

DAPHabitat System Environmental Product Declaration

www.daphabitat.pt

[according to ISO 14025, EN 15804:2012+A2:2019 and EN 15942]



Declaration number: **DAP 020:2024**



UNWASHED AGGREGATES – ATOUGUIA QUARRY

ISSUE DATE: **20/12/2024**

VALID UNTIL: **19/12/2029**

SECIL AGREGADOS, S.A.



Version 1.4.1 Ed. March 2024

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1. GENERAL INFORMATION


1.1. The DAPHabitat System

Program operator:	Sustainable Construction Platform www.clusterhabitat.pt geral@clusterhabitat.pt	 Cluster Habitat Sustentável
Address:	Departamento Engenharia Civil Universidade de Aveiro 3810-193 Aveiro	
Email address:	deptecnico@clusterhabitat.pt	
Telephone number:	(+351) 234 401 576	
Website:	www.daphabitat.pt	
Logo		



1.2. EPD owner

Name of the owner:	Secil Agregados, S.A.
Production site:	Serra da Atouguia – 2580-079 Ota
Address (head office):	Av. Eng. Duarte Pacheco 19, 7º – 1070-100 Lisboa - Portugal
Telephone:	(+351) 217 927 100
E-mail:	apoiotecnico@secil.pt
Website:	https://www.secil.pt/
Logo:	
Information concerning the applicable management Systems:	NP EN ISO 9001 - Quality management systems
Specific aspects regarding the production:	Main CAE: 08121 - Extraction of gravel, sand and crushed stone; Secondary CAE: 08112 - Extraction of ornamental granite and similar stones
Organization's environmental policy:	Commitments made by SECIL as part of its Environmental Responsibility and Protection policy: To guarantee a standard of responsible action that reconciles the exploitation of natural resources with the maintenance and development of the ecosystems in which it operates. Mitigate the impacts of its operations by adopting the best available technologies and best practices and by providing adequate training for its employees. Promote biodiversity in the territories under its management. Reduce the carbon impact of its activity, specifically by promoting the use of secondary raw materials and alternative fuels. To make data on its environmental performance available to the public on a regular basis.

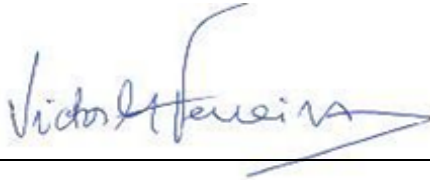
1.3. Information concerning the EPD

Authors:	c ⁵ Lab - Sustainable Construction Materials Association	 Sustainable Construction Materials Association
Contact of the authors:	Edifício Central Park, Rua Central Park 6 2795-242 LINDA-A-VELHA Email: info@c5lab.pt	
Issue date:	20/12/2024	
Registration date:	03/01/2025	
Registration number:	DAP 020:2024	
Valid until:	19/12/2029	
Representativity of the EPD (location, manufacturer, group of manufacturers):	EPD for unwashed aggregates produced at the Atouguia quarry belonging to Secil Agregados, S.A.	
Where to consult explanatory material:	https://www.secil.pt/	
Type of EPD:	Cradle-to-gate (A1-A3) EPD.	

1.4. Demonstration of the verification

External independent verification, accordingly, with the standard ISO 14025:2010 and EN 15804:2012+A2:2019	
Certification Body	Verifier
	
(CERTIF – Associação para a Certificação)	(Marisa Almeida)

1.5. EPD Registration

Programme operator

(Plataforma para a Construção Sustentável)

1.6. PCR (product category rules) basic model


Name:	PCR: Basic module for construction products and services
Issue date:	Edition August 2023
Number of registrations on the data base:	RCP-mb001
Version:	Version 2.3
Identification and contact of the coordinator (s):	Marisa Almeida marisa@ctcv.pt Luís Arroja arroja@ua.pt José Dinis Silvestre jose.silvestre@ist.utl.pt
Identification and contact of the authors:	Marisa Almeida marisa@ctcv.pt Luís Arroja arroja@ua.pt José Silvestre jds@civil.ist.utl.pt Fausto Freire Cristina Rocha Ana Paula Duarte Ana Cláudia Dias Helena Gervásio Victor Ferreira Ricardo Mateus António Baio Dias
Composition of the Sectorial Panel:	-
Consultation period:	18/11/2015 - 18/01/2016
Valid until:	01/06/2027

CEN standard EN 15804 serves as the core Product Category Rules (PCR)

1.7. Relevant c-PCR (Complementary product category rules)

Not Applicable.

1.8. Information concerning the product/product class

Identification of the product:	Agregados Não Lavados – Pedreira Atouguia (Unwashed Aggregates)																									
Illustration of the product:																										
Brief description of the product:	Industrial aggregates are granular materials, of mineral origin and generally inert. They are used in different construction products and their choice has a strong influence on the quality and behaviour of the end products.																									
Main technical characteristics of the product:	<p>The Unwashed Aggregates product class comprises a set of 4 (four) products manufactured by Secil Agregados, S.A. at the Atouguia Quarry and listed in Table 1.</p> <p>Table 1 - Product Technical Characteristics and Performance Declarations.</p> <table><tr><th>Product</th><th>Granulometry (mm)</th><th>Description</th><th>Performance Declaration (In Portuguese)</th></tr><tr><td>Pó de Pedra</td><td>0/4</td><td>Fine material from rock crushing</td><td>https://bit.ly/DOP1_Po_Pedra</td></tr><tr><td>Brita 3</td><td>16/32</td><td>Unwashed gravel of larger nominal size</td><td>https://bit.ly/DOP6_Brita_3</td></tr><tr><td rowspan="2">Tout-Venant</td><td>1ª</td><td>Material used before any treatment, with an extensive particle size range</td><td>https://bit.ly/DOP7_Tout-Venant_1ª</td></tr><tr><td>2ª</td><td>Similar to 1st class Tout-Venant, but of lower quality</td><td>https://bit.ly/DOP8_Tout-Venant_2ª</td></tr><tr><td>Enrocamento</td><td>90/250</td><td>Large-scale aggregates.</td><td>https://bit.ly/DOP9_Enrocamento</td></tr></table>			Product	Granulometry (mm)	Description	Performance Declaration (In Portuguese)	Pó de Pedra	0/4	Fine material from rock crushing	https://bit.ly/DOP1_Po_Pedra	Brita 3	16/32	Unwashed gravel of larger nominal size	https://bit.ly/DOP6_Brita_3	Tout-Venant	1ª	Material used before any treatment, with an extensive particle size range	https://bit.ly/DOP7_Tout-Venant_1ª	2ª	Similar to 1st class Tout-Venant, but of lower quality	https://bit.ly/DOP8_Tout-Venant_2ª	Enrocamento	90/250	Large-scale aggregates.	https://bit.ly/DOP9_Enrocamento
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Description of the product's application/use:	Aggregates have specific properties suitable for civil engineering works and can be used in the manufacture of concrete, mortar and bituminous mixtures or used without any hydraulic or other binder and in hydraulic protection or regulation works.																									
Placing on the market / Rules of application in the market / Technical rules of the product:	<p>Table 2 - Technical Product Standards and Intended Uses.</p> <table><tr><th>Product</th><th>Technical Rules</th><th>Intended uses</th></tr><tr><td>Pó de Pedra</td><td>Non-Bonded Materials: NP EN 13242:2002+A1:2010;</td><td>Typical use in non-bonded materials for use in civil engineering and road construction.</td></tr><tr><td>Brita 3</td><td>Concrete– NP EN 12620:2002+A1:2008; Bituminous mixtures - NP EN 12620:2002+A1:2008; NP EN 13043:2004; NP EN 13043/AC:2010; NP EN 13043:2004 ERRATA 1:2018; Non-Bonded Materials – NP EN 13242:2002+A1:2010;</td><td>Use in:<ul style="list-style-type: none">Concrete for buildings, roads and other civil engineering work;Bituminous mixtures and surface treatments for roads, airports and other traffic areas;Unbound materials for use in civil engineering and road construction.</td></tr><tr><td>Tout-Venant</td><td>Non-Bonded Materials – NP EN 13242:2002 + A1:2010;</td><td>Use in non-bonded materials for use in civil engineering and road construction.</td></tr><tr><td>Enrocamento</td><td>Rockfill – NP EN 13383-1:2010</td><td>Use in hydraulic protection or regulation works</td></tr></table>			Product	Technical Rules	Intended uses	Pó de Pedra	Non-Bonded Materials: NP EN 13242:2002+A1:2010;	Typical use in non-bonded materials for use in civil engineering and road construction.	Brita 3	Concrete – NP EN 12620:2002+A1:2008; Bituminous mixtures - NP EN 12620:2002+A1:2008; NP EN 13043:2004; NP EN 13043/AC:2010; NP EN 13043:2004 ERRATA 1:2018; Non-Bonded Materials – NP EN 13242:2002+A1:2010;	Use in: <ul style="list-style-type: none">Concrete for buildings, roads and other civil engineering work;Bituminous mixtures and surface treatments for roads, airports and other traffic areas;Unbound materials for use in civil engineering and road construction.	Tout-Venant	Non-Bonded Materials – NP EN 13242:2002 + A1:2010;	Use in non-bonded materials for use in civil engineering and road construction.	Enrocamento	Rockfill – NP EN 13383-1:2010	Use in hydraulic protection or regulation works								
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Quality control:	The Unwashed Aggregates produced comply with CE marking requirements and their quality is controlled in compliance with Regulation (EU) No. 305/2011 of 9 March 2011.																									

Special delivery conditions:	Disturbances to the normal supply of unwashed aggregates due to unforeseeable circumstances or force majeure, such as strikes, riots, equipment breakdowns and accidents and power cuts by the entities responsible for supplying them, provided that they are not attributable to Secil Agregados, S.A., do not constitute a breach of the supply contract and will therefore not give rise to the payment of any compensation. When the aggregates are delivered to the site and before they are unloaded, the Customer or its representative must check on the delivery note that the product corresponds to that requested. Signing the delivery note implies confirmation of what it says.
Components and substances to declare:	Not Applicable.
Where explanatory material may be obtained:	https://www.secil.pt/
History of the LCA studies:	Not Applicable.

1.9. Calculation rules of the LCA

Functional unit:	Not Applicable.
Declared unit:	1 tonne of Unwashed Aggregates
System boundaries:	Cradle-to-Gate EPD. From the extraction and processing of raw materials in the quarry to the product dispatch procedure.
Criteria for the exclusion:	Processes that fulfil the exclusion criteria stipulated in EN 15804 of 1% use of primary energy (renewable and non-renewable) and 1% of the inputs or outputs (in mass) of the process, not exceeding 5% of the total use of mass and energy in the production stage, A1-A3, were excluded from this EPD: <ul style="list-style-type: none"> Production of By-product 'Detritos' Production of By-product 'Alvenaria' Equipment maintenance Office activity Acetylene Domestic effluents Absorbents and filter materials Oil filters Sieving Nets Other minor components
Assumption and limitations	The missing data refers to indicators that cannot be acquired on site, namely: dust emissions from quarry activity; emissions from quarrying machinery, loading and blasting. This missing information was therefore extracted from generic processes available in the Ecoinvent 3.10 database. In addition, the 1 st and 2 nd category 'Tout-Venant' products go through the same processing chain, and their environmental impact is assumed to be equivalent, as their differentiation is solely due to the quality of the raw material. These products were therefore combined into a single product category called 'Tout-Venant'.
Quality and other characteristics about the information used in the LCA:	<p>The quality analysis was carried out based on the 'UN Environmental Global guidance on LCA database development' in accordance with the criteria stipulated in Annex E of EN 15804:2012+A2:2019. The quality of the data was categorised broadly between fair and very good on a 5-level qualitative scale from very poor to very good. The information on aggregate production is 1 year old, using mostly primary data collected directly from the quarry's industrial statistics and is representative of the reality of production.</p> <p>Information for background processes not provided by the quarry, and over which Secil Agregados, S.A. has no direct influence, was obtained using generic data from the Ecoinvent 3.10 database (updated in April 2024). This data was selected to provide geographical and technological coverage that fulfils the data quality criteria stipulated in Annex E of EN 15804:2012+A2:2019.</p> <p>Electricity production for the year 2023 was modelled using information obtained directly from the regulator of energy production and electricity infrastructure in Portugal. The results obtained are robust. The LCA was carried out using SimaPro 9.6.0.1 software.</p>
Allocation rules:	<p>To avoid the allocation of co-products, the inventory and impact analyses were carried out individually for each of the four products. However, mass allocation procedures are necessary for the consumption of energy, fuel, other consumables and waste.</p> <p>Knowing the power of each equipment and the total electricity consumption in the crushing, the distribution of consumption by equipment was carried out. In the crushing operation, consumption was distributed proportionally for each product, according to the power of the equipment used, the frequency of its use and the share of production associated with each piece of equipment.</p> <p>The distribution of lubricating oil consumption for each product was calculated in a similar way to electricity consumption, using the power of the equipment used, the frequency of its use and the share of production associated with each piece of equipment. Diesel consumption associated with the processes of blasting,</p>

	loading and transporting each product was determined from overall consumption, using the relative production masses of each unit.
	The generation of dry solid waste associated with each product was distributed proportionally to its production.
Software used for the assessment:	SimaPro 9.6.0.1 – PRé Sustainability
Background database used for the LCA:	Ecoinvent Database v3.10 – Ecoinvent
Comparability of EPD for construction products	The EPD of construction products and services cannot be comparable in case they are not produced according to EN 15804 and EN 15942 and according to the comparability conditions determined by ISO 14025.

1.10. Use of average environmental performance

The 'Unwashed Aggregates' class of products produced by Secil Agregados, S.A. at the Atouguia quarry, and used as building materials, differ mainly in their granulometry, even though the raw material (limestone) and production method (crushing and screening) are identical. To provide robust results and reduce errors associated with the use of average values, the impacts of each of the unwashed aggregates are presented separately, thus avoiding the use of average environmental performance for a series of products with different production stages and final application

The average difference between the maximum and minimum values (for the core environmental impact indicators) is around 9 per cent, with the greatest variability (41%) occurring only in one core environmental impact category (Water Deprivation Potential). There are occasions when there are greater differences, but these occur in optional impact categories or secondary indicators.

1.11. Technical information for Reference Service Life (RSL)

Not Applicable.

1.12. Flow diagram of input and output of the processes

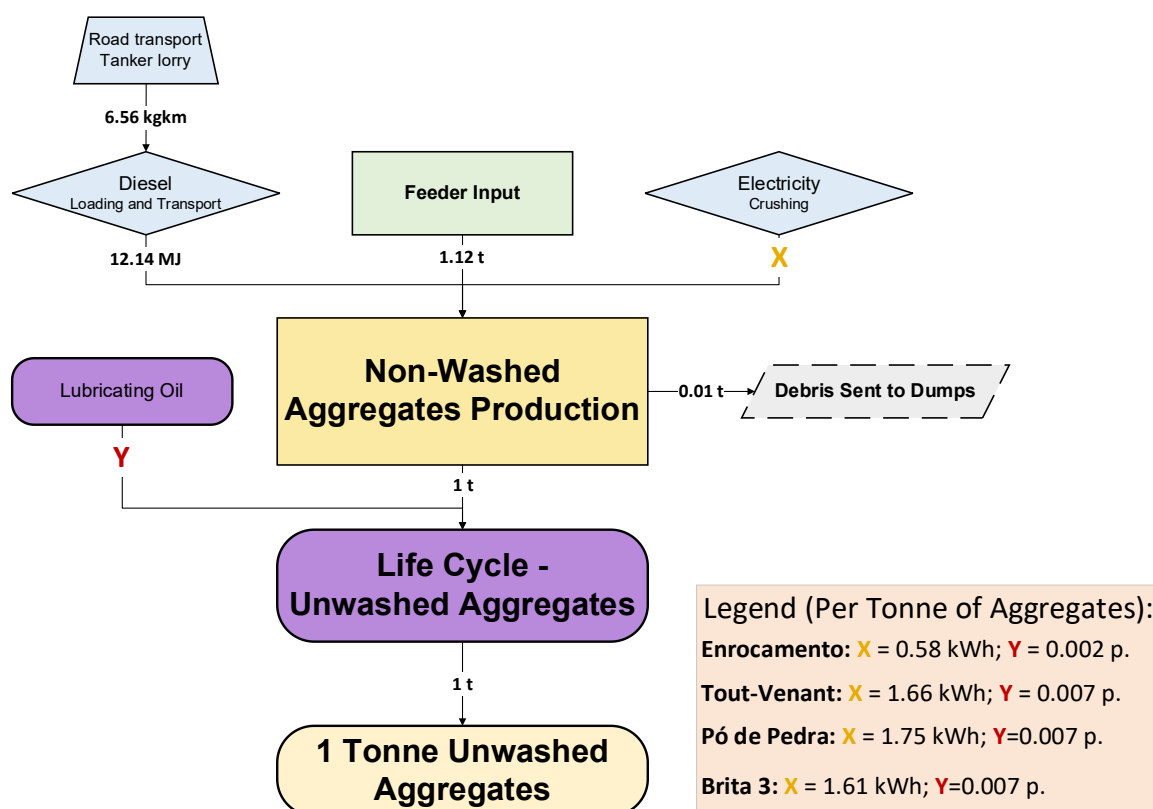


Figure 1: Simplified flowchart for the inventory of Unwashed Aggregates production.

2. CORE ENVIRONMENTAL IMPACT INDICATORS

2.1. Description of the system boundaries

(✓ = included; ND = module not declared)

PRODUCT STAGE			CONSTRUCTION PROCESS 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-constructions, demolition	Transport	Waste processing	Disposal	Re-use, recovery, recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
✓	✓	✓	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

The system boundaries are circumscribed for the Product Stage, covering modules A1-A3. All aggregates produced at the Atouguia quarry are produced as described in the following points:

Blasting

The first stage of aggregate production consists of blasting, which involves extracting large blocks of rock from the exploration front. This process begins with the selection of the area to be blasted and subsequent drilling, followed by the placement of explosives. The detonation of these explosives fragments the rock mass. After the explosion, the area is cleared, and the explosive packaging is incinerated on site. If necessary, deforestation is carried out and the removed land is stored for later landscaping.

Crushing and Screening

The material obtained from blasting is transported to the crushing area, where the first reduction in the size of the rock blocks takes place. This process begins with the rock being deposited in a feeding system, where larger blocks are reduced and sent to a screen that separates the smaller particles, known as 'Detritos' (Debris), from those suitable for producing aggregates, which are taken to a primary impact crusher.


This impact crusher is responsible for fragmenting the larger rocks, which are then passed on to a system of additional screens that carry out a new particle size separation. The particles that are still larger than desired are redirected to a secondary crusher (hammer mill) which carries out additional crushing, further reducing the particle size. Subsequently, the material is again subjected to a screening process, where it is classified by particle size, resulting in different types of aggregates, ready for commercialisation or for subsequent processes, such as washing. There may be recirculation of material whose size is larger than intended after passing through the crushers. This material is re-crushed until it reaches the required size.

2.1.1. Justification for the exemption to declare modules C1, C2, C3, C4 and D


Unwashed Aggregates from the SECIL-Atougua quarry are intermediate construction products that are physically integrated with other products (among others, cement and water in the case of their use in concrete products). They can have different end uses, which are impossible to generalise. In addition, biogenic carbon is not present in the product, so according to standard NP EN 15804:2012+A2:2019 only modules A1-A3 can be declared.

2.2. Core environmental impact indicators


Modules A1-A3	Global warming potential total; GWP-total	Global warming potential fossil; GWP-fossil	Global warming potential biogenic; GWP-biogenic	Global warming potential land use and land use change; GWP-luluc	Depletion potential of the stratospheric ozone layer; ODP	Acidification potential; AP
Unit	kg CO ₂ eq.	kg CO ₂ eq.	kg CO ₂ eq.	kg CO ₂ eq.	kg CFC 11 eq.	mol H ⁺ eq.
Enrocamento	1.95E+00	1.95E+00	-4.70E-03	4.41E-03	3.19E-08	7.11E-02
Tout-Venant	2.15E+00	2.14E+00	-2.98E-03	1.14E-02	3.68E-08	7.16E-02
Pó de Pedra	2.17E+00	2.16E+00	-2.83E-03	1.20E-02	3.72E-08	7.17E-02
Brita 3	2.14E+00	2.13E+00	-3.05E-03	1.11E-02	3.66E-08	7.16E-02

LEGEND:
 Product stage

Modules A1-A3	Eutrophication potential aquatic freshwater; EP-freshwater	Eutrophication potential aquatic marine; EP-marine	Eutrophication potential terrestrial; EP-terrestrial	Formation potential of tropospheric ozone; POCP	Abiotic depletion potential for non-fossil resources ADP-minerals&metals	Abiotic depletion potential for fossil resources potential ADP-fossil	Water (user) deprivation potential; WDP
Units	kg P eq.	kg N eq.	mol N eq.	Kg COVNM eq.	kg Sb eq.	MJ, P.C.I	m ³ World eq. deprived
Enrocamento	9.90E-05	2.40E-02	3.63E-01	7.27E-02	7.32E-07	2.32E+01	3.09E-01
Tout-Venant	1.07E-04	2.41E-02	3.65E-01	7.34E-02	7.43E-07	2.70E+01	5.09E-01
Pó de Pedra	1.08E-04	2.41E-02	3.65E-01	7.34E-02	7.44E-07	2.74E+01	5.26E-01
Brita 3	1.07E-04	2.41E-02	3.65E-01	7.34E-02	7.42E-07	2.69E+01	5.01E-01

LEGENDA:
 Product stage


2.3. Additional environmental impact indicators

Modules A1-A3	Potential incidence of disease due to PM emissions PM	Potential Human exposure efficiency relative to U235 IRP	Potential Comparative Toxic Unit for ecosystems ETP-fw	Potential Comparative Toxic Unit for humans, cancer effects HTP-c	Potential Comparative Toxic Unit for humans, not cancer effects HTP-nc	Potential soil quality index SQP
Unit	Disease incidence	kBq U 235 eq.	CTUe	CTUh	CTUh	-
Enrocamento	8.41E-07	4.66E-02	4.39E+01	2.35E-09	4.38E-09	9.17E+01
Tout-Venant	8.44E-07	1.06E-01	4.40E+01	2.41E-09	5.06E-09	9.47E+01
Pó de Pedra	8.45E-07	1.12E-01	4.40E+01	2.41E-09	5.12E-09	9.49E+01
Brita 3	8.44E-07	1.04E-01	4.40E+01	2.40E-09	5.04E-09	9.45E+01
LEGEND:  Product stage						

2.4. Indicators describing resource use

Modules A1-A3	Primary energy					
	EPR	RR	TRR	EPNR	RNR	TRNR
Unit	MJ, P.C.I.	MJ, P.C.I.	MJ, P.C.I.	MJ, P.C.I.	MJ, P.C.I.	MJ, P.C.I.
Enrocamento	2.28E+00	0.00E+00	2.28E+00	2.32E+01	0.00E+00	2.32E+01
Tout-Venant	5.53E+00	0.00E+00	5.53E+00	2.70E+01	0.00E+00	2.70E+01
Pó de Pedra	5.81E+00	0.00E+00	5.81E+00	2.74E+01	0.00E+00	2.74E+01
Brita 3	5.41E+00	0.00E+00	5.41E+00	2.69E+01	0.00E+00	2.69E+01


LEGEND:

 Product stage

EPR = use of renewable primary energy excluding renewable primary energy resources used as raw materials; RR = use of renewable primary energy resources used as raw materials; TRR = total use of renewable primary energy resources (EPR + RR); EPNR = use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; RNR = use of non-renewable primary energy resources used as raw materials; TRNR = total use of non-renewable primary energy resources (EPNR + RNR);

Modules A1-A3	Secondary materials and fuels, and use of water			
	MS	CSR	CSNR	Net use of fresh water
Unit	kg	MJ, P.C.I.	MJ, P.C.I.	m³
Enrocamento	0.00E+00	0.00E+00	0.00E+00	7.67E-03
Tout-Venant	0.00E+00	0.00E+00	0.00E+00	1.15E-02
Pó de Pedra	0.00E+00	0.00E+00	0.00E+00	1.18E-02
Brita 3	0.00E+00	0.00E+00	0.00E+00	1.14E-02

LEGEND:


 Product stage

MS = use of secondary material; CSR = use of renewable secondary fuels; CSNR = use of non-renewable secondary fuels.

2.5. Other environmental information describing different waste categories

Modules A1-A3	Hazardous waste disposed	Non-hazardous waste disposed	Radioactive waste disposed
Unit	kg	kg	kg
Enrocamento	1.49E-04	8.03E+00	1.11E-05
Tout-Venant	1.64E-04	8.03E+00	2.52E-05
Pó de Pedra	1.66E-04	8.03E+00	2.64E-05
Brita 3	1.64E-04	8.03E+00	2.46E-05

LEGENDA:

 Product stage

2.6. Environmental information describing output flows

Modules A1-A3	Components for re-use	Materials for recycling	Materials for energy recovery	Exported energy		
				Energy carrier 1	...	Energy carrier n
Unit	kg	kg	kg	MJ	MJ	MJ
Enrocamento	0.00E+00	8.83E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tout-Venant	0.00E+00	9.32E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pó de Pedra	0.00E+00	9.38E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Brita 3	0.00E+00	9.32E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00

LEGEND:

Product stage

2.7. Information describing the biogenic carbon content at the factory gate

Biogenic carbon content	Units	Modules A1-A3 (results)
Biogenic carbon content in product	Kg C	Not Applicable.
Biogenic carbon content in accompanying packaging	Kg C	Not Applicable.

3. SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

3.1. Scenario and technical information for module D

Not Applicable.

3.2. Additional information on release of dangerous substances to indoor air, soil, and water during the use stage

Not Applicable.

4. REFERENCES

- ✓ General Instructions of the DAPHabitat System, Version 2.1, Edition August 2023 (in www.daphabitat.pt);
- ✓ PCR – basic module for construction products and services. DAPHabitat System. Version 2.3, August 2023 (in www.daphabitat.pt);
- ✓ ISO 14025:2009 Environmental declarations and labels – Type III environmental declarations – Principles and procedures;
- ✓ EN 15804:2012 + A2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products;
- ✓ EN 15942:2021 Sustainability of construction works – Environmental product declarations – Communication format business-to-business.
- ✓ SECIL AGREGADOS, “Declaração de Desempenho nº 1 - Pó de Pedra,” 2023.
- ✓ SECIL AGREGADOS, “Declaração de desempenho nº 6 - Brita 3,” 2023.
- ✓ SECIL AGREGADOS, “Declaração de Desempenho nº 7 - Tout-Venant de 1a,” 2023.
- ✓ SECIL AGREGADOS, “Declaração de Desempenho nº 8 - Tout-Venant de 2a,” 2023.
- ✓ SECIL AGREGADOS, “Declaração de Desempenho nº 9 - Enrocamento,” 2023.