GlobalEPD

A VERIFIED ENVIRONMENTAL DECLARATION

AENOR

Clay roofing tiles in accordance with UNE-EN 1304

Environmental Product Declaration

EN ISO 14025:2010

EN 15804:2012+A2:2019

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HISPALYT
CERÁMICA PARA CONSTRUIR

Spanish Association of Clay Brick and Roofing Tile Manufacturers (HISPALYT)

The holder of this Declaration is responsible for its contents and for keeping the records and the documentation that supports data and statements included during the validity period

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AENOR is a founding member of ECO Platform, the European Association of Environmental Product Declaration verification programs

The European Standard EN 15804:2012+A2:2019 serves as the basis for PCR
Independent verification of the declaration and data in accordance with EN ISO 14025:2010 ☐ Internal ☒External
Verification body Product certification body accredited by ENAC with accreditation Nº 1/C-PR468

1. General information

1.1. The organisation

The owner of this Environmental Product Declaration (EPD) is Hispalyt, the Spanish Association of Clay Brick and Roofing Tile Manufacturers. Its contact data are given on page 2 of this EPD.

This EPD is for the exclusive use of Hispalyt and represents the environmental information of its associates, whose data may be obtained by contacting Hispalyt, or at the following URL:

www.hispalyt.es/tejas/fabricantes

1.2. Scope of the declaration

This EPD describes one tonne of clay roofing tiles and fittings manufactured in Spain by the member companies of Hispalyt. This EPD was based on 2022 production data.

The Life Cycle Analysis (LCA) results of this EPD are based on the data provided by the representing manufacturer of the Hispalyt Roofing Tile Sector.

It is considered to cover from cradle to grave and module D.

1.3. Life cycle and compliance

This EPD was developed and verified in line with UNE-EN ISO 14025:2010, UNE-EN 15804:2012+A2:2020 and the following Product Category Rules (PCRs):

INFORMATION ON PRODUCT CATEGORY RULES	
Descriptive Title	Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products.
Registration code and version	UNE-EN 15804:2012 + A2:2020
Date of Issue	2020
Compliance	UNE-EN 15804:2012 + A2:2020
Programme Operator	AENOR

This EPD includes the following life cycle stages:

Limits of the system: Information modules considered

Product stage	A1	Raw material supply	X
	A2	Transport to factory	X
	A3	Manufacture	X
Cons-truction	A4	Transport to construction site	X
	A5	Installation/construction	X
Stage d use	B1	Use	X
	B2	Maintenance	X
	B3	Repair	X
	B4	Replacement	NR
	B5	Refurbishment	X
	B6	Operational energy use	X
	B7	Operational water use	X
End of life	C1	Deconstruction/demolition	NR
	C2	Transport	X
	C3	Waste processing	X
	C4	Waste disposal	X
D		Potential for reuse, recovery and/or recycling	X

X = Module included in the LCA; NR = Module not relevant; MNE = Module not evaluated

This EPD may not be comparable to those developed in other Programmes or those compliant with different reference documents; in particular, it may not be comparable to EPDs not prepared in line with UNE-EN 15804.

Likewise, EPDs may not be comparable if their data sources vary (for example, databases), if not all the pertinent information modules are included, or if they are not based on the same scenarios.

The comparison of construction products should be based on the same functions, applying the same functional unit and at the same building level (or architectural or engineering works level); i.e., including product behaviour throughout the life cycle, as well as the specifications of subclause 6.7.2. of UNE-EN ISO 14025.

2. The product

2.1. Product identification

The products dealt with in this EPD are those defined in UNE-EN 1304 Clay roofing tiles and fittings. Product definitions and specifications.

The clay roofing tiles classification according to the United Nations Central Product Classification (CPC) is 37350

2.2. Product performance

The characteristics of clay roofing tiles varies depending on the type of product. The different types of clay roofing tiles and their technical characteristics that are contemplated in the UNE-EN 1304 Standard can be consulted in section 2.1 of Hispalyt's Catalogue of Ceramic Solutions for compliance with the Technical Building Code (CTE), (Catálogo de Soluciones Cerámicas para el cumplimiento del Código Técnico de la Edificación (CTE)) which may be downloaded free over its website

2.3. Product intended use

Clay roofing tiles are products for discontinuous laying on pitched roofs and for wall cladding and lining

They ensure the impermeability of the building. This performance is provided by the features of the material itself, the form of the pieces (over and under, mixed or plain), the overlapping, and their proper installation.

Such roofs may be traditional, whereby the tiles are fixed with mortar, or ventilated, whereby fixing clips or nails are used, providing microventilation under the roofing tile, this latter technique being the more recommendable.

2.4. Product composition

Clay roofing tiles and fittings are made from clay or other argillaceous materials, with or without sand, fuel, or other additives, fired at a sufficiently high temperature to achieve ceramic bond.

Product Composition

Component	Content	Units
Clay	98.3	%
Additives	1,7	%

Clay roofing tiles and their fittings do not contain substances that are listed in the 'Candidate List of Substances of Very High Concern (SVHC) for authorisation' and have been tested up to a level of 1000 ppmm (0.1%).

3. LCA Information

3.1. Life cycle analysis

This EPD is based on the Hispalyt Sector LCA Report for Six Clay Construction Products (Informe de ACV sectorial de seis productos de arcilla cocida utilizados en la construcción de Hispalyt) (version 2024-09-20), prepared by the UNESCO Chair in Life Cycle and Climate Change.

In order to carry out this study, information was compiled from seven manufacturing plants, which account for 89 % of production.

The representative manufacturer from the Hispalyt Roofing Tiles Sector was determined by carrying out an analysis. This considers the environmental impact of the production stage, based on two control environmental impact indicators: Global Warming Potential and Total Non-Renewable Primary Energy Use.

The following information was collected from the different plants to calculate these two indicators: process emissions, thermal energy and electricity consumption.

Once these data were obtained for each plant, the maximum, minimum and weighted average (taking into account the production volume) of the control indicators were calculated. That manufacturer coming closest to the mean was taken as representative manufacturer.

The AENOR GlobalEPD Programme PCRs for Clay Construction Products were observed in preparing the LCA report.

3.2. Declared unit

The declared unit is 1 tonne of clay rooofing tiles and fittings, with an expected average reference service life of 150 years.

The gross dry product density taken in this EPD is 2000 kg/m3. These data were taken from the Catalogue of construction elements of the Technical Building Code (Código Técnico de la Edificación, or CTE), March 2010 version.

The following conversion factor may be used for transforming the functional unit for one tonne of clay roofing tile into one square metre of roof covering:

Over and under tiles: $$\frac{M \times 10^{-3}}{(l\text{-}0{,}11) \times (w\text{-}0{,}11)}$$

Mixed and plain tiles: $$\frac{M \times 10^{-3}}{(l\text{-}0{,}05) \times (w\text{-}0{,}06)}$$

Whereby, according to the manufacturer's declaration:

M: mass of roofing tile in kg
l: length of roofing the tile in m
w: width of roofing the tile in m

3.3. Reference Useful Life (RLS)

A reference product service life of 150 years has been used, in keeping with the PCRs for preparing EPDs for clay construction products, drawn up by the European federation of brick and roofing tile manufacturers (TBE).

3.4. Representativeness, quality and selection of data

The primary inventory data have been collected by HISPALYT and correspond to the representative manufacturer's data for the year 2022.

The software LCA for Experts (GaBi) 10.7.1.28 with database version 2023.1) (SpheraSolutions) was used for modelling, from which the necessary secondary data were extracted.

The data used meet the established requirements in terms of accuracy, completeness, coherence and technological and temporal representativeness.

3.5. Other calculation rules and assumptions

In accordance with the CPR, inputs (oils, greases, etc.) and outputs (plastic and metal containers with oil residues and scrap) regarding the maintenance of heavy production equipment and machinery and transport systems have been excluded.

For transport pallets, a reuse of 5 trips has been considered.

For the transport from the production site to the treatment site of the waste generated in the production stage (A1-A3), the following distances have been applied: 50 km for scrap and 50 km for waste assimilated to municipal solid waste (MSW).

The electricity production mix considered for the production of the electricity used in production has been estimated from the weighted residual mix of the six Hispalyt representative manufacturers based on the CNMC data for the year 2022 of the different marketers.

To determine the details of the mix of renewable energy production sources, data from Red Eléctrica Española for 2022 were used.

The global warming potential (GWPtotal) of the different technologies that make up the electricity mix used in A1-A3 is 0.0961 $kgCO_2$ eq/MJ.

The global warming potential (GWPtotal) of obtaining and transporting the natural gas used in A1-A3 is 0.0191 $kgCO_2$ eq/MJ.

4. System boundaries, scenarios and additional technical information

4.1. Processes prior to manufacture (upstream)

A1 – Raw materials

It considers the quarry extraction and processing of all the raw materials and additives used in the manufacture of clay facing ceramic bricks and their fittings.

The extraction of clay, the main raw material, is carried out in quarries under strict safety and environmental controls. Once the quarries have been exploited, they are regenerated for different uses, preferably agricultural.

The raw material from the quarries is stockpiled before entering the production line.

A2 – Transport

It covers the transport of all raw materials considered in module A1, from the extraction or production site to the factory gate.

It is mainly carried out by lorry, but depending on the extraction or processing site of the raw material, transport by ship will also be necessary.

It has been considered that the transport of clay, the main raw material, is carried out by lorries that comply with Euro IV standards.

4.2. Product manufacturing

A3 – Manufacture

The industrial manufacturing process for ceramic materials includes the steps below.

Crushing: This process is carried out prior to entry in the plant. It consists in reducing the clay grains size, achieving homogenization of the material, preventing greater energy consumption, and lengthening the useful life of equipment. Once they are crushed, the different types of clay are stored in box feeders.

Grinding: consists of a second reduction in the size of clay particles, using pan mills, disintegrators, rollers, etc.

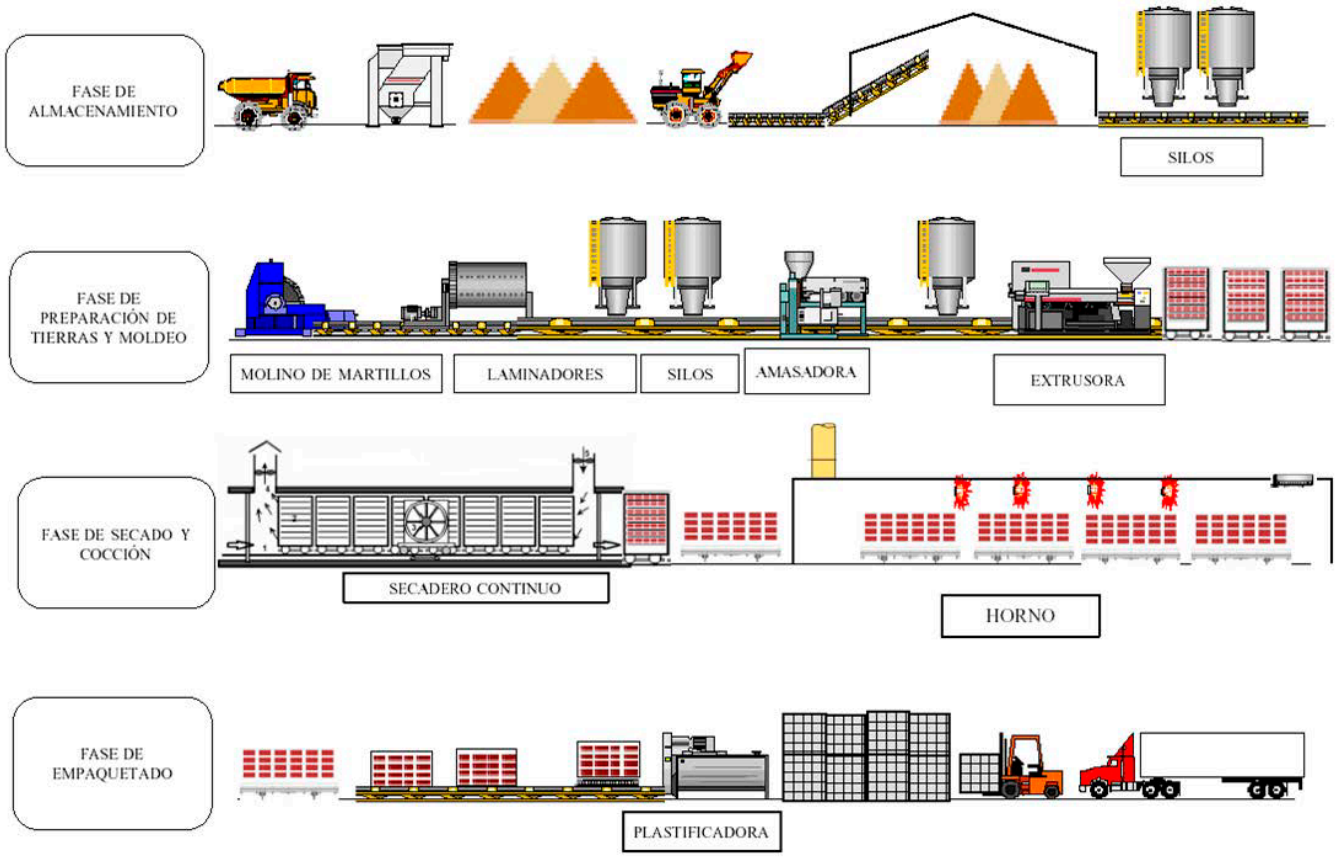
Blending: Once the granulometric levels required for the raw material have been achieved, the clay is introduced into the mixer, where the first addition of water takes place to obtain a plastic mouldable material for extrusion.

Forming: The clay afterwards passes through the extruder, where a vacuum pump extracts all the air it may contain and presses it against a mould, obtaining a column shaped in the form of the product. This system reduces industrial water consumption and facilitates working with dryer ceramic pastes.

Cutting and Stacking: After its passage through the extruder, the column is then cut using a set of wires and the final product dimensions are set. The ceramic product is placed onto steel rails or pallets before introduction into the drying area.

Drying and Firing: The stacked product is introduced into the drying area, which seeks to reduce the content in humidity of the items by up to 1-2%. The material from the drying area enters the tunnel kiln for the firing process. Current technology allows for industrial production with excellent thermal performance. A reduction in energy consumption as well as gas emissions into the atmosphere is thus achieved.

Packing and Storage: Once the firing process is finished, the ceramic product from the kiln carts is removed and unloaded on the packing and bagging conveyors. Lastly, the packages are stored in the stockyard to await transport to the building site



4.3 Construction process

A4 –Transport to consumer

The final product transport from the production plant to the building site is mainly by lorry, but depending on the destination, transport by ship will also be necessary.

A 20-26 tonne lorry has been used for the land transport modelling, which complies with the Euro IV standard.

The transport distances calculation is based on the orders served during reference year 2022. The gross dry density of 2000 kg/m^3 is based on the Catalogue of construction Elements of the Technical Building Code (CTE), March 2010 version.

Module A4 Transport to the construction site

Scenario information	Value (by functional unit)
Fuel type and consumption of vehicle or vehicle type used for transport	0,297 l diesel/km in 20-26-tonne lorry
Distance	558 km
Capacity utilisation (including empty returns)	85 %
Transported products gross dry density	2000 kg/m^3
Volume capacity utilisation factor (factor: =1 or <1 or ≥ 1 for compressed or nested packaged products)	No applicable

Module A4 Maritime transport to the construction site

Scenario information	Value (by functional unit)
Fuel type and consumption of vehicle or vehicle type used for transport	0,0123 l diesel/km in 3,500t tonne average ship
Distance	0,1 km
Capacity utilisation (including empty returns)	65 %
Transported products gross dry density	2000 kg/m3
Volume capacity utilisation factor (factor: =1 or <1 or ≥ 1 for compressed or nested packaged products)	No applicable

A5 – Product installation

In general terms, the installation of ceramic products at the building site is mainly manual and little or negligible use of energy or water is required. The storage of clay products at the building site does not require any special care aside from the usual good safety and health practices. A 2% loss of material (in mass) during the installation has been considered.

Module A5 Installation

Stage information	Value (by functional unit or declared unit)
Waste materials on the building site before waste processing, generated by the product's installation (specified by type)	20 kg waste 4,74 kg packaging
Output materials (specified by type) as result of waste processing at the building site e.g. of collection for recycling, for energy recovery, disposal (specified by route)	18,16 kg recycled 0,59 kg recovered 5,99 kg disposal

4.4 Use related to the building fabric

The PCRs used consider the impact during the phase of use (B1) null or negligible.

The PCRs used consider that clay roofing tiles do not require maintenance, repair or refurbishment. Therefore, no impact is declared in modules B2, B3 and B5.

Clay roof tiles may require occasional inspections to reposition elements, restoring connections and overlaps or to replace single elements damaged for example by extreme atmospheric agents or vandalism. Impacts associated to these operations are very low and considered as negligible, thus, no impact is declared in module B4.

4.5 Use related to the operation of the building

Clay roofing tiles do not consume neither water nor energy for their operation and therefore the impact on modules B6 and B7 is considered to be zero.

4.6 End of life

The end-of-life includes the modules deconstruction and/or demolition (C1), waste transport (C2), waste processing for reuse, recovery and/or recycling (C3) and disposal (C4).

According to the PCRs applied, module C1 is considered negligible. As for module C2, a transport distance from the building site to landfill is applied 50km and to waste management facility 50 km. For the assessment of processes C3 and C4, the following scenario is applied: 25% of product waste was sent to landfills while the remaining 75% is recycled.

Specifically for module C3, the Construction waste management process (EN15804 C3) from the Sphera database has been used to consider the impact associated with the deconstruction process prior to recycling.

Modules C1-C4 End of life

Parameter	Value (by functional unit or declared unit)
Collection process specified by type	1000 kg collected separately
	0 kg collected with mixed construction waste
Recovery system, specified by type	727 kg for re-use
	kg for recycling
	0 kg for energy recovery
Disposal, specified by type	250 kg product or material for final deposition
Assumptions for scenario development	Waste intended for landfill is transported 50 km by road to a controlled inert landfill, as well as waste intended for recycling. The empty return journey is not included.

4.7 Benefits and burdens beyond the limits of the system

The net environmental burdens and net benefits resulting from reusable clay roofing tiles after ceramic roof deconstruction phase have been considered.

4.8 Differences from previous versions of this EPD.

This EPD is modified to correct some data.

5. Declaration of the environmental parameters of the ACV and the ICV

Environmental impacts

The estimated impact results are relative and do not indicate the final value of the impact categories, nor do they refer to threshold values, safety margins or risks.

Parameter	Units	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	1,16E+02	9,59E+00	1,97E+02	3,22E+02	4,26E+01	2,54E+00	0	0	0	NR	0	0	0	NR	3,78E+00	2,04E+00	3,64E+00	-2,02E+02
GWP-fossil	kg CO_2 eq	1,16E+02	9,48E+00	2,05E+02	3,31E+02	4,21E+01	5,54E-01	0	0	0	NR	0	0	0	NR	3,82E+00	2,06E+00	3,76E+00	-2,04E+02
GWP-biogenic	kg CO_2 eq	-2,17E-01	2,83E-02	-8,61E+00	-8,80E+00	1,26E-01	1,98E+00	0	0	0	NR	0	0	0	NR	-6,94E-02	-3,18E-02	-1,25E-01	1,33E+00
GWP-luluc	kg CO_2 eq	4,66E-02	8,86E-02	2,01E-04	1,35E-01	3,95E-01	4,69E-04	0	0	0	NR	0	0	0	NR	2,41E-02	1,07E-02	1,17E-02	-4,07E-02
ODP	kg CFC11 eq	8,43E-08	1,25E-12	2,05E-07	2,90E-07	3,74E-12	1,17E-09	0	0	0	NR	0	0	0	NR	4,98E-12	1,10E-11	9,55E-12	-7,10E-08
AP	mol H^+ eq	3,11E-01	6,20E-02	2,38E+00	2,75E+00	3,04E-01	1,23E-03	0	0	0	NR	0	0	0	NR	1,27E-02	1,96E-02	2,66E-02	-1,72E+00
EP-freshwater	kg P eq	1,07E-03	3,50E-05	4,09E-04	1,51E-03	1,56E-04	1,10E-05	0	0	0	NR	0	0	0	NR	2,45E-05	1,16E-05	7,56E-06	-7,80E-04
EP-marine	kg N eq	4,61E-02	3,04E-02	6,96E-01	7,73E-01	1,51E-01	4,13E-04	0	0	0	NR	0	0	0	NR	5,32E-03	9,33E-03	6,88E-03	-4,77E-01
EP-terrestrial	mol N eq	5,03E-01	3,37E-01	7,62E+00	8,46E+00	1,66E+00	4,28E-03	0	0	0	NR	0	0	0	NR	6,14E-02	1,03E-01	7,57E-02	-5,23E+00
POCP	Kg NMVOC eq	2,52E-01	5,87E-02	1,89E+00	2,20E+00	2,88E-01	1,41E-03	0	0	0	NR	0	0	0	NR	1,04E-02	2,70E-02	2,08E-02	-1,37E+00
ADP-minerals& metals [2]	kg Sb eq	2,07E-03	6,30E-07	2,75E-06	2,08E-03	2,75E-06	7,39E-09	0	0	0	NR	0	0	0	NR	2,47E-07	3,48E-06	1,73E-07	-1,33E-03
ADP-fossil [2]	MJ	2,01E+03	1,30E+02	3,49E+03	5,63E+03	5,80E+02	2,93E+00	0	0	0	NR	0	0	0	NR	5,05E+01	3,83E+01	5,00E+01	-3,46E+03
WDP [2]	m^3	3,37E+02	1,16E-01	1,49E+02	4,86E+02	4,92E-01	1,28E-01	0	0	0	NR	0	0	0	NR	2,21E-01	4,63E-01	4,12E-01	-2,51E+02

GWP - Total: Global Warming Potential; GWP - fossil: Global warming potential of fossil fuels; GWP - biogenic: Biogenic Global Warming Potential; GWP - luluc : Global warming potential of land use and land use change; ODP: Stratospheric Ozone Depletion Potential; AP: Acidification potential, accumulated surplus; EP-freshwater: Eutrophication potential, fraction of nutrients that reach the final freshwater compartment; EP-marine: Eutrophication potential, fraction of nutrients that reach the final compartment of seawater; EP-terrestrial: Eutrophication potential, cumulative surplus; POCP: tropospheric ozone formation potential; ADP-minerals&metalsAbiotic resource depletion potential for non-fossil resources; APD-fossil: Abiotic Resource Depletion Potential for fossil resources; WDP: Water deprivation potential (user), weighted water deprivation consumption. NR: Not relevant

Additional environmental impacts

Parámetro	Unidades	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Incidencia de enfermedades	2,52E-06	2,26E-07	9,46E-06	1,22E-05	1,05E-06	1,15E-08	0	0	0	NR	0	0	0	NR	6,04E-08	4,35E-07	3,28E-07	-7,60E-06
IRP [1]	kBq U235 eq	1,86E+01	3,65E-02	5,04E-01	1,91E+01	1,09E-01	3,88E-03	0	0	0	NR	0	0	0	NR	9,65E-03	3,63E-02	6,59E-02	-1,20E+01
ETP-fw [2]	CTUe	1,32E+03	9,26E+01	3,30E+02	1,74E+03	4,05E+02	2,01E+00	0	0	0	NR	0	0	0	NR	3,67E+01	2,69E+01	2,73E+01	-9,19E+02
HTP-c [2]	CTUh	1,10E-08	1,90E-09	5,19E-09	1,80E-08	8,24E-09	1,54E-10	0	0	0	NR	0	0	0	NR	7,15E-10	5,08E-10	4,20E-09	-7,68E-09
HTP-nc [2]	CTUh	4,15E-07	1,08E-07	1,07E-06	1,59E-06	4,72E-07	1,65E-08	0	0	0	NR	0	0	0	NR	4,64E-08	3,05E-08	4,62E-07	-7,33E-07
SQP [2]	-	6,96E+01	5,45E+01	4,84E+02	6,09E+02	2,42E+02	4,88E-01	0	0	0	NR	0	0	0	NR	1,96E+01	8,76E+00	1,21E+01	-1,52E+02

PM: Potential incidence of diseases due to particulate matter (PM) emissions; IRP: Human Potential Exposure Efficiency Relative to U235; ETP-fw: Comparative Ecosystem Toxic Unit Potential - Freshwater; HTP-c: Comparative Ecosystem Toxic Unit Potential - Carcinogenic Effects; HTP-nc: Comparative Ecosystem Toxic Unit Potential - Non-Carcinogenic Effects; SQP : Land use.; NR: Not relevant

Notice 1: This impact category deals mainly with the eventual impacts of low doses of ionizing radiation on human health, from the nuclear fuel cycle. It does not consider the effects due to possible nuclear accidents or occupational exposure due to the disposal of radioactive waste in underground facilities. The ionizing radiation potential of the ground, due to radon or from some construction materials, is not measured with this parameter either.

Notice 2: The results of this indicator of environmental impact should be used with caution, since the uncertainties of the results are high and the experience with this parameter is limited.

Use of resources

Parameter	Units	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1,24E+02	9,49E+00	9,64E+01	2,30E+02	4,11E+01	2,99E-01	0	0	0	NR	0	0	0	NR	3,48E+00	2,88E+00	8,15E+00	-9,79E+01
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0	NR	0	0	0	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,24E+02	9,49E+00	9,64E+01	2,30E+02	4,11E+01	2,99E-01	0	0	0	NR	0	0	0	NR	3,48E+00	2,88E+00	8,15E+00	-9,79E+01
PENRE	MJ	2,01E+03	1,31E+02	3,49E+03	5,63E+03	5,82E+02	2,93E+00	0	0	0	NR	0	0	0	NR	5,06E+01	3,83E+01	5,00E+01	-3,46E+03
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0	NR	0	0	0	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	2,01E+03	1,31E+02	3,49E+03	5,63E+03	5,82E+02	2,93E+00	0	0	0	NR	0	0	0	NR	5,06E+01	3,83E+01	5,00E+01	-3,46E+03
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0	NR	0	0	0	NR	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	0	0	NR	0	0	0	NR	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	0	0	NR	0	0	0	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	7,66E+00	1,04E-02	3,47E+00	1,11E+01	4,53E-02	3,08E-03	0	0	0	NR	0	0	0	NR	5,14E-03	1,08E-02	1,26E-02	-5,73E+00

PERE : Use of renewable primary energy excluding primary renewable energy resources used as raw material; PERM: Use of primary renewable energy used as raw material; PERT: Total use of primary renewable energy; PENRE: Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials; PENRM: Use of non-renewable primary energy used as raw material; PENRT: Total use of non-renewable primary energy; SM: Use of secondary materials; RSF: Use of renewable secondary fuels; NRSF: Use of non-renewable secondary fuels; FW: Net use of running water resources; NR: Not relevant

Waste categories

Parameter	Units	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	2,30E-03	4,05E-10	2,79E-07	2,30E-03	2,15E-09	4,47E-08	0	0	0	NR	0	0	0	NR	6,44E-06	2,73E-06	1,09E-09	-1,48E-03
NHWD	kg	2,67E-01	1,99E-02	2,45E-01	5,32E-01	8,38E-02	5,99E+00	0	0	0	NR	0	0	0	NR	6,38E-03	1,82E-02	2,50E+02	-2,43E-01
RWD	kg	2,17E-01	2,45E-04	2,41E-03	2,20E-01	7,52E-04	4,53E-05	0	0	0	NR	0	0	0	NR	8,75E-05	3,72E-04	5,71E-04	-1,39E-01

HWD: Hazardous Waste Disposed; NHWD: Non-hazardous waste disposed of; RWD: Radioactive waste disposed of; NR: Not relevant

Output flows

Parameter	Units	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	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	0	0	NR	0	0	0	NR	0,00E+00	7,50E+02	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	6,82E-01	6,82E-01	0,00E+00	1,82E+01	0	0	0	NR	0	0	0	NR	0,00E+00	0,00E+00	0,00E+00	-2,19E-01
MER	kg	0,00E+00	0,00E+00	9,43E-02	9,43E-02	0,00E+00	5,95E-01	0	0	0	NR	0	0	0	NR	0,00E+00	0,00E+00	0,00E+00	-4,90E-02
EE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0	0	NR	0	0	0	NR	0,00E+00	0,00E+00	0,00E+00	0,00E+00

CRU: Components for reuse; MFR: Materials for recycling; MER: Materials for energy recovery; EE: Exported energy Electric; NR: Not relevant

Information on biogenic carbon content

Biogenic carbon content	Units	Result by declared functional unit
Product biogenic carbon content - KgC	Kg C	0,00E+00
Biogenic carbon content packaging - KgC	Kg C	6,50E-01

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