



**Perlite
Italiana
S.r.l.**



ENVIRONMENTAL PRODUCT DECLARATION

PRODUCT NAMES:

Peralit 13; Perlistone;
Peroil T; T1/5;
T1/10; T2/5;
T2/10; T3/10

SITE:

Via Alzaia Trento, 7 - 20094
Corsico (MI) - Italy

In conformity to ISO 14025 and EN 15804:2012+A2:2019

Program Operator	EPDItaly
Publisher	EPDItaly

Declaration Number	EPDPerliteEspansa_2021_rev.1.0
Registration Number	EPDITALY1337

Date of issue	2026/06/25
Valid until	2031/06/25



Peralit 13



Perlistone



Peroil T



T1/5; T1/10; T2/5; T2/10; T3/10

GENERAL INFORMATION

EPD OWNER	
Company name	Perlite Italiana S.r.l.
Registered office	Via Alzaia Trento, 7 - 20094 Corsico (MI) – Italy.
Contacts for information on the EPD	Sergio Frattini – sergio.frattini@perlite.it Nicola Spadavecchia – nicola.spadavecchia@perlite.it

PROGRAM OPERATOR	
EPDItaly www.epditaly.it	Via Gaetano De Castillia n° 10 - 20124 Milano, Italy.

INFORMATION REGARDING THE EPD	
Product name(s)	Peralit 13; Perlstone; Peroil T; T1/5; T1/10; T2/5; T2/10; T3/10.
Site(s)	Via Alzaia Trento, 7 - 20094 Corsico (MI) – Italy.
Short description and technical information of the product(s)	Expanded perlite with fine, medium, and coarse grain sizes; thermally insulating, non-combustible, non-toxic, inert, and lightweight.
Field of application of the product(s)	Used for thermal insulation, in industrial sectors, as a growing substrate and soil corrector.
EPD type	Product specific EPD.
Product(s) reference standards (if any)	Not applicable.
CPC Code (number) https://unstats.un.org/unsd/classifications/Econ	37990 – “Non-metallic mineral products n.e.c. (including mineral wool, expanded mineral materials, worked mica, articles of mica, non-electrical articles of graphite or other carbon and articles of peat)”.

VERIFICATION INFORMATION	
PCR (title, version, date of publication or update)	CORE PCR per i Prodotti e Servizi da Costruzione: ICMQ 001 Rev.4, last update of 10/11/2025.
EPDItaly Regulation (version, date of publication or update)	Regulation of the EPDItaly Programme, Rev. 7.1, issue date: 05/09/2025.
Project Report LCA	Analisi del ciclo di vita dei prodotti della Perlite espansa, della Protezione passiva dal fuoco, dell'Isolamento termico e calcestruzzi alleggeriti e dell'Architettura del verde, Rev.0.2, June 2026.
Independent Verification Statement	The PCR review was performed by the EPDItaly Technical Committee - info@epditaly.it. Independent verification of the declaration and data, carried out according to ISO 14025: 2010. ☐ Internal ☒ External Third party verification carried out by: ICMQ S.p.A., via Gaetano De Castillia n° 10 - 20124 Milan, Italy. Accreditation number released by Accredia: 00064.
Comparability Statement	Environmental statements published within the same product category, but from different programs, may not be comparable. In particular, EPDs of construction products may not be comparable if they do not comply with EN 15804:2012+A2:2019.
Liability Statement	The EPD Owner releases EPDItaly from any non-compliance with environmental legislation. The holder of the declaration will be responsible for the information and supporting evidence. EPDItaly disclaims any responsibility for the information, data and results provided by the EPD Owner for life cycle assessment.

ADDITIONAL INFORMATION	
Technical Support	LCA study carried out by Greenwich S.r.l.  A SOCOTEC COMPANY Luca Micheletti – l.micheletti@greenwichsrl.it Vanessa Malerba – v.malerba@greenwichsrl.it

COMPANY

Company

Perlite Italiana S.r.l. is a leading brand across the continent, operating in three main sectors: agriculture, construction, and industry.

Story

Founded in 1951 in Corsico (MI), Italy, the company began operations with the first expansion furnace for the production of expanded perlite; becoming today the Italian leader in the production and marketing of this item. Now, Perlite Italiana owns a total area of 48.000 m², including 13.000 m² of covered warehouse space for product storage and loading.

The company is ISO 9001 certified and guarantees the CE marking for all products covered by the CPR (Construction Products Regulation).

Vision

The main pillars on which the company policy is based are:

- To provide the market with products characterized by consistent quality, a diversified range, maximum flexibility, and the pursuit of tailor-made solutions.*
- To ensure that all activities are carried out in strict and continuous compliance with all applicable regulations concerning product safety, environmental impact, health, and workplace safety relevant to its operations.*
- To commit to the prevention of climate change and the mitigation of its environmental impacts, as well as to the reduction and control of all risks and hazards to personnel; therefore, to continuously monitor its environmental aspects and risks, accompanied by their periodic assessment.*
- To provide resources, financial means, and expertise; to assign authority and responsibility; and to define the procedures necessary for the proper and effective functioning of its Management System.*
- To encourage suppliers to develop eco-friendly solutions and, where possible, optimize the consumption of natural resources and energy.*
- To ensure continuous training and the development of staff competencies.*
- To promote awareness and involvement of all personnel in the implementation of the Company Policy through appropriate information, education, and training activities.*

Through this Policy, Management is fully involved in risk analysis, context analysis, and the evaluation of customer and stakeholder satisfaction trends. Through this Policy, Management also commits to providing the necessary resources to ensure a process of continuous improvement, mitigation of identified risks, and enhancement of customer satisfaction.

On an annual basis, context analysis and risk assessment are carried out, and the resulting objectives are defined and shared with personnel during the annual management review meeting.

It is the purpose of Management to include, within the requirements of the Quality Management System, aspects related to Sustainability as well as Environmental, Health, and Safety frameworks, ensuring their full compliance.



PRODUCT DESCRIPTION

Names:

Peralit 13; Perlistone; Peroil T; T1/5; T1/10; T2/5; T2/10; T3/10.

Identification:

Expanded perlite with fine, medium, and coarse grain sizes; thermally insulating, non-combustible, non-toxic, inert, and lightweight.

Description:

They consist of expanded perlite, which is obtained by expanding fine perlite, a natural glassy volcanic rock.

Expanded perlite is available in various grain sizes, a key factor that differentiates the various products listed above. Depending on the grain size of the perlite, the related product is more suitable for some uses than others, due to its different properties.

These products are used for thermal insulation, in industrial sectors, as a growing substrate and soil corrector. For more information, visit the EPD holder's website: <https://www.perlite.it>.

Products T1/5, T1/10, T2/5, T2/10 and T3/10 are perlite that are bagged manually, with the bag forming an integral part of the product. Since the operation is performed manually, there is no additional consumption related to the production process of these products; therefore, they share the same production cycle as the other products defined within this EPD. This is consistent with the provisions of paragraph 4.2 of the EPDItaly Regulation, revision 7.1.

Geographical scope:

Europe with the exception of a few raw materials.

LCA INFORMATION

Declared Unit (DU):

The declared unit for this study is 1 kg of product.

Reference Service Lifetime (RSL):

Since the impacts of the products do not change over time, no RSL was adopted.

Time representativeness:

Solar year 2021.

Database and LCA software used:

Ecoinvent 3.11 – allocation, cut-off by classification - Unit, SimaPro 10.2.0.2, the method that has been used is consistent with EN 15804+A2; EF 3.1 package has been considered.

System boundaries:

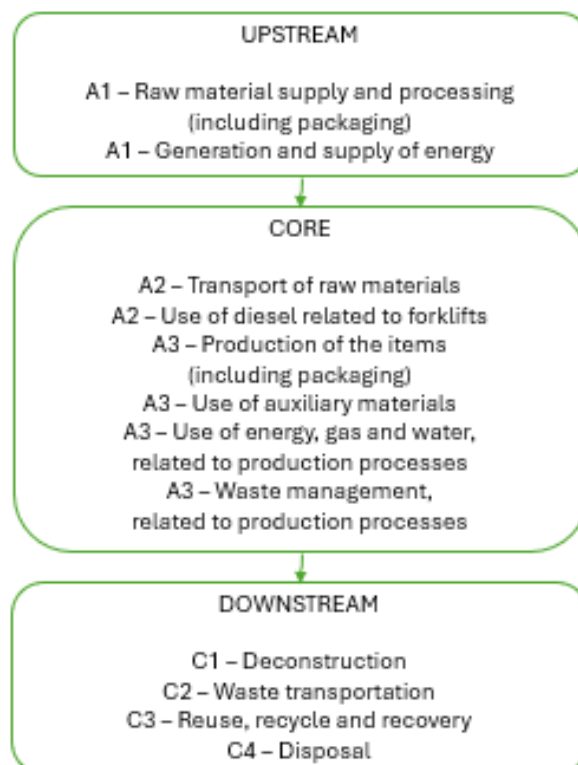
Cradle-to-gate with modules C1-C4 and module D (phases A1-A3, C1-C4, D).

Technical Specifications:

Since each product is made of perlite of different grain size, each product has different properties, for more information, visit the EPD holder's website: <https://www.perlite.it>.

System diagram:

Product packaging has been included within C2, C3 and C4, given the absence of Phase A5 among the system boundaries.



Process description

The products in question are obtained within the plant of Perlite Italiana S.r.l. at Via Alzaia Trento, 7 - 20094 Corsico (MI) - Italy. This is where the raw materials are processed to produce the final products.

Fine perlite is a lightweight insulating material, obtained from a naturally occurring, water-rich, glassy volcanic rock. The production process that creates expanded perlite occurs when the raw granules are placed in vertical furnaces and rapidly heated to a temperature of approximately 900°C.

The water within the granules rapidly vaporizes, generating gas bubbles that expand in volume 15-20 times, transforming the gray-pink rock into a white, porous, and ultra-lightweight product with excellent thermal properties. Finally, the product is cooled, sorted by grain size, and packaged, ready to be used.

Allocation

Raw material packaging and product packaging were determined by weighing.

Gas consumptions were obtained from utility bills and divided by the three furnaces in operation. The resulting values were then divided by the value of materials processed by those furnaces during the year.

Regarding electricity consumptions, the values reported by the two company-owned pods were divided by the corresponding production values.

Water was excluded from the study as it was not involved in any of the relevant processes.

The consumption of auxiliary materials, diesel fuel, and production-related waste (with the exception of raw material packaging) was allocated based on the overall production value of the production site.

Regarding emissions, values from test reports were used and allocated based on the reference production of the chimneys.

Furthermore, gas, electricity, auxiliary materials, diesel fuel, and waste (with the exception of raw material packaging) were then multiplied by the mass of raw material actually processed.

Data quality

For generic data, the criteria of geographic, technological equivalence and equivalence with respect to system boundaries were assessed throughout the analysis, according to Annex E of EN 15804:2012 + A2:2019, Table E.1 and UNI EN 15941:2024. The overall data quality was assessed as good.

Cut-off

There are no cut-off within this LCA study.

Proxy data

No proxy data have been used for these products.

Electric energy modelling

Electricity was modelled using the Italian medium voltage dataset following a location based approach, specifically the residual mix one has been considered; for which 1 kWh is equivalent to 0,683 kg CO₂ eq. in terms of GWP-total.

End-of-life scenarios

Phase C1: For product demolition, since the PCR does not address this aspect in detail, a reference value found in the literature was considered, consisting of a consumption of 1.1 kWh/ton of diesel; this, when proportional to 1 kg of product, corresponds to a consumption of 0.0011 kWh/kg for each product under study.

Phase C2: This transport involves both the products and their packaging and was modelled considering a scenario of 100 km for each kg of waste transported. Product packaging was also considered, given the absence of Phase A5 among the system boundaries.

Phase C3: This phase considers the reuse and recycling of the product and its packaging. Since the actual fate of these two wastes is unknown, reference values found in the literature and defined below were used. Product packaging was also considered, given the absence of Phase A5 among the system boundaries.

Phase C4: This phase considers waste destined to both incineration (without energy recovery) and landfill, of the product and its packaging. The reference percentages of which are also defined in the following table. Product packaging was also considered, given the absence of Phase A5 within the system boundaries.

The following table summarizes the percentages of EoL considered for this study, first for the products and then for their packaging:

Material	Recycling (%) – C3	Incineration (%) – C4	Landfill (%) – C4
Perlite	0	0	100
Bag - TNT (PET)	0	50	50

Material	Recycling (%) – C3	Incineration (%) – C4	Landfill (%) – C4
Pallet	31	0	69
Big bag - TNT (PP)	41	0	59
LDPE cap	41	0	59
LDPE film	41	0	59
LDPE bag	41	0	59
Paper bag	82	0	18

[illegible]

LIFE CYCLE INVENTORY

Product composition

Peralit 13

Raw materials	Weight per declared unit (kg)	Weight per declared unit (%)	Biogenic material, weight (%)
Perlite	1,000	100,000	0,000
Total	1,000	100,000	0,000

The product comes with 4,71E-02 kg of pallet, 4,16E-04 kg of big bag - TNT (PP), 1,06E-03 kg of LDPE cap, 1,53E-03 kg of LDPE film and 2,30E-02 kg of paper bag, per kg of product.

The product does not contain biogenic carbon; instead, the product packaging contains 3,11E-02 kg C per kg of product.

Perlistone

Raw materials	Weight per declared unit (kg)	Weight per declared unit (%)	Biogenic material, weight (%)
Perlite	1,000	100,000	0,000
Total	1,000	100,000	0,000

The product comes with 2,52E-02 kg of pallet, 1,19E-02 kg of LDPE bag, 1,93E-03 kg of LDPE film and 6,83E-04 kg of LDPE cap, per kg of product.

The product does not contain biogenic carbon; instead, the product packaging contains 1,08E-02 kg C per kg of product.

Peroil T

Raw materials	Weight per declared unit (kg)	Weight per declared unit (%)	Biogenic material, weight (%)
Perlite	1,000	100,000	0,000
Total	1,000	100,000	0,000

The product comes with 2,14E-02 kg of pallet, 1,01E-02 kg of LDPE bag, 1,64E-03 kg of LDPE film and 5,81E-04 kg of LDPE cap, per kg of product.

The product does not contain biogenic carbon; instead, the product packaging contains 9,18E-03 kg C per kg of product.

T1/5

Raw materials	Weight per declared unit (kg)	Weight per declared unit (%)	Biogenic material, weight (%)
Perlite	0,931	93,100	0,000
Bag – TNT (PET)	0,069	6,900	0,000
Total	1,000	100,000	0,000

The product comes with 3,13E-02 kg of pallet, 2,39E-03 kg of LDPE film and 1,40E-03 kg of LDPE cap, per kg of product.

The product does not contain biogenic carbon; instead, the product packaging contains 1,34E-02 kg C per kg of product.

T1/10

Raw materials	Weight per declared unit (kg)	Weight per declared unit (%)	Biogenic material, weight (%)
Perlite	0,964	96,400	0,000
Bag – TNT (PET)	0,036	3,600	0,000
Total	1,000	100,000	0,000

The product comes with 3,13E-02 kg of pallet, 2,39E-03 kg of LDPE film and 1,40E-03 kg of LDPE cap, per kg of product.

The product does not contain biogenic carbon; instead, the product packaging contains 1,34E-02 kg C per kg of product.

T2/5

Raw materials	Weight per declared unit (kg)	Weight per declared unit (%)	Biogenic material, weight (%)
Perlite	0,947	94,700	0,000
Bag – TNT (PET)	0,053	5,300	0,000
Total	1,000	100,000	0,000

The product comes with 2,36E-02 kg of pallet, 1,81E-03 kg of LDPE film and 1,06E-03 kg of LDPE cap, per kg of product.

The product does not contain biogenic carbon; instead, the product packaging contains 1,01E-02 kg C per kg of product.

T2/10

Raw materials	Weight per declared unit (kg)	Weight per declared unit (%)	Biogenic material, weight (%)
Perlite	0,973	97,300	0,000
Bag – TNT (PET)	0,027	2,700	0,000
Total	1,000	100,000	0,000

The product comes with 2,36E-02 kg of pallet, 1,81E-03 kg of LDPE film and 1,06E-03 kg of LDPE cap, per kg of product.

The product does not contain biogenic carbon; instead, the product packaging contains 1,01E-02 kg C per kg of product.

T3/10

Raw materials	Weight per declared unit (kg)	Weight per declared unit (%)	Biogenic material, weight (%)
Perlite	0,972	97,200	0,000
Bag – TNT (PET)	0,028	2,800	0,000
Total	1,000	100,000	0,000

The product comes with 4,81E-02 kg of pallet, 3,68E-03 kg of LDPE film and 2,15E-03 kg of LDPE cap, per kg of product.

The product does not contain biogenic carbon; instead, the product packaging contains 2,06E-02 kg C per kg of product.

ENVIRONMENTAL PERFORMANCE INDICATORS

Peralit 13

Mandatory environmental impact category indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
GWP-total	Kg CO ₂ eq	8,25E-02	5,19E-02	3,97E-01	3,99E-04	2,04E-02	2,55E-04	1,68E-02	2,18E-02
GWP-fossil	Kg CO ₂ eq	8,32E-02	5,19E-02	3,95E-01	3,99E-04	2,04E-02	2,46E-04	6,83E-03	-2,35E-02
GWP-biogenic	Kg CO ₂ eq	-7,49E-04	2,90E-05	1,99E-03	1,13E-07	1,40E-05	8,43E-06	9,99E-03	4,55E-02
GWP-land use	Kg CO ₂ eq	3,33E-05	1,84E-05	3,52E-04	3,27E-08	6,76E-06	7,34E-07	3,65E-06	-2,54E-04
ODP	Kg CFC11 eq	1,60E-08	1,07E-09	3,22E-09	8,63E-12	4,45E-10	4,11E-12	2,07E-10	-1,13E-09
AP	Mol H ⁺ eq.	3,38E-04	3,65E-04	3,99E-04	3,57E-06	6,55E-05	1,22E-06	4,70E-05	-1,32E-04
EP-freshwater	Kg P eq.	1,07E-06	3,50E-07	3,87E-06	1,31E-09	1,49E-07	2,42E-08	6,79E-08	-1,68E-06
EP-marine	Kg N eq.	9,90E-05	1,04E-04	2,04E-04	1,66E-06	2,18E-05	1,64E-07	2,04E-05	-4,33E-05
EP-terrestrial	Mol N eq.	1,18E-03	1,15E-03	1,46E-03	1,82E-05	2,40E-04	1,85E-06	1,96E-04	-4,31E-04
POCP	Kg NMVOC eq.	5,99E-04	3,88E-04	7,13E-04	5,48E-06	9,94E-05	5,94E-07	7,35E-05	-1,53E-04
ADPF*	MJ	5,85E+00	7,20E-01	1,81E+00	5,19E-03	2,89E-01	5,73E-03	1,62E-01	-4,85E-01
ADPE*	Kg Sb eq.	1,57E-07	1,54E-07	3,22E-07	1,38E-10	6,88E-08	5,22E-10	9,90E-09	-1,12E-07
Water Use*	m ³ world eq deprived	1,11E-02	2,62E-03	5,54E-02	8,90E-06	1,12E-03	5,40E-05	-6,70E-04	-2,45E-02

* Disclaimer: The results of this environmental impact indicator should be used with caution, as the uncertainties of these results are high or experience with the indicator is limited.

Acronyms: **GWP-fossil** = Global Warming Potential fossil fuels; **GWP-biogenic** = Global Warming Potential biogenic; **GWP-land use** = Global Warming Potential land use and land use change; **ODP** = Depletion potential of the stratospheric ozone layer; **AP** = Acidification potential, Accumulated Exceedance; **EP-freshwater** = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** =

Formation potential of tropospheric ozone; **ADPF** = Abiotic depletion for fossil resources potential; **ADPE** = Abiotic depletion potential for non-fossil resources; **Water use** = Water (use) deprivation potential, deprivation-weighted water consumption.

Additional indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PM	disease inc.	2,11E-09	3,94E-09	5,46E-09	1,02E-10	1,62E-09	3,53E-12	1,06E-09	-1,29E-09
IRP**	kBq U235 eq.	1,30E-03	2,84E-04	2,65E-03	9,92E-07	1,25E-04	5,04E-05	4,24E-05	-1,19E-03
ETP-fw*	CTUe	2,39E-01	8,87E-02	2,88E-01	2,45E-04	3,84E-02	5,45E-04	1,85E-01	-1,34E-01
HTP-nc*	CTUh	4,17E-10	4,08E-10	6,45E-10	6,34E-13	1,80E-10	1,70E-12	4,93E-11	-2,28E-10
HTP-c*	CTUh	3,40E-11	9,04E-12	9,94E-11	4,02E-14	3,46E-12	3,58E-14	1,26E-12	-2,91E-11
SQP*	Pt	-5,52E-01	3,72E-01	9,73E+00	3,07E-04	1,71E-01	8,09E-04	3,22E-01	-5,22E+00

* Disclaimer 1: The results of this environmental impact indicator should be used with caution, as the uncertainties of these results are high or experience with the indicator is limited.

** Disclaimer 2: 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.

Acronyms. **PM** = Particulate Matter; **IRP** = Ionizing Radiation Potential - Human Health; **ETP-fw** = Ecotoxicity Potential, freshwater; **HTP-nc** = Human Toxicity Potential, non-cancer; **HTP-c** = Human Toxicity Potential, cancer; **SQP** = Soil Quality Potential.

Resource use indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	4,61E-02	1,05E-02	5,99E-01	3,47E-05	4,57E-03	4,80E-01	4,80E-01	-8,03E-01
PERM	MJ	8,00E-03	0,00E+00	9,57E-01	0,00E+00	0,00E+00	-4,79E-01	-4,79E-01	0,00E+00
PERT	MJ	5,41E-02	1,05E-02	1,56E+00	3,47E-05	4,57E-03	1,24E-03	1,55E-03	-8,03E-01
PENRE	MJ	5,80E+00	7,20E-01	1,69E+00	5,19E-03	2,89E-01	6,76E-02	2,24E-01	-4,85E-01
PENRM	MJ	5,40E-02	0,00E+00	1,24E-01	0,00E+00	0,00E+00	-6,19E-02	-6,19E-02	0,00E+00
PENRT	MJ	5,85E+00	7,20E-01	1,81E+00	5,19E-03	2,89E-01	5,73E-03	1,62E-01	-4,85E-01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	3,29E-04	8,43E-05	1,32E-03	2,90E-07	3,61E-05	3,44E-06	-1,20E-05	-6,27E-04

Acronyms. **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water.

Waste indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
HWD	kg	4,37E-05	1,67E-05	1,91E-04	4,73E-08	7,31E-06	1,83E-07	2,57E-06	-8,34E-05
NHWD	kg	4,21E-03	2,96E-02	4,42E-02	3,46E-06	1,39E-02	1,23E-05	1,04E+00	-6,37E-03
RWD	kg	9,39E-07	1,93E-07	2,08E-06	6,68E-10	8,51E-08	4,13E-08	2,78E-08	-9,57E-07

Acronyms. **HWD** = Hazardous waste disposed; **NHWD** = Non-hazardous waste disposed; **RWD** = Radioactive waste disposed.

Output flow indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,47E-02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Acronyms. **CRU** = Components for re-use; **MFR** = Material for recycling; **MER** = Materials for energy recovery; **EEE** = Exported energy, electricity; **EET** = Exported energy, thermal.

Biogenic carbon

The product does not contain biogenic carbon; instead, the product packaging contains 3,11E-02 kg C per kg of product.

Perlistone

Mandatory environmental impact category indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
GWP-total	Kg CO ₂ eq	1,52E-01	7,77E-02	7,64E-01	3,99E-04	1,98E-02	1,23E-03	8,79E-03	-3,48E-03
GWP-fossil	Kg CO ₂ eq	1,74E-01	7,76E-02	7,21E-01	3,99E-04	1,98E-02	1,19E-03	7,42E-03	-1,36E-02
GWP-biogenic	Kg CO ₂ eq	-2,15E-02	3,14E-05	4,24E-02	1,13E-07	1,36E-05	4,07E-05	1,36E-03	1,01E-02
GWP-land use	Kg CO ₂ eq	8,25E-05	3,07E-05	4,99E-05	3,27E-08	6,55E-06	3,54E-06	3,58E-06	-1,95E-05
ODP	Kg CFC11 eq	3,40E-08	1,49E-09	2,86E-09	8,63E-12	4,32E-10	1,98E-11	2,03E-10	-7,00E-10
AP	Mol H ⁺ eq.	6,26E-04	9,16E-04	3,00E-04	3,57E-06	6,35E-05	5,90E-06	4,56E-05	-4,85E-05
EP-freshwater	Kg P eq.	2,18E-06	4,81E-07	2,28E-06	1,31E-09	1,45E-07	1,16E-07	6,55E-08	-3,45E-07
EP-marine	Kg N eq.	1,83E-04	2,44E-04	2,01E-04	1,66E-06	2,11E-05	7,90E-07	1,78E-05	-1,21E-05
EP-terrestrial	Mol N eq.	2,07E-03	2,70E-03	1,19E-03	1,82E-05	2,33E-04	8,93E-06	1,92E-04	-1,29E-04
POCP	Kg NMVOC eq.	1,19E-03	8,21E-04	7,69E-04	5,48E-06	9,63E-05	2,86E-06	6,99E-05	-1,02E-04
ADPF*	MJ	1,24E+01	1,05E+00	1,88E+00	5,19E-03	2,80E-01	2,76E-02	1,59E-01	-4,70E-01
ADPE*	Kg Sb eq.	3,15E-07	1,99E-07	2,71E-07	1,38E-10	6,67E-08	2,52E-09	9,62E-09	-7,02E-08
Water Use*	m ³ world eq deprived	2,05E-02	3,56E-03	3,46E-02	8,90E-06	1,09E-03	2,61E-04	1,62E-03	-1,26E-02

* Disclaimer: The results of this environmental impact indicator should be used with caution, as the uncertainties of these results are high or experience with the indicator is limited.

Acronyms: **GWP-fossil** = Global Warming Potential fossil fuels; **GWP-biogenic** = Global Warming Potential biogenic; **GWP-land use** = Global Warming Potential land use and land use change; **ODP** = Depletion potential of the stratospheric ozone layer; **AP** = Acidification potential, Accumulated Exceedance; **EP-freshwater** = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADPF** = Abiotic depletion for fossil resources potential; **ADPE** = Abiotic depletion potential for non-fossil resources; **Water use** = Water (use) deprivation potential, deprivation-weighted water consumption.

Additional indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PM	disease inc.	3,82E-09	5,09E-09	5,10E-09	1,02E-10	1,57E-09	1,70E-11	1,04E-09	-4,61E-10
IRP**	kBq U235 eq.	2,57E-03	3,68E-04	1,85E-03	9,92E-07	1,21E-04	2,43E-04	4,01E-05	-4,22E-04
ETP-fw*	CTUe	4,49E-01	1,19E-01	1,65E-01	2,45E-04	3,72E-02	2,63E-03	1,47E-02	-3,46E-02
HTP-nc*	CTUh	8,78E-10	5,30E-10	5,19E-10	6,34E-13	1,75E-10	8,19E-12	3,42E-11	-9,26E-11
HTP-c*	CTUh	8,75E-11	1,41E-11	7,87E-11	4,02E-14	3,36E-12	1,73E-13	1,18E-12	-1,25E-11
SQP*	Pt	9,76E-01	4,54E-01	2,98E+00	3,07E-04	1,66E-01	3,90E-03	3,15E-01	-9,00E-01

* Disclaimer 1: The results of this environmental impact indicator should be used with caution, as the uncertainties of these results are high or experience with the indicator is limited.

** Disclaimer 2: 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.

Acronyms. **PM** = Particulate Matter; **IRP** = Ionizing Radiation Potential - Human Health; **ETP-fw** = Ecotoxicity Potential, freshwater; **HTP-nc** = Human Toxicity Potential, non-cancer; **HTP-c** = Human Toxicity Potential, cancer; **SQP** = Soil Quality Potential.

Resource use indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	1,38E-01	1,38E-02	1,93E-01	3,47E-05	4,43E-03	1,75E-01	1,71E-01	-1,51E-01
PERM	MJ	1,86E-01	0,00E+00	3,39E-01	0,00E+00	0,00E+00	-1,69E-01	-1,69E-01	0,00E+00
PERT	MJ	3,24E-01	1,38E-02	5,32E-01	3,47E-05	4,43E-03	5,99E-03	1,47E-03	-1,51E-01
PENRE	MJ	1,23E+01	1,05E+00	1,27E+00	5,19E-03	2,80E-01	3,35E-01	4,67E-01	-4,70E-01
PENRM	MJ	7,40E-02	0,00E+00	6,16E-01	0,00E+00	0,00E+00	-3,08E-01	-3,08E-01	0,00E+00
PENRT	MJ	1,24E+01	1,05E+00	1,88E+00	5,19E-03	2,80E-01	2,76E-02	1,59E-01	-4,70E-01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	6,35E-04	1,14E-04	8,08E-04	2,90E-07	3,50E-05	1,66E-05	4,12E-05	-1,40E-04

Acronyms. **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water.

Waste indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
HWD	kg	9,62E-05	2,18E-05	2,28E-04	4,73E-08	7,08E-06	8,82E-07	2,40E-06	-6,25E-06
NHWD	kg	9,46E-03	3,51E-02	3,72E-02	3,46E-06	1,34E-02	5,94E-05	1,03E+00	-1,01E-03
RWD	kg	1,85E-06	2,47E-07	1,44E-06	6,68E-10	8,25E-08	1,99E-07	2,61E-08	-3,31E-07

Acronyms. **HWD** = Hazardous waste disposed; **NHWD** = Non-hazardous waste disposed; **RWD** = Radioactive waste disposed.

Output flow indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,38E-02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Acronyms. **CRU** = Components for re-use; **MFR** = Material for recycling; **MER** = Materials for energy recovery; **EEE** = Exported energy, electricity; **EET** = Exported energy, thermal.

Biogenic carbon

The product does not contain biogenic carbon; instead, the product packaging contains 1,08E-02 kg C per kg of product.

Peroil T

Mandatory environmental impact category indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
GWP-total	Kg CO2 eq	1,52E-01	7,76E-02	7,57E-01	3,99E-04	1,97E-02	1,05E-03	8,41E-03	-2,96E-03
GWP-fossil	Kg CO2 eq	1,74E-01	7,75E-02	7,15E-01	3,99E-04	1,97E-02	1,01E-03	7,24E-03	-1,16E-02
GWP-biogenic	Kg CO2 eq	-2,13E-02	3,14E-05	4,21E-02	1,13E-07	1,35E-05	3,46E-05	1,16E-03	8,63E-03
GWP-land use	Kg CO2 eq	8,19E-05	3,07E-05	4,30E-05	3,27E-08	6,51E-06	3,01E-06	3,56E-06	-1,66E-05
ODP	Kg CFC11 eq	3,40E-08	1,49E-09	2,56E-09	8,63E-12	4,29E-10	1,69E-11	2,01E-10	-5,95E-10
AP	Mol H+ eq.	6,25E-04	9,16E-04	2,78E-04	3,57E-06	6,31E-05	5,01E-06	4,53E-05	-4,12E-05
EP-freshwater	Kg P eq.	2,18E-06	4,80E-07	2,14E-06	1,31E-09	1,44E-07	9,90E-08	6,50E-08	-2,93E-07
EP-marine	Kg N eq.	1,83E-04	2,44E-04	1,96E-04	1,66E-06	2,10E-05	6,71E-07	1,76E-05	-1,03E-05
EP-terrestrial	Mol N eq.	2,07E-03	2,70E-03	1,14E-03	1,82E-05	2,31E-04	7,59E-06	1,91E-04	-1,09E-04
POCP	Kg NMVOC eq.	1,19E-03	8,20E-04	7,28E-04	5,48E-06	9,57E-05	2,43E-06	6,94E-05	-8,67E-05
ADPF*	MJ	1,24E+01	1,05E+00	1,69E+00	5,19E-03	2,79E-01	2,35E-02	1,58E-01	-3,99E-01
ADPE*	Kg Sb eq.	3,15E-07	1,98E-07	2,37E-07	1,38E-10	6,63E-08	2,14E-09	9,55E-09	-5,97E-08
Water Use*	m3 world eq deprived	2,04E-02	3,55E-03	2,98E-02	8,90E-06	1,08E-03	2,21E-04	2,37E-03	-1,07E-02

* Disclaimer: The results of this environmental impact indicator should be used with caution, as the uncertainties of these results are high or experience with the indicator is limited.

Acronyms: **GWP-fossil** = Global Warming Potential fossil fuels; **GWP-biogenic** = Global Warming Potential biogenic; **GWP-land use** = Global Warming Potential land use and land use change; **ODP** = Depletion potential of the stratospheric ozone layer; **AP** = Acidification potential, Accumulated Exceedance; **EP-freshwater** = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADPF** = Abiotic depletion for fossil resources potential; **ADPE** = Abiotic depletion potential for non-fossil resources; **Water use** = Water (use) deprivation potential, deprivation-weighted water consumption.

Additional indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PM	disease inc.	3,82E-09	5,08E-09	4,90E-09	1,02E-10	1,57E-09	1,45E-11	1,03E-09	-3,92E-10
IRP**	kBq U235 eq.	2,57E-03	3,68E-04	1,69E-03	9,92E-07	1,20E-04	2,06E-04	3,96E-05	-3,59E-04
ETP-fw*	CTUe	4,49E-01	1,19E-01	1,49E-01	2,45E-04	3,70E-02	2,23E-03	1,41E-02	-2,94E-02
HTP-nc*	CTUh	8,77E-10	5,29E-10	4,76E-10	6,34E-13	1,74E-10	6,96E-12	3,28E-11	-7,87E-11
HTP-c*	CTUh	8,74E-11	1,41E-11	7,23E-11	4,02E-14	3,34E-12	1,47E-13	1,17E-12	-1,07E-11
SQP*	Pt	9,69E-01	4,53E-01	2,54E+00	3,07E-04	1,65E-01	3,31E-03	3,13E-01	-7,65E-01

* Disclaimer 1: The results of this environmental impact indicator should be used with caution, as the uncertainties of these results are high or experience with the indicator is limited.

** Disclaimer 2: 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.

Acronyms. **PM** = Particulate Matter; **IRP** = Ionizing Radiation Potential - Human Health; **ETP-fw** = Ecotoxicity Potential, freshwater; **HTP-nc** = Human Toxicity Potential, non-cancer; **HTP-c** = Human Toxicity Potential, cancer; **SQP** = Soil Quality Potential.

Resource use indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	1,38E-01	1,38E-02	1,66E-01	3,47E-05	4,40E-03	1,49E-01	1,46E-01	-1,28E-01
PERM	MJ	1,85E-01	0,00E+00	2,88E-01	0,00E+00	0,00E+00	-1,44E-01	-1,44E-01	0,00E+00
PERT	MJ	3,23E-01	1,38E-02	4,54E-01	3,47E-05	4,40E-03	5,09E-03	1,46E-03	-1,28E-01
PENRE	MJ	1,23E+01	1,05E+00	1,17E+00	5,19E-03	2,79E-01	2,85E-01	4,20E-01	-3,99E-01
PENRM	MJ	7,38E-02	0,00E+00	5,23E-01	0,00E+00	0,00E+00	-2,62E-01	-2,62E-01	0,00E+00
PENRT	MJ	1,24E+01	1,05E+00	1,69E+00	5,19E-03	2,79E-01	2,35E-02	1,58E-01	-3,99E-01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	6,33E-04	1,14E-04	7,01E-04	2,90E-07	3,48E-05	1,41E-05	5,88E-05	-1,19E-04

Acronyms. **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water.

Waste indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
HWD	kg	9,55E-05	2,18E-05	2,20E-04	4,73E-08	7,04E-06	7,50E-07	2,37E-06	-5,31E-06
NHWD	kg	9,45E-03	3,51E-02	3,67E-02	3,46E-06	1,34E-02	5,05E-05	1,02E+00	-8,62E-04
RWD	kg	1,85E-06	2,47E-07	1,31E-06	6,68E-10	8,20E-08	1,69E-07	2,57E-08	-2,81E-07

Acronyms. **HWD** = Hazardous waste disposed; **NHWD** = Non-hazardous waste disposed; **RWD** = Radioactive waste disposed.

Output flow indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,17E-02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Acronyms. **CRU** = Components for re-use; **MFR** = Material for recycling; **MER** = Materials for energy recovery; **EEE** = Exported energy, electricity; **EET** = Exported energy, thermal.

Biogenic carbon

The product does not contain biogenic carbon; instead, the product packaging contains 9,18E-03 kg C per kg of product.

T1/5

Mandatory environmental impact category indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
GWP-total	Kg CO2 eq	1,55E-01	7,76E-02	7,57E-01	3,99E-04	1,97E-02	1,05E-03	8,41E-03	-2,96E-03
GWP-fossil	Kg CO2 eq	1,74E-01	7,75E-02	7,15E-01	3,99E-04	1,97E-02	1,01E-03	7,24E-03	-1,16E-02
GWP-biogenic	Kg CO2 eq	-1,90E-02	3,14E-05	4,27E-02	1,13E-07	1,35E-05	3,46E-05	1,16E-03	8,63E-03
GWP-land use	Kg CO2 eq	8,19E-05	3,07E-05	4,30E-05	3,27E-08	6,51E-06	3,01E-06	3,56E-06	-1,66E-05
ODP	Kg CFC11 eq	3,40E-08	1,49E-09	2,56E-09	8,63E-12	4,29E-10	1,69E-11	2,01E-10	-5,95E-10
AP	Mol H+ eq.	6,25E-04	9,16E-04	2,78E-04	3,57E-06	6,31E-05	5,01E-06	4,53E-05	-4,12E-05
EP-freshwater	Kg P eq.	2,18E-06	4,80E-07	2,14E-06	1,31E-09	1,44E-07	9,90E-08	6,50E-08	-2,93E-07
EP-marine	Kg N eq.	1,83E-04	2,44E-04	1,96E-04	1,66E-06	2,10E-05	6,71E-07	1,76E-05	-1,03E-05
EP-terrestrial	Mol N eq.	2,07E-03	2,70E-03	1,14E-03	1,82E-05	2,31E-04	7,59E-06	1,91E-04	-1,09E-04
POCP	Kg NMVOC eq.	1,19E-03	8,20E-04	7,28E-04	5,48E-06	9,57E-05	2,43E-06	6,94E-05	-8,67E-05
ADPF*	MJ	1,24E+01	1,05E+00	1,69E+00	5,19E-03	2,79E-01	2,35E-02	1,58E-01	-3,99E-01
ADPE*	Kg Sb eq.	3,15E-07	1,98E-07	2,37E-07	1,38E-10	6,63E-08	2,14E-09	9,55E-09	-5,97E-08
Water Use*	m3 world eq deprived	2,04E-02	3,55E-03	2,98E-02	8,90E-06	1,08E-03	2,21E-04	2,37E-03	-1,07E-02

* Disclaimer: The results of this environmental impact indicator should be used with caution, as the uncertainties of these results are high or experience with the indicator is limited.

Acronyms: **GWP-fossil** = Global Warming Potential fossil fuels; **GWP-biogenic** = Global Warming Potential biogenic; **GWP-land use** = Global Warming Potential land use and land use change; **ODP** = Depletion potential of the stratospheric ozone layer; **AP** = Acidification potential, Accumulated Exceedance; **EP-freshwater** = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADPF** = Abiotic depletion for fossil resources potential; **ADPE** = Abiotic depletion potential for non-fossil resources; **Water use** = Water (use) deprivation potential, deprivation-weighted water consumption.

Additional indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PM	disease inc.	3,82E-09	5,08E-09	4,90E-09	1,02E-10	1,57E-09	1,45E-11	1,03E-09	-3,92E-10
IRP**	kBq U235 eq.	2,57E-03	3,68E-04	1,69E-03	9,92E-07	1,20E-04	2,06E-04	3,96E-05	-3,59E-04
ETP-fw*	CTUe	4,49E-01	1,19E-01	1,49E-01	2,45E-04	3,70E-02	2,23E-03	1,41E-02	-2,94E-02
HTP-nc*	CTUh	8,77E-10	5,29E-10	4,76E-10	6,34E-13	1,74E-10	6,96E-12	3,28E-11	-7,87E-11
HTP-c*	CTUh	8,74E-11	1,41E-11	7,23E-11	4,02E-14	3,34E-12	1,47E-13	1,17E-12	-1,07E-11
SQP*	Pt	9,69E-01	4,53E-01	2,54E+00	3,07E-04	1,65E-01	3,31E-03	3,13E-01	-7,65E-01

* Disclaimer 1: The results of this environmental impact indicator should be used with caution, as the uncertainties of these results are high or experience with the indicator is limited.

** Disclaimer 2: 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.

Acronyms. **PM** = Particulate Matter; **IRP** = Ionizing Radiation Potential - Human Health; **ETP-fw** = Ecotoxicity Potential, freshwater; **HTP-nc** = Human Toxicity Potential, non-cancer; **HTP-c** = Human Toxicity Potential, cancer; **SQP** = Soil Quality Potential.

Resource use indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	2,37E-01	1,38E-02	3,35E-02	3,47E-05	4,40E-03	2,15E-01	2,12E-01	-1,28E-01
PERM	MJ	8,64E-02	0,00E+00	4,20E-01	0,00E+00	0,00E+00	-2,10E-01	-2,10E-01	0,00E+00
PERT	MJ	3,23E-01	1,38E-02	4,54E-01	3,47E-05	4,40E-03	5,09E-03	1,46E-03	-1,28E-01
PENRE	MJ	1,10E+01	1,05E+00	1,53E+00	5,19E-03	2,79E-01	1,04E-01	2,39E-01	-3,99E-01
PENRM	MJ	1,36E+00	0,00E+00	1,61E-01	0,00E+00	0,00E+00	-8,05E-02	-8,05E-02	0,00E+00
PENRT	MJ	1,24E+01	1,05E+00	1,69E+00	5,19E-03	2,79E-01	2,35E-02	1,58E-01	-3,99E-01
SM	kg	4,83E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	6,33E-04	1,14E-04	7,01E-04	2,90E-07	3,48E-05	1,41E-05	5,88E-05	-1,19E-04

Acronyms. **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water.

Waste indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
HWD	kg	9,55E-05	2,18E-05	2,20E-04	4,73E-08	7,04E-06	7,50E-07	2,37E-06	-5,31E-06
NHWD	kg	9,45E-03	3,51E-02	3,67E-02	3,46E-06	1,34E-02	5,05E-05	1,02E+00	-8,62E-04
RWD	kg	1,85E-06	2,47E-07	1,31E-06	6,68E-10	8,20E-08	1,69E-07	2,57E-08	-2,81E-07

Acronyms. **HWD** = Hazardous waste disposed; **NHWD** = Non-hazardous waste disposed; **RWD** = Radioactive waste disposed.

Output flow indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,12E-02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Acronyms. **CRU** = Components for re-use; **MFR** = Material for recycling; **MER** = Materials for energy recovery; **EEE** = Exported energy, electricity; **EET** = Exported energy, thermal.

Biogenic carbon

The product does not contain biogenic carbon; instead, the product packaging contains 1,34E-02 kg C per kg of product.

T1/10

Mandatory environmental impact category indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
GWP-total	Kg CO2 eq	2,47E-01	4,98E-02	3,56E-01	3,99E-04	1,97E-02	3,22E-04	5,26E-02	6,96E-03
GWP-fossil	Kg CO2 eq	2,51E-01	4,97E-02	3,45E-01	3,99E-04	1,97E-02	3,10E-04	5,09E-02	-5,43E-03
GWP-biogenic	Kg CO2 eq	-5,16E-03	2,78E-05	1,09E-02	1,13E-07	1,35E-05	1,06E-05	1,69E-03	1,24E-02
GWP-land use	Kg CO2 eq	3,36E-04	1,77E-05	4,64E-05	3,27E-08	6,52E-06	9,26E-07	3,76E-06	-1,53E-05
ODP	Kg CFC11 eq	2,32E-07	1,03E-09	1,50E-09	8,63E-12	4,30E-10	5,19E-12	2,22E-10	-2,32E-10
AP	Mol H+ eq.	1,12E-03	3,51E-04	2,05E-04	3,57E-06	6,32E-05	1,54E-06	5,45E-05	-2,29E-05
EP-freshwater	Kg P eq.	1,06E-05	3,36E-07	1,77E-06	1,31E-09	1,44E-07	3,05E-08	7,54E-08	-1,53E-07
EP-marine	Kg N eq.	2,42E-04	1,00E-04	1,40E-04	1,66E-06	2,10E-05	2,07E-07	2,30E-05	-6,44E-06
EP-terrestrial	Mol N eq.	3,18E-03	1,11E-03	8,41E-04	1,82E-05	2,32E-04	2,34E-06	2,36E-04	-6,99E-05
POCP	Kg NMVOC eq.	1,38E-03	3,73E-04	4,78E-04	5,48E-06	9,59E-05	7,49E-07	8,11E-05	-4,18E-05
ADPF*	MJ	8,38E+00	6,90E-01	1,01E+00	5,19E-03	2,79E-01	7,22E-03	1,67E-01	-1,55E-01
ADPE*	Kg Sb eq.	1,66E-06	1,48E-07	1,32E-07	1,38E-10	6,64E-08	6,59E-10	1,13E-08	-2,88E-08
Water Use*	m3 world eq deprived	1,28E-01	2,51E-03	1,55E-02	8,90E-06	1,08E-03	6,81E-05	3,32E-04	-4,21E-03

* Disclaimer: The results of this environmental impact indicator should be used with caution, as the uncertainties of these results are high or experience with the indicator is limited.

Acronyms: **GWP-fossil** = Global Warming Potential fossil fuels; **GWP-biogenic** = Global Warming Potential biogenic; **GWP-land use** = Global Warming Potential land use and land use change; **ODP** = Depletion potential of the stratospheric ozone layer; **AP** = Acidification potential, Accumulated Exceedance; **EP-freshwater** = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADPF** = Abiotic depletion for fossil resources potential; **ADPE** = Abiotic depletion potential for non-fossil resources; **Water use** = Water (use) deprivation potential, deprivation-weighted water consumption.

Additional indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PM	disease inc.	9,81E-09	3,78E-09	3,58E-09	1,02E-10	1,57E-09	4,45E-12	1,07E-09	-3,05E-10
IRP**	kBq U235 eq.	1,08E-02	2,72E-04	1,34E-03	9,92E-07	1,21E-04	6,35E-05	4,92E-05	-1,62E-04
ETP-fw*	CTUe	1,02E+00	8,50E-02	1,03E-01	2,45E-04	3,70E-02	6,87E-04	1,75E-01	-1,70E-02
HTP-nc*	CTUh	1,98E-09	3,90E-10	3,12E-10	6,34E-13	1,74E-10	2,14E-12	1,50E-10	-4,53E-11
HTP-c*	CTUh	9,39E-11	8,66E-12	6,30E-11	4,02E-14	3,34E-12	4,52E-14	3,66E-12	-1,37E-11
SQP*	Pt	1,08E+00	3,56E-01	3,52E+00	3,07E-04	1,65E-01	1,02E-03	3,15E-01	-1,08E+00

* Disclaimer 1: The results of this environmental impact indicator should be used with caution, as the uncertainties of these results are high or experience with the indicator is limited.

** Disclaimer 2: 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.

Acronyms. **PM** = Particulate Matter; **IRP** = Ionizing Radiation Potential - Human Health; **ETP-fw** = Ecotoxicity Potential, freshwater; **HTP-nc** = Human Toxicity Potential, non-cancer; **HTP-c** = Human Toxicity Potential, cancer; **SQP** = Soil Quality Potential.

Resource use indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	5,34E-01	1,00E-02	1,64E-01	3,47E-05	4,41E-03	2,12E-01	2,12E-01	-1,76E-01
PERM	MJ	4,68E-02	0,00E+00	4,20E-01	0,00E+00	0,00E+00	-2,10E-01	-2,10E-01	0,00E+00
PERT	MJ	5,80E-01	1,00E-02	5,84E-01	3,47E-05	4,41E-03	1,57E-03	1,85E-03	-1,76E-01
PENRE	MJ	7,65E+00	6,90E-01	8,44E-01	5,19E-03	2,79E-01	8,77E-02	2,47E-01	-1,55E-01
PENRM	MJ	7,35E-01	0,00E+00	1,61E-01	0,00E+00	0,00E+00	-8,05E-02	-8,05E-02	0,00E+00
PENRT	MJ	8,38E+00	6,90E-01	1,01E+00	5,19E-03	2,79E-01	7,22E-03	1,67E-01	-1,55E-01
SM	kg	2,52E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	3,43E-03	8,07E-05	3,52E-04	2,90E-07	3,49E-05	4,34E-06	1,23E-05	-6,25E-05

Acronyms. **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water.

Waste indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
HWD	kg	1,07E-03	1,59E-05	1,01E-04	4,73E-08	7,05E-06	2,31E-07	4,73E-04	-6,28E-06
NHWD	kg	5,76E-02	2,84E-02	3,48E-02	3,46E-06	1,34E-02	1,55E-05	1,01E+00	-8,56E-04
RWD	kg	8,62E-06	1,84E-07	1,02E-06	6,68E-10	8,21E-08	5,22E-08	3,32E-08	-1,28E-07

Acronyms. **HWD** = Hazardous waste disposed; **NHWD** = Non-hazardous waste disposed; **RWD** = Radioactive waste disposed.

Output flow indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,12E-02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Acronyms. **CRU** = Components for re-use; **MFR** = Material for recycling; **MER** = Materials for energy recovery; **EEE** = Exported energy, electricity; **EET** = Exported energy, thermal.

Biogenic carbon

The product does not contain biogenic carbon; instead, the product packaging contains 1,34E-02 kg C per kg of product.

T2/5

Mandatory environmental impact category indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
GWP-total	Kg CO ₂ eq	3,90E-01	7,36E-02	7,06E-01	3,99E-04	1,95E-02	2,43E-04	7,30E-02	5,25E-03
GWP-fossil	Kg CO ₂ eq	4,16E-01	7,35E-02	6,53E-01	3,99E-04	1,95E-02	2,34E-04	7,17E-02	-4,10E-03
GWP-biogenic	Kg CO ₂ eq	-2,68E-02	2,97E-05	5,31E-02	1,13E-07	1,34E-05	8,03E-06	1,28E-03	9,36E-03
GWP-land use	Kg CO ₂ eq	5,21E-04	2,91E-05	3,60E-05	3,27E-08	6,47E-06	6,99E-07	3,83E-06	-1,15E-05
ODP	Kg CFC11 eq	3,51E-07	1,41E-09	1,33E-09	8,63E-12	4,26E-10	3,92E-12	2,29E-10	-1,75E-10
AP	Mol H ⁺ eq.	1,76E-03	8,67E-04	1,99E-04	3,57E-06	6,27E-05	1,16E-06	5,84E-05	-1,73E-05
EP-freshwater	Kg P eq.	1,61E-05	4,56E-07	1,64E-06	1,31E-09	1,43E-07	2,30E-08	7,93E-08	-1,16E-07
EP-marine	Kg N eq.	3,89E-04	2,31E-04	1,73E-04	1,66E-06	2,09E-05	1,56E-07	2,51E-05	-4,86E-06
EP-terrestrial	Mol N eq.	4,96E-03	2,56E-03	9,39E-04	1,82E-05	2,30E-04	1,76E-06	2,56E-04	-5,27E-05
POCP	Kg NMVOC eq.	2,31E-03	7,78E-04	5,55E-04	5,48E-06	9,51E-05	5,65E-07	8,58E-05	-3,15E-05
ADPF*	MJ	1,57E+01	9,95E-01	8,92E-01	5,19E-03	2,77E-01	5,45E-03	1,69E-01	-1,17E-01
ADPE*	Kg Sb eq.	2,52E-06	1,88E-07	1,10E-07	1,38E-10	6,58E-08	4,97E-10	1,20E-08	-2,17E-08
Water Use*	m ³ world eq deprived	1,91E-01	3,37E-03	1,24E-02	8,90E-06	1,07E-03	5,14E-05	6,62E-04	-3,18E-03

* Disclaimer: The results of this environmental impact indicator should be used with caution, as the uncertainties of these results are high or experience with the indicator is limited.

Acronyms: **GWP-fossil** = Global Warming Potential fossil fuels; **GWP-biogenic** = Global Warming Potential biogenic; **GWP-land use** = Global Warming Potential land use and land use change; **ODP** = Depletion potential of the stratospheric ozone layer; **AP** = Acidification potential, Accumulated Exceedance; **EP-freshwater** = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADPF** = Abiotic depletion for fossil resources potential; **ADPE** = Abiotic depletion potential for non-fossil resources; **Water use** = Water (use) deprivation potential, deprivation-weighted water consumption.

Additional indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PM	disease inc.	1,51E-08	4,83E-09	4,27E-09	1,02E-10	1,55E-09	3,36E-12	1,08E-09	-2,30E-10
IRP**	kBq U235 eq.	1,65E-02	3,49E-04	1,19E-03	9,92E-07	1,20E-04	4,80E-05	5,27E-05	-1,22E-04
ETP-fw*	CTUe	1,59E+00	1,13E-01	9,16E-02	2,45E-04	3,67E-02	5,19E-04	2,52E-01	-1,28E-02
HTP-nc*	CTUh	3,14E-09	5,01E-10	3,29E-10	6,34E-13	1,73E-10	1,62E-12	2,05E-10	-3,42E-11
HTP-c*	CTUh	1,73E-10	1,34E-11	6,78E-11	4,02E-14	3,31E-12	3,41E-14	4,82E-12	-1,03E-11
SQP*	Pt	3,33E+00	4,29E-01	2,67E+00	3,07E-04	1,64E-01	7,70E-04	3,13E-01	-8,14E-01

* Disclaimer 1: The results of this environmental impact indicator should be used with caution, as the uncertainties of these results are high or experience with the indicator is limited.

** Disclaimer 2: 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.

Acronyms. **PM** = Particulate Matter; **IRP** = Ionizing Radiation Potential - Human Health; **ETP-fw** = Ecotoxicity Potential, freshwater; **HTP-nc** = Human Toxicity Potential, non-cancer; **HTP-c** = Human Toxicity Potential, cancer; **SQP** = Soil Quality Potential.

Resource use indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	8,55E-01	1,31E-02	1,26E-01	3,47E-05	4,37E-03	1,60E-01	1,61E-01	-1,33E-01
PERM	MJ	2,34E-01	0,00E+00	3,17E-01	0,00E+00	0,00E+00	-1,59E-01	-1,59E-01	0,00E+00
PERT	MJ	1,09E+00	1,31E-02	4,43E-01	3,47E-05	4,37E-03	1,18E-03	2,01E-03	-1,33E-01
PENRE	MJ	1,47E+01	9,95E-01	7,70E-01	5,19E-03	2,77E-01	6,62E-02	2,30E-01	-1,17E-01
PENRM	MJ	1,08E+00	0,00E+00	1,22E-01	0,00E+00	0,00E+00	-6,08E-02	-6,08E-02	0,00E+00
PENRT	MJ	1,57E+01	9,95E-01	8,92E-01	5,19E-03	2,77E-01	5,45E-03	1,69E-01	-1,17E-01
SM	kg	3,71E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	5,17E-03	1,08E-04	2,89E-04	2,90E-07	3,46E-05	3,28E-06	2,05E-05	-4,72E-05

Acronyms. **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water.

Waste indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
HWD	kg	1,60E-03	2,06E-05	2,22E-04	4,73E-08	6,99E-06	1,74E-07	6,95E-04	-4,74E-06
NHWD	kg	8,76E-02	3,32E-02	3,38E-02	3,46E-06	1,33E-02	1,17E-05	9,92E-01	-6,46E-04
RWD	kg	1,31E-05	2,34E-07	9,04E-07	6,68E-10	8,14E-08	3,94E-08	3,60E-08	-9,69E-08

Acronyms. **HWD** = Hazardous waste disposed; **NHWD** = Non-hazardous waste disposed; **RWD** = Radioactive waste disposed.

Output flow indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,48E-03	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Acronyms. **CRU** = Components for re-use; **MFR** = Material for recycling; **MER** = Materials for energy recovery; **EEE** = Exported energy, electricity; **EET** = Exported energy, thermal.

Biogenic carbon

The product does not contain biogenic carbon; instead, the product packaging contains 1,01E-02 kg C per kg of product.

T2/10

Mandatory environmental impact category indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
GWP-total	Kg CO2 eq	2,74E-01	7,36E-02	7,18E-01	3,99E-04	1,95E-02	2,43E-04	4,10E-02	5,25E-03
GWP-fossil	Kg CO2 eq	2,97E-01	7,35E-02	6,71E-01	3,99E-04	1,95E-02	2,34E-04	3,98E-02	-4,10E-03
GWP-biogenic	Kg CO2 eq	-2,39E-02	2,97E-05	4,73E-02	1,13E-07	1,34E-05	8,03E-06	1,28E-03	9,36E-03
GWP-land use	Kg CO2 eq	3,05E-04	2,91E-05	3,60E-05	3,27E-08	6,47E-06	6,99E-07	3,70E-06	-1,15E-05
ODP	Kg CFC11 eq	1,96E-07	1,41E-09	1,35E-09	8,63E-12	4,26E-10	3,92E-12	2,15E-10	-1,75E-10
AP	Mol H+ eq.	1,21E-03	8,67E-04	2,03E-04	3,57E-06	6,27E-05	1,16E-06	5,18E-05	-1,73E-05
EP-freshwater	Kg P eq.	9,24E-06	4,56E-07	1,67E-06	1,31E-09	1,43E-07	2,30E-08	7,21E-08	-1,16E-07
EP-marine	Kg N eq.	2,88E-04	2,31E-04	1,77E-04	1,66E-06	2,09E-05	1,56E-07	2,14E-05	-4,86E-06
EP-terrestrial	Mol N eq.	3,54E-03	2,56E-03	9,58E-04	1,82E-05	2,30E-04	1,76E-06	2,23E-04	-5,27E-05
POCP	Kg NMVOC eq.	1,76E-03	7,78E-04	5,67E-04	5,48E-06	9,51E-05	5,65E-07	7,75E-05	-3,15E-05
ADPF*	MJ	1,41E+01	9,95E-01	9,07E-01	5,19E-03	2,77E-01	5,45E-03	1,63E-01	-1,17E-01
ADPE*	Kg Sb eq.	1,44E-06	1,88E-07	1,11E-07	1,38E-10	6,58E-08	4,97E-10	1,08E-08	-2,17E-08
Water Use*	m3 world eq deprived	1,07E-01	3,37E-03	1,24E-02	8,90E-06	1,07E-03	5,14E-05	1,89E-03	-3,18E-03

* Disclaimer: The results of this environmental impact indicator should be used with caution, as the uncertainties of these results are high or experience with the indicator is limited.

Acronyms: **GWP-fossil** = Global Warming Potential fossil fuels; **GWP-biogenic** = Global Warming Potential biogenic; **GWP-land use** = Global Warming Potential land use and land use change; **ODP** = Depletion potential of the stratospheric ozone layer; **AP** = Acidification potential, Accumulated Exceedance; **EP-freshwater** = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADPF** = Abiotic depletion for fossil resources potential; **ADPE** = Abiotic depletion potential for non-fossil resources; **Water use** = Water (use) deprivation potential, deprivation-weighted water consumption.

Additional indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PM	disease inc.	9,54E-09	4,83E-09	4,37E-09	1,02E-10	1,55E-09	3,36E-12	1,05E-09	-2,30E-10
IRP**	kBq U235 eq.	9,66E-03	3,49E-04	1,21E-03	9,92E-07	1,20E-04	4,80E-05	4,62E-05	-1,22E-04
ETP-fw*	CTUe	1,03E+00	1,13E-01	9,28E-02	2,45E-04	3,67E-02	5,19E-04	1,34E-01	-1,28E-02
HTP-nc*	CTUh	2,03E-09	5,01E-10	3,31E-10	6,34E-13	1,73E-10	1,62E-12	1,19E-10	-3,42E-11
HTP-c*	CTUh	1,31E-10	1,34E-11	6,87E-11	4,02E-14	3,31E-12	3,41E-14	3,02E-12	-1,03E-11
SQP*	Pt	2,16E+00	4,29E-01	2,67E+00	3,07E-04	1,64E-01	7,70E-04	3,12E-01	-8,14E-01

* Disclaimer 1: The results of this environmental impact indicator should be used with caution, as the uncertainties of these results are high or experience with the indicator is limited.

** Disclaimer 2: 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.

Acronyms. **PM** = Particulate Matter; **IRP** = Ionizing Radiation Potential - Human Health; **ETP-fw** = Ecotoxicity Potential, freshwater; **HTP-nc** = Human Toxicity Potential, non-cancer; **HTP-c** = Human Toxicity Potential, cancer; **SQP** = Soil Quality Potential.

Resource use indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	5,03E-01	1,31E-02	1,26E-01	3,47E-05	4,37E-03	1,60E-01	1,60E-01	-1,33E-01
PERM	MJ	2,08E-01	0,00E+00	3,17E-01	0,00E+00	0,00E+00	-1,59E-01	-1,59E-01	0,00E+00
PERT	MJ	7,12E-01	1,31E-02	4,43E-01	3,47E-05	4,37E-03	1,18E-03	1,73E-03	-1,33E-01
PENRE	MJ	1,35E+01	9,95E-01	7,85E-01	5,19E-03	2,77E-01	6,62E-02	2,24E-01	-1,17E-01
PENRM	MJ	5,83E-01	0,00E+00	1,22E-01	0,00E+00	0,00E+00	-6,08E-02	-6,08E-02	0,00E+00
PENRT	MJ	1,41E+01	9,95E-01	9,07E-01	5,19E-03	2,77E-01	5,45E-03	1,63E-01	-1,17E-01
SM	kg	1,89E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	2,94E-03	1,08E-04	2,90E-04	2,90E-07	3,46E-05	3,28E-06	4,83E-05	-4,72E-05

Acronyms. **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water.

Waste indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
HWD	kg	8,62E-04	2,06E-05	2,07E-04	4,73E-08	6,99E-06	1,74E-07	3,55E-04	-4,74E-06
NHWD	kg	4,93E-02	3,32E-02	3,46E-02	3,46E-06	1,33E-02	1,17E-05	1,00E+00	-6,46E-04
RWD	kg	7,58E-06	2,34E-07	9,19E-07	6,68E-10	8,14E-08	3,94E-08	3,09E-08	-9,69E-08

Acronyms. **HWD** = Hazardous waste disposed; **NHWD** = Non-hazardous waste disposed; **RWD** = Radioactive waste disposed.

Output flow indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,48E-03	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Acronyms. **CRU** = Components for re-use; **MFR** = Material for recycling; **MER** = Materials for energy recovery; **EEE** = Exported energy, electricity; **EET** = Exported energy, thermal.

Biogenic carbon

The product does not contain biogenic carbon; instead, the product packaging contains 1,01E-02 kg C per kg of product.

T3/10

Mandatory environmental impact category indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
GWP-total	Kg CO2 eq	2,78E-01	7,58E-02	7,32E-01	3,99E-04	2,01E-02	4,95E-04	4,40E-02	1,07E-02
GWP-fossil	Kg CO2 eq	3,02E-01	7,58E-02	6,83E-01	3,99E-04	2,00E-02	4,78E-04	4,14E-02	-8,36E-03
GWP-biogenic	Kg CO2 eq	-2,45E-02	3,08E-05	4,85E-02	1,13E-07	1,38E-05	1,64E-05	2,59E-03	1,91E-02
GWP-land use	Kg CO2 eq	3,15E-04	3,00E-05	6,96E-05	3,27E-08	6,64E-06	1,42E-06	3,76E-06	-2,35E-05
ODP	Kg CFC11 eq	2,02E-07	1,46E-09	1,86E-09	8,63E-12	4,37E-10	7,98E-12	2,22E-10	-3,57E-10
AP	Mol H+ eq.	1,23E-03	8,92E-04	2,57E-04	3,57E-06	6,44E-05	2,37E-06	5,34E-05	-3,52E-05
EP-freshwater	Kg P eq.	9,52E-06	4,70E-07	2,02E-06	1,31E-09	1,47E-07	4,69E-08	7,49E-08	-2,36E-07
EP-marine	Kg N eq.	2,92E-04	2,37E-04	1,91E-04	1,66E-06	2,14E-05	3,18E-07	2,24E-05	-9,90E-06
EP-terrestrial	Mol N eq.	3,60E-03	2,63E-03	1,12E-03	1,82E-05	2,36E-04	3,59E-06	2,30E-04	-1,07E-04
POCP	Kg NMVOC eq.	1,78E-03	8,00E-04	6,59E-04	5,48E-06	9,76E-05	1,15E-06	8,02E-05	-6,42E-05
ADPF*	MJ	1,41E+01	1,03E+00	1,25E+00	5,19E-03	2,84E-01	1,11E-02	1,68E-01	-2,38E-01
ADPE*	Kg Sb eq.	1,48E-06	1,94E-07	1,82E-07	1,38E-10	6,76E-08	1,01E-09	1,12E-08	-4,43E-08
Water Use*	m3 world eq deprived	1,11E-01	3,47E-03	2,27E-02	8,90E-06	1,10E-03	1,05E-04	-1,78E-03	-6,47E-03

* Disclaimer: The results of this environmental impact indicator should be used with caution, as the uncertainties of these results are high or experience with the indicator is limited.

Acronyms: **GWP-fossil** = Global Warming Potential fossil fuels; **GWP-biogenic** = Global Warming Potential biogenic; **GWP-land use** = Global Warming Potential land use and land use change; **ODP** = Depletion potential of the stratospheric ozone layer; **AP** = Acidification potential, Accumulated Exceedance; **EP-freshwater** = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADPF** = Abiotic depletion for fossil resources potential; **ADPE** = Abiotic depletion potential for non-fossil resources; **Water use** = Water (use) deprivation potential, deprivation-weighted water consumption.

Additional indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PM	disease inc.	9,76E-09	4,98E-09	5,06E-09	1,02E-10	1,60E-09	6,84E-12	1,09E-09	-4,69E-10
IRP**	kBq U235 eq.	9,94E-03	3,60E-04	1,65E-03	9,92E-07	1,23E-04	9,77E-05	4,88E-05	-2,49E-04
ETP-fw*	CTUe	1,05E+00	1,17E-01	1,32E-01	2,45E-04	3,77E-02	1,06E-03	1,40E-01	-2,61E-02
HTP-nc*	CTUh	2,08E-09	5,18E-10	4,37E-10	6,34E-13	1,77E-10	3,29E-12	1,26E-10	-6,96E-11
HTP-c*	CTUh	1,33E-10	1,38E-11	1,04E-10	4,02E-14	3,40E-12	6,96E-14	3,13E-12	-2,10E-11
SQP*	Pt	2,22E+00	4,43E-01	5,39E+00	3,07E-04	1,68E-01	1,57E-03	3,22E-01	-1,66E+00

* Disclaimer 1: The results of this environmental impact indicator should be used with caution, as the uncertainties of these results are high or experience with the indicator is limited.

** Disclaimer 2: 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.

Acronyms. **PM** = Particulate Matter; **IRP** = Ionizing Radiation Potential - Human Health; **ETP-fw** = Ecotoxicity Potential, freshwater; **HTP-nc** = Human Toxicity Potential, non-cancer; **HTP-c** = Human Toxicity Potential, cancer; **SQP** = Soil Quality Potential.

Resource use indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	5,16E-01	1,35E-02	2,47E-01	3,47E-05	4,49E-03	3,26E-01	3,25E-01	-2,71E-01
PERM	MJ	2,13E-01	0,00E+00	6,46E-01	0,00E+00	0,00E+00	-3,23E-01	-3,23E-01	0,00E+00
PERT	MJ	7,29E-01	1,35E-02	8,94E-01	3,47E-05	4,49E-03	2,41E-03	1,82E-03	-2,71E-01
PENRE	MJ	1,35E+01	1,03E+00	1,00E+00	5,19E-03	2,84E-01	1,35E-01	2,92E-01	-2,38E-01
PENRM	MJ	6,03E-01	0,00E+00	2,48E-01	0,00E+00	0,00E+00	-1,24E-01	-1,24E-01	0,00E+00
PENRT	MJ	1,41E+01	1,03E+00	1,25E+00	5,19E-03	2,84E-01	1,11E-02	1,68E-01	-2,38E-01
SM	kg	1,96E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	3,03E-03	1,12E-04	4,98E-04	2,90E-07	3,55E-05	6,68E-06	-3,70E-05	-9,62E-05

Acronyms. **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy re-sources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water.

Waste indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
HWD	kg	8,93E-04	2,13E-05	2,28E-04	4,73E-08	7,18E-06	3,55E-07	3,69E-04	-9,66E-06
NHWD	kg	5,08E-02	3,44E-02	3,66E-02	3,46E-06	1,36E-02	2,39E-05	1,02E+00	-1,32E-03
RWD	kg	7,80E-06	2,42E-07	1,27E-06	6,68E-10	8,36E-08	8,02E-08	3,29E-08	-1,98E-07

Acronyms. **HWD** = Hazardous waste disposed; **NHWD** = Non-hazardous waste disposed; **RWD** = Radioactive waste disposed.

Output flow indicators

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,73E-02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Acronyms. **CRU** = Components for re-use; **MFR** = Material for recycling; **MER** = Materials for energy recovery; **EEE** = Exported energy, electricity; **EET** = Exported energy, thermal.

Biogenic carbon

The product does not contain biogenic carbon; instead, the product packaging contains 2,06E-02 kg C per kg of product.

REFERENCES

- [1] CORE PCR per i Prodotti e Servizi da Costruzione: ICMQ 001 Rev.4 (compliant with EN 15804:2012 + A2:2019);
- [2] EPDITALY Regulation Rev.7.1 of 05/09/2025;
- [3] Background report: Analisi del ciclo di vita dei prodotti della Perlite espansa, della Protezione passiva dal fuoco, dell'Isolamento termico e calcestruzzi alleggeriti e dell'Architettura del verde, Rev.0.2, June 2026, by L. Micheletti and V. Malerba, Greenwich S.r.l.;
- [4] UNI EN 15804:2012 + A2:2019, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products;
- [5] UNI EN 15941:2024, Sostenibilità delle costruzioni - Qualità dei dati per la valutazione ambientale dei prodotti e delle costruzioni - Selezione e utilizzo dei dati.