DAPHabitat System Environmental Product Declaration

www.daphabitat.pt

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

Declaration number: **DAP 003:2023**

PORTUGUESE "GREY" CEMENT

ISSUE DATE: 04/12/2023 VALID UNTIL: 03/12/2028

ATIC – ASSOCIAÇÃO TÉCNICA DA INDÚSTRIA DE CIMENTO

ASSOCIAÇÃO TÉCNICA DA INDÚSTRIA DE CIMENTO

centroHabitat
Plataforma para a Construção Sustentável

Version 1.4. Ed. September 2023

Index

1. GENERAL INFORMATION

1.1. The DAPHAbitat System

Program operator:	Associação Plataforma para a Construção Sustentável www.centrohabitat.net centrohabitat@centrohabitat.net
Address:	Departamento Engenharia Civil Universidade de Aveiro 3810-193 Aveiro
Email address:	deptecnico@centrohabitat.net
Telephone number:	(+351) 234 401576
Website:	www.daphabitat.pt
Logo	

1.2. EPD owner

Name of the owner:	ATIC – Associação Técnica da Indústria de Cimento
Production site:	Praceta Teófilo Araújo Rato, 2600 - 540 ALHANDRA | Rua dos Troviscais 10, 3020 - 886 SOUSELAS | Cerro da Cabeça Alta - Apartado 45, 8100 - 952 LOULÉ | Estrada do Outão, 2900-718 SETÚBAL | Maceira Liz-Maceira, 2405-018 LEIRIA | Pataias-Gare – Apartado 46, 2449-909 PATAIAS |
Address (head office):	Edifício Central Park, Rua Central Park, 6, 4ºC, 2795 - 242 LINDA-A-VELHA
Telephone:	+351 213 510 830
E-mail:	cimento.atic@atic.pt
Website:	http://www.atic.pt/
Logo:	
Information concerning the applicable management Systems:	Both producers are certified by the **NP EN ISO 14001:2015** Environmental Management Systems standard.
Specific aspects regarding the production:	CAE 23510 – Cement Manufacture
Organization's environmental policy:	Not Applicable.

1.3. Information concerning the EPD

Authors:	c5Lab - Sustainable Construction Materials Association
Contact of the authors:	Edifício Central Park, Rua Central Park 6 | 2795-242 LINDA-A-VELHA Email: fcapucha@c5lab.pt
Issue date:	04/12/2023
Registration date:	18/12/2023
Registration number:	DAP 003:2023
Valid until:	03/12/2028
Representativity of the EPD (location, manufacturer, group of manufacturers):	EPD for the average product "Grey" cement, manufactured in (6) six industrial plants from the (2) two producers (Cimpor - Cimentos de Portugal, SGPS, S.A. | Secil - Companhia Geral De Cal E Cimento, S.A.).
Where to consult explanatory material:	https://secilpro.com/ https://www.cimpor.com/cimento#produtos
Type of EPD:	Cradle-to-Gate EPD (A1-A3)

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 (s)
(CERTIF – Associação para a Certificação)	(Ana Cláudia Dias, Marisa Almeida)

1.5. EPD Registration

Operador de Programa de Registo
(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

<table>
<tr><td>Identification of the product:</td><td>“Grey” Cement</td></tr>
<tr><td>Illustration of the product:</td><td>  </td></tr>
<tr><td>Brief description of the product:</td><td>Cement is a hydraulic binder, i.e., a finely ground inorganic material which, when mixed with water, forms a paste which sets and hardens by means of hydration reactions and processes and which, after hardening, retains its strength and stability even under water. The main raw materials (limestone and marl) are obtained from the internal quarries localized in the plant’s premises. The corrective raw materials and additives (clay, shale, sand, gypsum) are obtained from external quarries and transported to the plants. The secondary raw materials come from waste produced by other sectors. The intermediary product (clinker) is obtained in the rotary kiln which is localized in the plant’s premises.</td></tr>
<tr><td>Main technical characteristics of the product:</td><td>The product class “grey” cement consists of a group of 12 products manufactured by the two producers and listed in table 1.

Table 1: Composition of the product that make the class “grey” cement.
<table>
<tr><th>Blend/Producer Designation</th><th>EN 197-1 Designation</th><th>Producer</th><th>EN 197-1 Composition requirements</th></tr>
<tr><td>CEM I 52,5 R</td><td>Portland Cement</td><td>CIMPOR</td><td>95-100% Clinker
0-5% Minor Additional Constituents</td></tr>
<tr><td>CEM I 42,5 R</td><td>Portland Cement</td><td>CIMPOR</td><td>95-100% Clinker
0-5% Minor Additional Constituents</td></tr>
<tr><td>CEM II/A-L 42,5 R</td><td>Portland-Limestone Cement</td><td>CIMPOR</td><td>80-94% Clinker;
6-20% Limestone (<0.5% TOC)
0-5% Minor Additional Constituents</td></tr>
<tr><td>CEM II/B-L 32,5 N</td><td>Portland-Limestone Cement</td><td>CIMPOR</td><td>65-79% Clinker
21-35% Limestone (<0.5% TOC)
0-5% Minor Additional Constituents</td></tr>
<tr><td>CEM IV/B (V) 32,5 N - SR</td><td>Sulphate Resisting Pozzolanic Cement</td><td>CIMPOR</td><td>45-64% Clinker (3CaO.Al2O3<9%)
36-55% Fly Ash
0-5% Minor Additional Constituents</td></tr>
<tr><td>CEM IV/A (V) 42,5 R – SR</td><td>Sulphate Resisting Pozzolanic Cement</td><td>CIMPOR</td><td>65-79% Clinker (3CaO.Al2O3<9%)
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0-5% Minor Additional Constituents</td></tr>
<tr><td>CEM I 52,5 R</td><td>Portland Cement</td><td>SECIL</td><td>95-100% Clinker
0-5% Minor Additional Constituents</td></tr>
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36-55% Fly Ash
0-5% Minor Additional Constituents</td></tr>
<tr><td colspan="4">TOC – Total Organic Carbon</td></tr>
</table></td></tr>
</table>

<table>
<tr><td></td><td>Table 2 lists the products CE conformity declaration for each of the 12 products that compose the “grey” cement class.

Table 2: CE conformity declarations for the products of the “grey” cement class.
<table>
<tr><th>Product Designation</th><th>Producer</th><th>CE Conformity Declaration</th></tr>
<tr><td>CEM I 52,5 R</td><td>CIMPOR</td><td>http://bit.ly/CEMI525R-CIMPOR</td></tr>
<tr><td>CEM I 42,5 R</td><td>CIMPOR</td><td>https://bit.ly/CEMI425R-CIMPOR</td></tr>
<tr><td>CEM II/A-L 42,5 R</td><td>CIMPOR</td><td>https://bit.ly/CEMIIA-L425R-CIMPOR</td></tr>
<tr><td>CEM II/B-L 32,5 N</td><td>CIMPOR</td><td>https://bit.ly/CEMIIB-L325N-CIMPOR</td></tr>
<tr><td>CEM IV/B (V) 32,5 N - SR</td><td>CIMPOR</td><td>https://bit.ly/CEMIVBV325N-SR-CIMPOR</td></tr>
<tr><td>CEM IV/A (V) 42,5 R – SR</td><td>CIMPOR</td><td>https://bit.ly/CEMIVAV425R–SR-CIMPOR</td></tr>
<tr><td>CEM I 52,5R</td><td>SECIL</td><td>https://bit.ly/CEMI525RSECIL</td></tr>
<tr><td>CEM I 42,5R</td><td>SECIL</td><td>https://bit.ly/CEMI425RSECIL</td></tr>
<tr><td>CEM II/B-L 42,5R</td><td>SECIL</td><td>https://bit.ly/CEMIIBL425RSECIL</td></tr>
<tr><td>CEM II/B-L 32,5N</td><td>SECIL</td><td>https://bit.ly/CEMIIB-L325NSECIL</td></tr>
<tr><td>CEM II/A-L 42,5R</td><td>SECIL</td><td>https://bit.ly/CEMIIA-L425RSECIL</td></tr>
<tr><td>CEM IV/A (V) 32,5R – SR</td><td>SECIL</td><td>https://bit.ly/CEMIVAV325-R-SR-SECIL</td></tr>
</table></td></tr>
<tr><td>Description of the product’s application/use:</td><td>Cement is used as a hydraulic binder that, when appropriately mixed with water and aggregates, produces concrete, mortar or cement screed that retains its workability for a sufficient time and, after a specified period, attains strength and long-term volume stability.</td></tr>
<tr><td>Placing on the market / Rules of application in the market / Technical rules of the product:</td><td>NP EN 197-1:2012 – Cement - Part 1: Composition, specifications, and conformity criteria for common cements.
NP EN 14216:2015 – Cement - Composition, specifications, and conformity criteria for very low heat special cements.</td></tr>
<tr><td>Quality control:</td><td>Both producers are certified in the Quality Management Systems standard, EN ISO 9001:2015, thus assuring the manufacturing quality control within the industrial plants.</td></tr>
<tr><td>Special delivery conditions:</td><td>Depending on the type of material and client necessities, “grey” cement can be delivered in bulk, in kraft bags on top of wood pallets, on large, plasticized packages and big-bags.</td></tr>
<tr><td>Components and substances to declare:</td><td>Not Applicable.</td></tr>
<tr><td>Where explanatory material may be obtained:</td><td>The information can be found at the following links:
https://www.secil.pt/pt/centro-de-documentacao
https://www.cimpor.com/cimento#produtos</td></tr>
<tr><td>History of the LCA studies:</td><td>Not Applicable.</td></tr>
</table>

1.9. Calculation rules of the LCA

Functional unit:	Not Applicable.
Declared unit:	1 metric tonne of “grey” cement
System boundaries:	Cradle-to-gate EDP. From the extraction and processing of raw materials until the product enters into the dispatch procedure.
Criteria for the exclusion:	The following unit processes complies with the exclusion criterion established on EN 15804, corresponding to 1% of the total consumed energy or total input mass. The overall neglected input flows per module must not be higher than 5% of the total energy or mass input. • Liquid Oxygen; • Lixiviates; • Chromium VI Reducing Agents; • Baghouse Filters; • Liquid CO_2 Cylinder; • Biocides; • Corrosion Protectors; • Griding Balls; • Machinery Oils and Greases; • Acetylene; • Refractories; • Sodium Hypochlorite; • Descalers.
Assumption and limitations	The primary data corresponds to the summation for the manufacture of 12 cement types that compose the product class “Grey” cement, within the six industrial plants from the two producers (CIMPOR and SECIL). Information was supplied consolidated and anonymised therefore, it is not possible to disaggregate the inventory by type of cement or individual industrial plant.
Quality and other characteristics about the information used in the LCA:	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 generically between reasonable and very good on a 5-level qualitative scale from very poor to very good. The information on the production of "grey" cement was obtained less than 5 years ago, using mostly primary data collected directly from the industrial statistics of the six industrial units and subsequently consolidated, being representative of the reality of production. Information for background processes not provided by the industrial units, and over which the producers have no influence, was obtained from generic data in the Ecoinvent 3.9.1 database (updated in June 2023), or by consulting the EPDs of equivalent products. These were selected to provide geographical and technological coverage that fulfils the data quality criteria stipulated in Annex E of EN 15804:2012+A2:2019. Electricity production was modulated using information obtained directly from the regulator of energy production and electricity infrastructure in Portugal. The results obtained are considered to be robust. The LCA was carried out using SimaPro 9.5 software. Table 3 presents the composition of the product modelled in SimaPro 9.5 (corresponding to the average composition of the Portuguese “grey” cement): **Table 3** - Composition of the “grey” cement in the LCA model.
Allocation rules:	Since the inventory data collected relates only to the production of "Grey" Cement, no allocation procedure is deemed necessary. The polluter pays principle has been applied to waste consumed in the process and waste produced that is subject to recovery processes.
Software used for the assessment:	SimaPro 9.5 – PRé Sustainability
Background database used for the LCA:	Ecoinvent Database v3.9.1 - Ecoinvent
Variability of LCIA results:	The main factor affecting the variability of the LCIA results is the ratio of clinker consumed, which can vary between 45% (for a CEM IV cement) and 97.5% (for CEM I). The average clinker consumption rate is 77.9%. The percentages shown refer to the mass of the final product. As clinker is a constituent with a significant environmental impact, mainly associated with rotary kiln activity, the clinker content may affect the variability of the LCIA results.

Constituents	Amount kg (Per Declared Unit)
“Grey” Clinker	779
Gypsum	54
Filer	154
Own Limestone	7
Fly Ash	6
Total	**1000**

	Other parameters such as the clinker kilns fuel mix and additives used may also slightly affect the LCIA results.
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 15948 and according to the comparability conditions determined by ISO 14025.

1.10. Use of average environmental performance

The present environmental declaration concerns a series of 12 products manufactured in six plants from two producers (CIMPOR and SECIL) making the average product Portuguese "grey" cement. The technological homogeneity between the manufacturing plants is high, the production method for each of the 12 products is equivalent (Dry Process), only the ratio of constituent's mixture, consumption of intermediary product and/or additives, among other minor parameters varies. The main factor affecting the variability of the LCIA results is the clinker content, which can vary between 45% (for a CEM IV cement) and 100% (for CEM I). The average clinker consumption rate is 77.9 in weight percentage of the final product output.

While these factors may vary from cement plant to cement plant and cement blend to cement blend, the LCA indicators for Portuguese "Grey" cement are within a range close enough to justify the application of the representative EPD for its intended use, i.e., providing the basis for the environmental assessment of buildings and other construction works in typical Portuguese situations. For detailed calculations requiring LCA data for specific cements, please refer to individual cement companies.

1.11. Technical information for Reference Service Life (RSL)

Not applicable.

1.12. Flow diagram of input and output of the processes

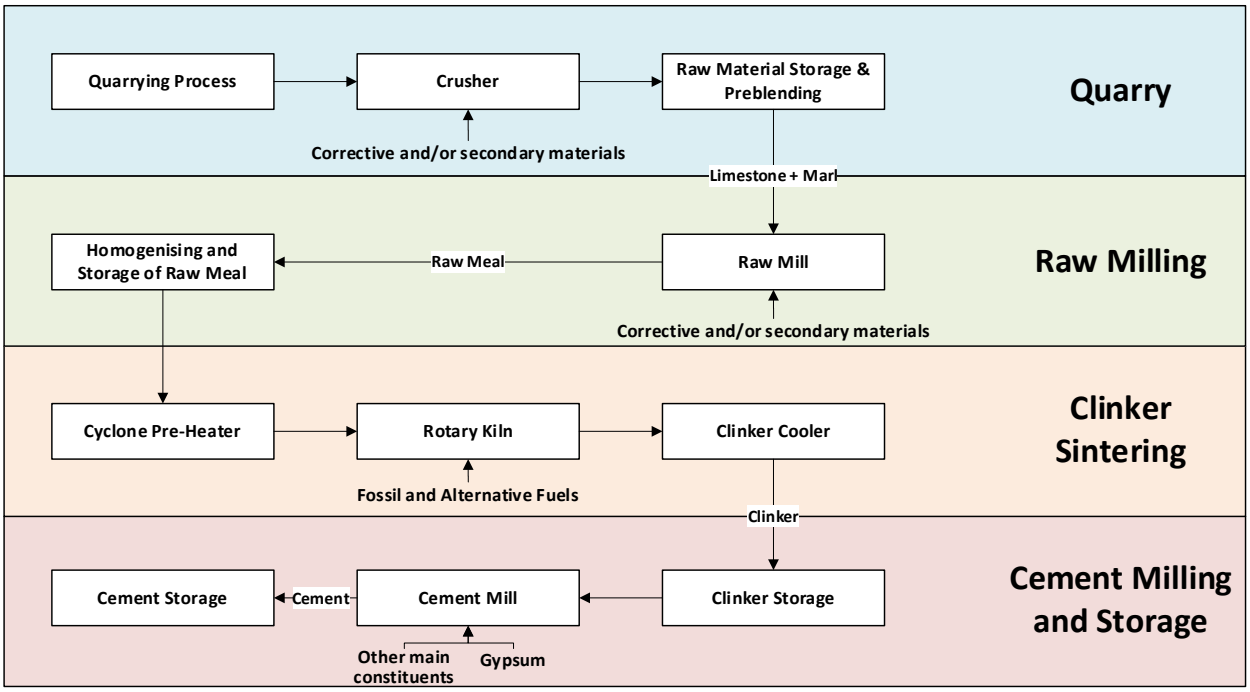

Figure 1: Flowchart for the cement manufacturing process.

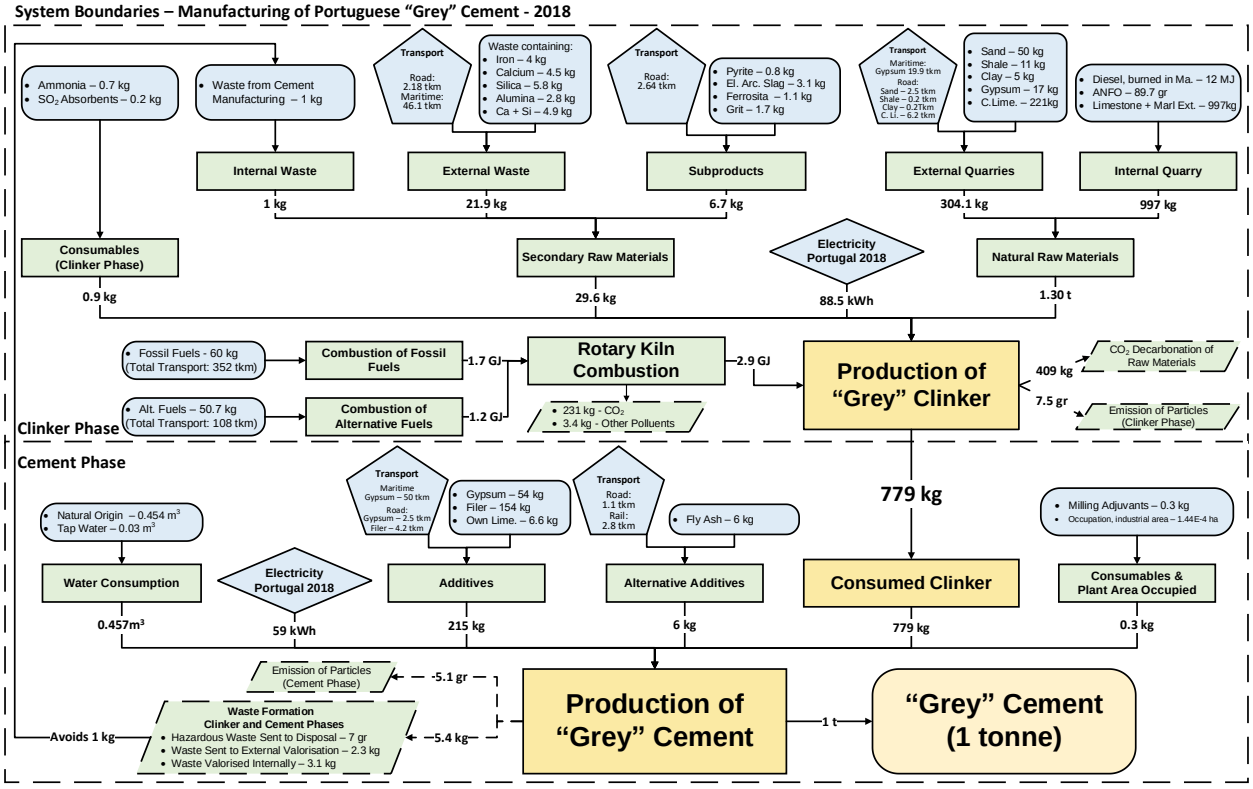

Figure 2: Diagram depicting the overall inventory flows for producing one metric tonne of Portuguese "grey" cement.

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 limited to the Product Stage, covering the modules A1-A3. All "grey" cement manufactured in the six plants is produced using the same method (Dry Process) described below:

Extraction and Processing of the Natural Raw Materials in the Quarry

Cement manufacturing starts in the internal quarry where the natural raw materials (limestone and marl) are extracted. Localized in the factory premises, the quarry operates in open air through controlled explosions. After extraction, the raw materials are presented in chunks with volumes up to 1 m^3, being afterwards transported by trucks to a crusher for granulometry reduction. Once at a reasonable granulometry, the raw material is stored in pre-homogenising hangars.

Raw Meal Milling

In the manufacturing plant, the crushed natural raw materials are introduced in a mill (denoted 'raw mill') together with secondary raw materials (e.g., pyrite) and corrective raw materials (e.g., sand), in predetermined dosages according to the desired quality of the intermediary product (clinker), to produce the 'Raw Meal' a mixture with very fine granulometries (lower than 50µm). Simultaneously, during milling, raw materials are dried using waste heat from the rotary kiln hot gases exhaust. After milling, the raw meal is stored in silos. The secondary raw materials and the corrective materials are transported to the factory gate from external quarries, raw materials suppliers, or as waste from other sectors, mainly by road.

Sintering

The raw meal is extracted from the silos and inserted in a cyclone system for pre-heating through the use of the hot exhaust gases from the kiln. The pre-heated input will then enter the rotary kiln for sintering, slowly moving across it by action of rotation and gravity. Inside the kiln, temperature reach up 1450 ºC promoting several physicochemical reactions to obtain Clinker, an artificial rock with hydraulic properties. After sintering, the hot clinker enters a cooling system which allows partial heat recovery by reintroducing the cooling air as secondary air. The fossil and alternative fuels used in the rotary kiln are transported to the factory gate primarily via road or maritime transport, being supplied from either fuel suppliers or as waste from other sectors.

Cement Milling and Storage

The final product, cement is produced by introducing mixture of clinker, gypsum, and other additives in a mill (denoted 'Cement Mill'). The ratio of mixture is carefully selected and scrutinised according to the desired properties of the "grey" cement type that is intended to be produced, being stored in silos afterwards.

Dispatch

Cement can be commercialised in bulk, being directly extracted from the silos into cisterns. The dispatch process and shipping to the construction stage (Module A4) is not covered by the system boundaries. The packaging process is also excluded from the system boundaries.

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

"Grey" cement is an intermediary construction product that is physically integrated with other products (e.g., gravel, sand, and water) during construction phase, and goes through a chemical transformation (hydraulic reactions) to create products such as concrete. It may have various end-uses, impossible to determine until its use in the construction site, and it is not possible to separate it from the other products in the end-of-life. Moreover, biogenic carbon is not present in the product, therefore according to EN 15804: 2012+A2: 2019, the product system may be exempt from declaring the modules only the modules C1, C2, C3, C4 and D, declaring only the A1-A3 modules, corresponding to the product stage.

2.2. Core environmental impact indicators

	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.
Modules A1-A3	7.5E+02	7.3E+02	1.1E+01	8.2E-01	4.8E-06	6.6E-01

LEGEND:
Product Stage

	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
Unit	kg P eq.	kg N eq.	mol N eq.	Kg COVNM eq.	kg Sb eq.	MJ, P.C.I	m3 world eq. deprived
Modules A1-A3	1.7E-02	4.2E-01	1.7E+00	1.5E+00	2.4E-06	3.1E+03	6.0E+01

LEGEND:
Product Stage

Note: The results obtained for the indicators "Depletion Potential for Non-fossil Abiotic Resources (ADP- minerals&metals)", "Depletion Potential for Fossil Abiotic Resources (ADP-fossil)" and "Water Unavailability Potential (user) (WDP)" should be used with caution as the uncertainties associated with them are high or there is little experience with the indicator.

2.3. Additional environmental impact indicators

	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	-
Modules A1-A3	6.8E-06	3.1E+00	2.2E+03	1.1E-08	6.0E-07	8.8E+02

LEGEND:
Product Stage

Note: The impact indicator "Potential Human Exposure Efficiency in relation to U235 (IRP)" focuses mainly on the possible impact of a low dose of ionising radiation on human health resulting from the nuclear fuel cycle. It does not consider effects arising from possible nuclear accidents, occupational exposure, or the disposal of radioactive waste in underground facilities. Potential ionising radiation from soil, radon and some building materials is also not measured by this indicator. The results obtained for the indicators "Comparative Toxic Potential Unit for Ecosystems (ETP-fw)", "Comparative Toxic Potential Unit for Humans, Carcinogenic (HTP-c)", "Comparative Toxic Potential Unit for Humans, Non-Carcinogenic (HTP-nc)" and "Soil Quality Potential Index (SQP)" should be used with caution as the uncertainties associated with them are high or there is little experience with the indicator.

2.4. Indicators describing resource use

	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.
Modules A1-A3	3.5E+02	0.0E+00	3.5E+02	3.1E+03	0.0E+00	3.1E+03

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 (EPRN + RNR);

	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.**	**m^3**
Modules A1-A3	3.6E+01	1.1E+02	1.1E+03	1.3E+00

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

	Hazardous waste disposed	**Non-hazardous waste disposed**	**Radioactive waste disposed**
Unit	kg	kg	kg
Modules A1-A3	8.5E-02	4.0E-01	7.2E-04

LEGEND:
Product Stage

2.6. Environmental information describing output flows

	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
Modules	6.9E-01	7.7E+00	1.4E-02	0.0E+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. 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.
- ✓ ATIC - Associação Técnica da Indústria do Cimento, "Caracterização da Indústria," 2019.
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