Environmental Product Declaration

of Masonry Mortars by THRAKON S.A.

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

EPD of multiple products, based on the worst-case results of the product group. The product list is presented on page 4

EPD PROGRAM	The international EPD System, https://environdec.com/
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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

Program related information

Program: The International EPD® System
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Accountabilities for PCR, LCA and independent, third-party verification
CEN standard EN 15804:2012+A2:2019 (October 2019) serves as the Core Product Category Rules (PCR)
Product category rules (PCR) PCR 2019:14 Construction products, version 1.3.4 (2024-04-30)
PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact

Life Cycle Assessment (LCA)

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Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
☒ EPD verification by certification body

Third party verification:

BUSINESS QUALITY VERIFICATION BQV

Business Quality Verification P.C, Accredited by E.S.Y.D, Accreditation No. 1218
5 Konitsis street, Marousi, GR 15125, Greece
https://bqv.gr/

Business Quality Verification P.C. is an approved certification body accountable for the third-party verification

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 of the EPD.

EPDs within the same product category but registered in different EPD programmes 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 characterization factors); have equivalent content declarations; and be valid at the time of comparison.

Company Information

THRAKON is a leading manufacturer of dry mortars, coatings, and construction chemicals in the building industry. With over 25 years of experience, we are committed to delivering high-quality, cost-effective construction solutions with exceptional technical support, customer service, and after-sales assistance. Exceeding 1700 high-performance products, we offer the best construction solutions that add value to our customers. We bring innovation and expertise to the construction world for more than 25 years.

THRAKON offers complete building solutions across a myriad of applications. Our product categories, including External Thermal Insulation Systems (ETICS), Plasters & Renders, Tile Adhesives & Grouts, Waterproofing, Repairing, Microcement, Paints & Varnishes, Solvent Adhesives and Flooring Screeds, ensure that we cater to every construction need.

We offer complete building solutions for all areas of application, rather than individual products. Our certified systems guarantee solutions that meet every customer's needs, providing system-based approaches that increase confidence in selecting the safest and most reliable building solutions for any construction project. We invest substantial resources in research and development, with innovation being the cornerstone of our growth. Our strong R&D department identifies key construction needs and develops products that not only meet industry standards but exceed expectations.

Our six manufacturing plants in Greece are equipped with state-of-the-art technology and staffed with qualified personnel, ensuring top-quality products. THRAKON also operates its quarries, producing white marble and high-quality silica sand, enabling us to manufacture the best products. THRAKON's commitment to excellence is reflected in every step of our manufacturing process.

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Product Information

The products included in this EPD are listed below:

- KLW 130
- PAW 290
- KLW 131
- MIX 280

It should be noted that for the specific product category, the worst-case results of the category are presented. The maximum deviations in core indicators from the declared worst-case are presented in **Appendix**.

THRAKON presents a comprehensive range of masonry mortars, providing effective solutions for building of structural elements such as brickwork, cement blocks, stone, pavement slabs and other common building materials on common substrates, dry and wet areas. They are appropriate for interior and exterior applications.

THRAKON masonry mortars comply with European standards, including EN 998-2 for cement-based masonry mortars, ensuring the highest quality and safety.

THRAKON masonry mortars offer multiple advantages:

- It offers superior bonding to all common substrates as well as resistance to frost and moisture
- Strong adhesion between structural components
- Excellent workability and thixotropic behavior
- High resistance – fast application

Raw material	Weight (versus the product) [1]	Biogenic carbon content[2]
Cement	0.05-0.35	-
Limestone	0.65-0.75	-
GGBFS	<0.15	-
Other additives	<0.05	
Packaging materials		
Paper bag	6.40E-03	3.20E-03
Pallets	4.67E-03	2.33E-03

[1]The content declaration (this table will be presented in EPD) is given in content declaration range), due to confidentiality reasons).

[2]Biogenic carbon content of wood and wood-based materials is assumed as 50% of the mass of the material, adopted from EN 16449.

According to the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Regulation, the product does not contain any substance included in the Candidate List of Substances of Very High Concern (SVHCs) for authorization with concentrations higher than 0.1% weight by weight (w/w).

System Boundaries

X= Included, ND= Module Not Declared																	
	Product stage			Construction stage		Use stage							End-of-life stage				Resource recovery stage
	Raw Materials Supply	**Transport**	**Manufacturing**	Transport	**Construction installation**	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	**De-construction and demolition**	**Transport**	**Waste processing for reuse, recovery and/or recycling**	**Disposal**	**Reuse-Recovery-Recycling-potential**
Module	**A1**	**A2**	**A3**	A4	**A5**	B1	B2	B3	B4	B5	B6	B7	**C1**	**C2**	**C3**	**C4**	**D**
Module Declared	**X**	**X**	**X**	ND	**X**	ND	ND	ND	ND	ND	ND	ND	**X**	**X**	**X**	**X**	**X**
Geography	**GLO**	**GLO**	**GR**	-									**EU**	**EU**	**EU**	**EU**	**EU**
GWP-GHG share of Specific data used	**28.31%**			-									-	-	-	-	**-**
Variation-products (GWP-GHG)	**Maximum deviation 30.97%**			-									-	-	-	-	**-**
Variation-sites	**11.3%**			-									-	-	-	-	**-**

Product stage (A1-A3)

Product stage (modules A1-A3) includes raw material supply, transportation, and manufacturing.

A1: Raw Material Supply

Production starts with the material supply. This module includes the mining and pretreatment processes before production (processing of raw materials, generation of electricity and fuels required for the manufacturing). Cement, calcium carbonate and other additives are the main raw materials used.

A2: Transportation of raw materials to manufacturer

Transportation module includes the delivery of raw, auxiliary and packaging materials from suppliers to the gate of manufacturing plant. All raw materials and packaging materials are imported from suppliers located in Europe and Turkey, except for cement that derives from north Africa.

A3: Manufacturing

This module includes all emissions that may occur during the manufacturing process (direct emissions in water/air from fuels combustion and water treatment, manufacturing waste treatment). Personnel-related activities, such as transportation of employees to and from work, and production of infrastructure and capital goods are not included in the scope of this study.

The manufacturing process starts with proportioning of raw materials, where they are proportioned according to specific formulations designed to meet the desired properties of the products. Then, the mixing process takes place. The mixing process involves dry mixing, where dry ingredients (cement, calcium carbonate etc.) are thoroughly mixed to ensure a uniform distribution of materials, and wet mixing, where water and any liquid admixtures are added to the dry mix. This is typically done in a high-shear mixer to ensure thorough blending and consistency.

Installation stage (A5)

This module includes impacts related to the installation of the product into customer's place. Installation is conducted manually, so electricity required during the installation process is zero. Impacts from water needed is also taken into account. According to technical datasheets of the product, an average water consumption during product's installation is 0.2 l per 1 kg of mortar. Furthermore, in this module, impacts from the treatment of waste packaging materials and the compensation of biogenic emissions from wooden pallets and paper cores are taken into account. For all packaging materials, data from European Statistical Authority have been acquired. Based on the most recent data of 2022 (Packaging materials waste end-of-life), 43.4% of packaging materials are recycled and 56.6% are landfilled.

Scenario Information (module A5)	Unit
Ancillary materials for installation	None
Water use	0.2 l per kg of product
Quantitative description of energy type kWh or MJ (regional mix) and consumption during the installation process	None
Waste materials on the building site before waste processing, generated by the product's installation (specified by type)	Packaging waste: **Wooden pallets:** 4.67E-03kg per kg of product **Paper bags:** 6.40E-03 kg per kg of product

Since the packaging contains more than 5% biogenic carbon, the uptake of this biogenic carbon, as biogenic CO_2, in Module A1 is balanced out by an equal amount of emissions of biogenic CO_2 in Module A5.

End of life stage (C1-C4)

The end-of-life stages begin with the deconstruction and demolition from the installation site and then the waste is transferred for recycling and disposal of the product.

C1: De-construction and demolition

This module refers to the impact arising from the diesel consumption of the heavy vehicles during demolition process. The end-of-life stages begin with the deconstruction and demolition from the installation site and then they transferred for recycling and disposal. Usually, this phase results in little impact because the product is generally part of a larger system (e.g., machine or building) and for that reason, impacts from dismantling should be allocated to all components of that system. For this reason, the impact of the dismantling phase was considered negligible.

C2: Transportation to waste processing

This module includes the transportation of the discarded product either to the recycling site or to landfills for final disposal. A distance of 50 km by lorry 16-32 tonnes from construction/demolition sites to scrap dealers and disposal sites has been chosen as a conservative assumption.

C3: Waste processing for reuse, recovery and/or recycling

This module includes impacts related to the reuse/recycling of products after their life cycle. As a conservative assumption, all products waste after the demolition process will be landfilled. So, there are no environmental impacts assigned to this module.

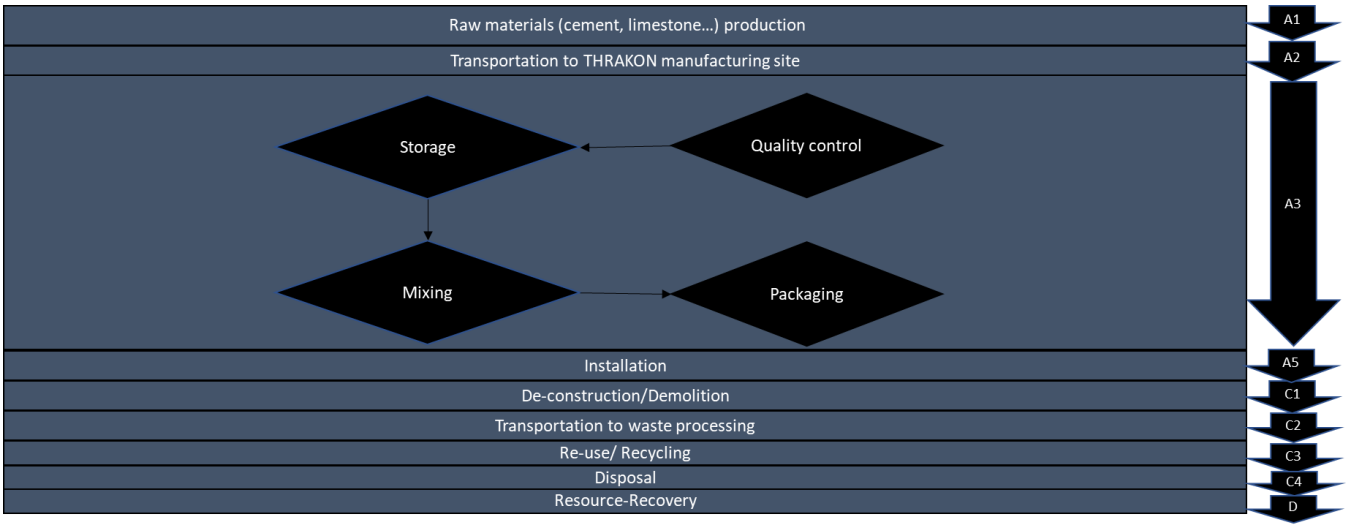
C4: Disposal

This module includes impacts related to the reuse/recycling of products after their life cycle. As said above, 100% of the product will be landfilled.

Resource and recovery stage (D)

D: Reuse-Recovery-Recycling-potential

Module D encompasses all avoided burdens related to the potential reuse and/or recycling of the product after its end-of-life stage. In particular, all benefits from the recycling of packaging materials, that can substitute the production of primary wood, paper or energy.



LCA Information

Declared unit

The declared unit of the study is 1 kg of masonry mortar manufactured in **THRAKON** Plants located at **Oinofyta, Chalkidona** and **Orestiada, Greece.**

Goal and Scope

This EPD evaluates the environmental impacts of the production of 1 kg of masonry mortar, from cradle to gate (modules A1-A3), along with construction/installation stage (module A5) end-of-life modules (C1-C4) end module D.

Cut-off rules

The cut-off criteria adopted is as stated in ''EN 15804:2012+A2:2019'' and ''PCR 2019:14, v.1.3.4''. Where there are insufficient data or data gaps for a unit process, the cut-off criteria are 1% of the total mass of input of that process. The total of neglected input flows per module is a maximum of 5% of energy usage and mass. In this case, cut-off was applied only in generated wastes from the manufacturing waste (categorized as municipal solid waste) and in lubricants for equipment operation. The quantity of cut-off was 1%.

Allocations

Allocation rules have been performed in accordance with the requirements of ISO 14044:2006. Wherever possible, allocation was avoided by dividing the unit process to be allocated into two or more sub-processes and collecting the input and output data related to these sub-processes. Where allocation cannot be avoided, the inputs and outputs of the system were partitioned between its different products or functions in a way that reflects the underlying physical relationships between them. In this case, allocation based on the mass of produced quantities was applied to the following streams:

- Fuels used for the manufacturing process (diesel and LPG)
- Electricity consumed throughout the manufacturing process

The allocation of waste shall follow the polluter-pays principle that is made operational according to the following rules. Processes of waste processing shall be assigned to the product system that generates the waste until the end-of-waste state is reached. The system boundary to the subsequent product system is set where the waste reaches the end-of-waste state, i.e., when the material has become a usable flow.

The previous rules indicate that for all waste that requires disposal in modules A5, C4, impacts from the whole disposal activity will be assigned in this product system. For waste (or parts thereof) that require recycling in module A5, only the sorting and transportation of waste will be assigned to this product system.

Data quality

ISO 14044 was applied in terms of data collection and quality requirements. The impact of the production of raw materials recovered from Ecoinvent database v.3.10+EN 15804 add-on. The data concerning the modules A2 (Transportation) and A3 (Product manufacturing) were provided by THRAKON and concerns the full year 2023. These data were the quantities of all input and output materials extracted from the company's SAP system and predetermined recipes, the consumed utilities (energy, LPG and diesel) from bills and invoices. Regarding electricity mix, the latest (2023) national residual electricity mix as published in DAPEEP S.A. was utilized. The climate impact (GWP-GHG) of this electricity, as calculated from a manually created dataset in openLCA is 0,7068

kg CO_2 eq./kWh. The CO_2 emissions from diesel and LPG combustion data were calculated from the National Inventory Report (NIR) of Greece (NIR Greece) The end-of-life are based on the most representative scenarios for this product. Background data for this stage are retrieved from *Ecoinvent v.3.10+EN 15804 add-on*.

Time representativeness

Data obtained refers to the year 2023

Software used

OpenLCA v.2.3

Characterization factors (JRC)

Based on Reference package EF 3.1

Environmental Performance

The results of the studied category of masonry mortars, based on the worst-case results, are presented. The maximum deviations from the declared worst-case product are presented in **Appendix**. 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. The use of the results of modules A1-A3 is discouraged without considering the results of module C. For Primary Energy Use indicators, option B of PCR 2019:14 v.1.3.4 has been followed.

ENVIRONMENTAL IMPACTS

INDICATOR	Unit	A1-A3	A5	C1	C2	C3	C4	D
GWP-total	**kg CO_2 eq.**	2.58E-01	2.28E-02	0.00E+00	7.11E-03	0.00E+00	6.26E-03	-3.17E-03
GWP-fossil	**kg CO_2 eq.**	2.72E-01	4.51E-04	0.00E+00	6.75E-03	0.00E+00	6.25E-03	-3.14E-03
GWP-biogenic	**kg CO_2 eq.**	-1.35E-02	2.24E-02	0.00E+00	9.82E-05	0.00E+00	8.62E-07	0.00E+00
GWP-luluc	**kg CO_2 eq.**	1.56E-04	5.24E-07	0.00E+00	2.59E-04	0.00E+00	3.22E-06	-3.77E-05
GWP-GHG[1]	**kg CO_2 eq.**	2.72E-01	5.81E-03	0.00E+00	7.01E-03	0.00E+00	6.26E-03	-3.25E-03
ODP	**kg CFC^{-11} eq.**	3.06E-09	6.28E-12	0.00E+00	2.57E-10	0.00E+00	1.81E-10	-1.28E-10
AP	**mol H^+ eq.**	8.01E-04	2.78E-06	0.00E+00	2.19E-05	0.00E+00	4.43E-05	-1.87E-05
EP-freshwater	**kg P eq.**	5.32E-05	1.15E-07	0.00E+00	5.30E-07	0.00E+00	5.19E-07	-3.77E-06
EP-marine	**kg N eq.**	2.26E-04	6.50E-06	0.00E+00	9.62E-06	0.00E+00	1.69E-05	-6.15E-06
EP-terrestrial	**mol N eq.**	2.49E-03	8.76E-06	0.00E+00	8.12E-05	0.00E+00	1.84E-04	-5.60E-05
POCP	**kg NMVOC eq.**	8.08E-04	4.70E-06	0.00E+00	3.11E-05	0.00E+00	6.60E-05	-1.96E-05
ADPe[2]	**kg Sb eq.**	8.77E-07	1.56E-09	0.00E+00	2.53E-08	0.00E+00	9.97E-09	-1.71E-08
ADPf[2]	**MJ**	2.09E+00	6.28E-03	0.00E+00	9.69E-02	0.00E+00	1.53E-01	-5.52E-02
WDP[2]	**m^3 eq**	3.36E-02	8.08E-05	0.00E+00	6.33E-04	0.00E+00	4.29E-04	-2.57E-03

[1] GWP-GHG indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide emissions and uptake and biogenic carbon stored in the product, with characterization factors (CFs) based on IPCC (2013).

[2] The results of this environmental impact indicators of ADPf, ADPe and WDP shall be used with care as the uncertainties of these results are high or as there is limited experienced with the indicator.

RESOURCE USE

INDICATOR	Unit	A1-A3	A5	C1	C2	C3	C4	D
PERE	**MJ**	1.20E-01	3.70E-04	0.00E+00	1.75E-03	0.00E+00	1.21E-03	-9.62E-03
PERM	**MJ**	4.18E-01	-4.18E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	**MJ**	5.38E-01	-4.17E-01	0.00E+00	1.75E-03	0.00E+00	1.21E-03	-9.62E-03
PENRE	**MJ**	1.95E+00	5.85E-03	0.00E+00	8.97E-02	0.00E+00	1.39E-01	-5.24E-02
PENRM	**MJ**	1.35E-01	-1.35E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	**MJ**	2.09E+00	-1.30E-01	0.00E+00	8.97E-02	0.00E+00	1.39E-01	-5.24E-02
SM	**kg**	1.06E-01	4.90E-03	0.00E+00	1.11E-04	0.00E+00	7.16E-05	4.01E-03
RSF	**MJ**	3.46E-03	1.20E-05	0.00E+00	1.09E-05	0.00E+00	1.47E-05	-1.99E-04
NRSF	**MJ**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	**m^3**	8.99E-04	1.78E-04	0.00E+00	2.53E-05	0.00E+00	1.59E-04	-6.18E-05

OUTPUT FLOWS AND WASTE CATEGORIES

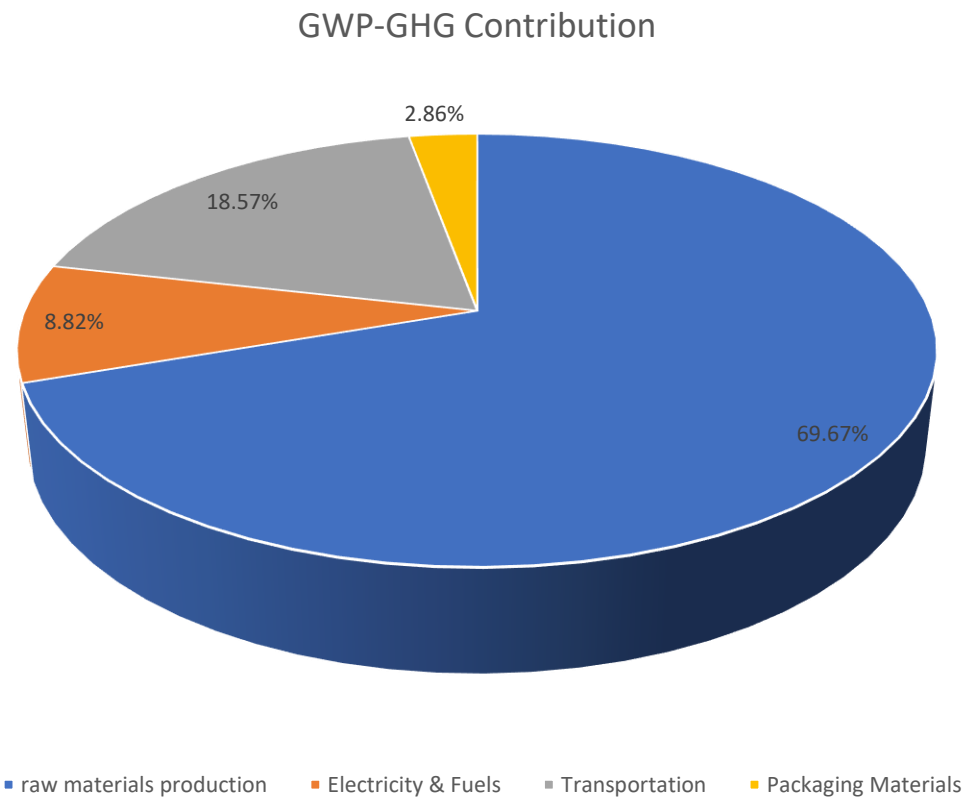
INDICATORS	Unit	A1-A3	A5	C1	C2	C3	C4	D
HWD	**kg**	2.94E-03	1.64E-05	0.00E+00	1.56E-04	0.00E+00	1.14E-04	-2.84E-04
NHWD	**kg**	3.98E-02	3.38E-02	0.00E+00	9.85E-04	0.00E+00	1.66E-03	-3.57E-03
RWD	**kg**	2.71E-06	1.01E-08	0.00E+00	2.14E-08	0.00E+00	2.38E-08	-1.45E-07
CRU	**kg**	-1.01E-20	-1.03E-21	0.00E+00	0.00E+00	0.00E+00	-7.68E-22	1.82E-22
MFR	**kg**	6.44E-03	2.52E-05	0.00E+00	0.00E+00	0.00E+00	5.91E-05	-3.86E-04
MER	**kg**	1.56E-06	5.37E-09	0.00E+00	0.00E+00	0.00E+00	6.62E-09	-8.95E-08
EE,e	**MJ**	1.72E-03	5.81E-06	0.00E+00	0.00E+00	0.00E+00	9.19E-06	-8.98E-05
EE,t	**MJ**	7.75E-03	1.04E-06	0.00E+00	0.00E+00	0.00E+00	5.95E-06	-3.59E-05

ADDITIONAL IMPACTS

INDICATOR	Unit	A1-A3	A5	C1	C2	C3	C4	D
PM	**Disease incidence**	7.95E-09	4.28E-11	0.00E+00	6.41E-10	0.00E+00	1.01E-09	-1.81E-10
IR[3]	**kBq U235 eq.**	1.06E-02	3.98E-05	0.00E+00	8.83E-05	0.00E+00	9.78E-05	-5.63E-04
EF	**CTUe**	6.79E-01	1.58E-01	0.00E+00	2.80E-01	0.00E+00	2.10E-02	-3.11E-02
HT-c	**CTUh**	1.06E-02	3.98E-05	0.00E+00	8.83E-05	0.00E+00	9.78E-05	-5.63E-04
HT-nc	**CTUh**	1.97E-09	2.82E-11	0.00E+00	9.29E-11	0.00E+00	2.76E-11	-3.73E-11
LU	**Dimensionless**	2.87E+00	5.38E-03	0.00E+00	8.39E-02	0.00E+00	3.02E-01	-7.69E-01

[3]Ionizing radiation potential (IRP) 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.

Interpretation



Additional information

The EPD does not give information on release of dangerous substances to soil, water and indoor air because the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonized test methods according to the provisions of the respective technical committees for European product standards are not available.

Abbreviations

Abbreviation	Description
LCA	Life Cycle assessment
EPD	Environmental Product Declaration
PCR	Product category rules
GWP-total	Global Warming Potential total
GWP-fossil	Global Warming Potential fossil
GWP-biogenic	Global Warming Potential biogenic
GWP-luluc	Global Warming Potential land use and land use change
ODP	Ozone Depletion Potential
AP	Acidification Potential
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 photochemical oxidants
ADPe	Abiotic depletion potential for non-fossil resources
ADPf	Abiotic depletion potential for fossil resources
WDP	Water use
PERE	Use of renewable primary energy excluding 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 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 resources
SM	Use of secondary material
RSF	Use of renewable secondary fuels
NRSF	Use of non-renewable secondary fuels
FW	Use of net fresh water
HWD	Hazardous waste disposed
NHWD	Non-hazardous waste disposed
RWD	Radioactive waste disposed
CRU	Components for re-use
MFR	Materials for recycling
MER	Materials for energy recovery
EE	Exported Energy
PM	Particulate matter emissions
IR	Ionizing radiation, human health
ETP-FW	Ecotoxicity, freshwater
HTP-c	Human toxicity, cancer
HTP-nc	Human toxicity, non-cancer
SQP	Land use related impacts/Soil quality

References

- ***General Programme Instructions*** *for the International EPD® System. Version 4.0*
- ***PCR 2019:14*** *v.1.3.4* ***(2024-04-30)*** *Construction products. EPD System.*
- ***EN 15804:2012+A2:2019/AC*** **(October 2019),** *Sustainability of construction works - Environmental Product Declarations — Core rules for the product category of construction products*
- ***ISO 14020:2000*** *Environmental labels and declarations — General principles*
- ***ISO 14025:2006*** *Environmental labels and declarations - Type III environmental declarations — Principles and procedures*
- ***ISO 14040:2006*** *Environmental management - Life cycle assessment-Principles and framework*
- ***ISO 14044:2006*** *Environmental management - Life cycle assessment - Requirements and guidelines*
- ***Ecoinvent / Ecoinvent Centre****, www.Eco-invent.org*
- ***TACKLING RECYCLING ASPECTS IN EN15804*** *- Christian Leroy, Jean-Sebastien Thomas, Nick Avery, Jan Bollen, Ladji Tikana*
- ***National Inventory Report for Greece***
- ***Residual Energy Mix 2023, DAPEEP***

Appendix

Maximum deviations from the declared worst case

ENVIROMENTAL IMPACTS	Unit	A-C Modules
GWP-total	**kg CO_2 eq.**	29.61%
GWP-fossil	**kg CO_2 eq.**	29.54%
GWP-biogenic	**kg CO_2 eq.**	32.94%
GWP-luluc	**kg CO_2 eq.**	4.28%
GWP-GHG	**kg CO_2 eq.**	28.94%
ODP	**kg CFC^{-11} eq.**	13.08%
AP	**mol H^+ eq.**	15.82%
EP-freshwater	**kg P eq.**	18.22%
EP-marine	**kg N eq.**	19.00%
EP-terrestrial	**mol N eq.**	20.10%
POCP	**kg NMVOC eq.**	17.29%
$ADPe^2$	**kg Sb eq.**	30.05%
$ADPf^2$	**MJ**	15.66%
WDP^2	**m^3 eq**	24.61%

RESOURCE USE	Unit	A-C Modules
PERE	**MJ**	23.37%
PERM	**MJ**	0.00%
PERT	**MJ**	21.72%
PENRE	**MJ**	15.90%
PENRM	**MJ**	0.00%
PENRT	**MJ**	15.90%
SM	**kg**	89.53%
RSF	**MJ**	39.41%
NRSF	**MJ**	0.00%
FW	**m^3**	19.06%

OUTPUT FLOWS AND WASTE CATEGORIES	Unit	A-C Modules
HWD	**kg**	18.08%
NHWD	**kg**	20.82%
RWD	**kg**	32.86%
CRU	**kg**	-8.26%
MFR	**kg**	36.73%
MER	**kg**	39.94%
EE,e	**MJ**	39.11%
EE,t	**MJ**	70.72%

ADDITIONAL IMPACTS	Unit	A-C Modules
PM	**Disease incidence**	8.13%
IR	**kBq U235 eq**	32.44%
EF	**CTUe**	19.81%
HT-c	**CTUh**	32.44%
HT-nc	**CTUh**	26.59%
LU	**Dimensionless**	10.46%