2,22E+00	-7,63E+00
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	0,00E+00	2,05E-04	1,46E-02	1,48E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	5,17E-04	2,41E-03	4,03E-04	4,70E-03	1,67E-02
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	0,00E+00	3,02E-08	5,39E-08	8,41E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	7,73E-08	7,95E-08	6,03E-08	4,40E-08	-6,20E-07
Acidification potential	mol H^+e	0,00E+00	1,77E-02	2,86E-02	4,63E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	4,56E-02	1,84E-02	3,55E-02	1,37E-02	-7,12E-02
EP-freshwater[2)]	kg Pe	0,00E+00	5,74E-05	2,13E-03	2,19E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,46E-04	4,19E-04	1,14E-04	1,59E-04	-1,81E-04
EP-marine	kg Ne	0,00E+00	8,20E-03	8,20E-03	1,64E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,11E-02	6,03E-03	1,65E-02	5,55E-03	-1,37E-02
EP-terrestrial	mol Ne	0,00E+00	8,97E-02	9,24E-02	1,82E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,31E-01	6,56E-02	1,81E-01	6,02E-02	-1,79E-01
POCP ("smog")[3)]	kg NMVOCe	0,00E+00	2,68E-02	2,72E-02	5,39E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	6,90E-02	2,70E-02	5,38E-02	2,01E-02	-4,14E-02
ADP-minerals & metals[4)]	kg Sbe	0,00E+00	7,49E-07	1,33E-05	1,40E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,81E-06	1,50E-05	1,41E-06	4,91E-06	-8,18E-04
ADP-fossil resources	MJ	0,00E+00	2,58E+01	4,54E+01	7,12E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	6,60E+01	7,81E+01	5,15E+01	3,76E+01	-1,03E+02
Water use[5)]	m^3e depr.	0,00E+00	6,49E-02	1,22E+00	1,29E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,65E-01	3,86E-01	1,29E-01	1,42E-01	-4,57E+00

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	0,00E+00	5,02E-07	4,59E-07	9,62E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,29E-06	5,39E-07	7,70E-06	1,07E-06	-5,59E-07
Ionizing radiation[6)]	kBq U235e	0,00E+00	1,16E-02	1,64E-01	1,76E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,92E-02	6,80E-02	2,28E-02	2,66E-02	-8,28E-01
Ecotoxicity (freshwater)	CTUe	0,00E+00	1,43E+00	2,14E+01	2,28E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	3,63E+00	1,10E+01	2,84E+00	8,00E+00	-1,18E+02
Human toxicity, cancer	CTUh	0,00E+00	2,03E-10	1,48E-09	1,68E-09	ND	ND	ND	ND	ND	ND	ND	ND	ND	5,19E-10	8,88E-10	4,05E-10	4,47E-10	-6,09E-09
Human tox. non-cancer	CTUh	0,00E+00	3,31E-09	4,71E-08	5,05E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	8,22E-09	5,06E-08	6,41E-09	1,52E-08	-1,13E-07
SQP[7)]	-	1,04E+09	1,91E+00	6,47E+01	1,04E+09	ND	ND	ND	ND	ND	ND	ND	ND	ND	4,63E+00	7,87E+01	3,61E+00	4,37E+01	-1,67E+01

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	0,00E+00	1,65E-01	8,10E+00	8,27E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	4,18E-01	1,07E+00	3,26E-01	4,32E-01	-1,44E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	0,00E+00	1,65E-01	8,10E+00	8,27E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	4,18E-01	1,07E+00	3,26E-01	4,32E-01	-1,44E+00
Non-re. PER as energy	MJ	0,00E+00	2,58E+01	4,54E+01	7,12E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	6,60E+01	7,81E+01	5,15E+01	3,77E+01	-1,03E+02
Non-re. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	0,00E+00	2,58E+01	4,54E+01	7,12E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	6,60E+01	7,81E+01	5,15E+01	3,77E+01	-1,03E+02
Secondary materials	kg	0,00E+00	1,07E-02	1,30E-01	1,41E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,74E-02	3,32E-02	2,14E-02	1,37E-02	-6,71E-02
Renew. secondary fuels	MJ	0,00E+00	2,89E-05	9,08E-04	9,37E-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	7,17E-05	4,22E-04	5,59E-05	1,80E-04	9,98E-06
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	-1,29E-06	-1,29E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	0,00E+00	1,72E-03	-2,61E-01	-2,59E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	4,36E-03	1,15E-02	3,41E-03	1,88E-02	-5,22E-02

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	0,00E+00	2,87E-02	3,31E-01	3,60E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	7,35E-02	1,32E-01	5,73E-02	5,36E-02	-4,37E-01
Non-hazardous waste	kg	0,00E+00	3,94E-01	3,61E+02	3,62E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,00E+00	2,45E+00	7,82E-01	1,03E+00	-1,44E+01
Radioactive waste	kg	0,00E+00	2,84E-06	4,39E-05	4,67E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	7,17E-06	1,67E-05	5,60E-06	6,51E-06	-4,83E-04

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	9,00E+02	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	0,00E+00	1,96E+00	4,36E+00	6,32E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	5,02E+00	5,35E+00	3,92E+00	2,21E+00	-7,62E+00
Ozone depletion Pot.	kg CFC_{-11}e	0,00E+00	2,39E-08	4,39E-08	6,78E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	6,12E-08	6,34E-08	4,78E-08	3,50E-08	-4,97E-07
Acidification	kg SO_2e	0,00E+00	1,24E-02	2,22E-02	3,46E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	3,20E-02	1,40E-02	2,50E-02	1,00E-02	-4,92E-02
Eutrophication	kg PO_4^3e	0,00E+00	2,91E-03	5,15E-03	8,05E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	7,48E-03	3,41E-03	5,84E-03	2,88E-03	-1,27E-02
POCP (“smog”)	kg C_2H_4e	0,00E+00	9,33E-04	1,47E-03	2,41E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,40E-03	1,25E-03	1,87E-03	8,51E-04	-2,01E-03
ADP-elements	kg Sbe	0,00E+00	7,28E-07	1,30E-05	1,37E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,76E-06	1,46E-05	1,37E-06	4,79E-06	-8,18E-04
ADP-fossil	MJ	0,00E+00	2,56E+01	4,27E+01	6,83E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	6,56E+01	7,70E+01	5,12E+01	3,72E+01	-1,05E+02

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	0,00E+00	1,97E+00	4,36E+00	6,32E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	5,05E+00	5,38E+00	3,94E+00	2,23E+00	-7,62E+00

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity, medium voltage, Portugal, Ecoinvent 3.10.1
Electricity CO2e / kWh	0,26

End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	-
Collection process – kg collected with mixed waste	1000
Recovery process – kg for re-use	-
Recovery process – kg for recycling	900
Recovery process – kg for energy recovery	-
Disposal (total) – kg for final deposition	100
Scenario assumptions e.g. transportation	Transported 50 km (recycling) and 50 km (landfill) - Market for transport, freight, lorry >32 metric ton, EURO5

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15802+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

Sarah Curpen, as an authorised verifier acting for EPD Hub Limited
10.11.2025

VERIFIED ISO 14025