GlobalEPD

A VERIFIED ENVIRONMENTAL DECLARATION

AENOR

REPERO®
Cable Family U-1000 R2V multipolar

Environmental product declaration

EN ISO 14025:2010

EN 50693:2019

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Bruno Baldassari & F.lli S.p.A.

U-1000 R2V 0,6/1 kV Repero®

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 50693 serves as PCR for this EPD
Independent verification of the declaration and data in accordance with EN ISO 14025:2010 ☐Internal ☒External
Verification body AENOR Product certification body accredited by ENAC with accreditation Nº 1/C-PR468

1. General Information

1.1. The organization

Baldassari Cavi, founded in 1963, is one of the leading manufacturers of low voltage electrical cables, confirming the path taken of constant growth over the years in terms of turnover and production range.

Baldassari Cavi products represent the qualitative excellence achieved through years of research and experimentation, starting from raw materials selected and transformed with the most modern production processes to create cables that exceed all the requirements of the regulations. The quality of the products, which has always been a priority of the company, is recognized nationally and internationally and is confirmed by the numerous approvals obtained over the years.

Baldassari Cavi produces a wide range of cables that can be used for all types of use and works with the most important certification bodies in the cable market such as IMQ, AENOR, LCIE, VDE, CEBEC and others.

The company has been ISO 9001 certified since 1996 and ISO 14001 since 2014.

1.2. Scope of the declaration

This declaration describes the U-1000 R2V multicore cable family, under the REPERO® trademark, manufactured in the palnts of the Bruno Baldassari & F.lli company, located in:

- Marlia (Lucca, Italy) for the copper conductor
- Lammari (Lucca, Italy) for the insulation
- Salanetti (Lucca, Italy) for the packaging.

This declaration refers to the year 2023.

For each sub-family, 1 representative cable, i.e. the best-selling in 2023, and the cables with the smallest and largest cross-section sold in 2023, were evaluated to represent the environmental impact of the entire family.

Therefore, to describe the cable family, the data of the following cables are reported:

Subfamily with two conductors (2x):

- U1000 R2V 2x1.5, the representative cable of the subfamily and the cable with the smallest cross-section;
- U1000 R2V 2x35, The cable with the largest section;

Subfamily with 3 conductors (3x):

- U1000 R2V 3x2.5, the representative cable for the subfamily;
- U1000 R2V 3x1.5, the cable with the smallest cross-section;
- U1000 R2V 3x95, The cable with the largest cross-section;

Subfamily with four conductors (4x):

- U1000 R2V 4x1.5, the representative cable of the subfamily and the cable with the smallest cross-section;
- U1000 R2V 4x150, The cable with the largest cross-section;

Subfamily with five conductors (5x):

- U1000 R2V 5x1.5, the representative cable of the subfamily and the cable with the smallest cross-section;
- U1000 R2V 5x70, The cable with the largest cross-section;

1.3. Lifecycle and compliance.

This EPD has been developed and verified in accordance with UNE-EN ISO 14025:2010 and UNE- EN 50693:2019standards and the following Category Rule:

ABOUT CATEGORY RULES PRODUCT	
Title	Product category rules for life cycle assessments of electronic and electrical products and systems
Registration code and version	EN 50693:2019.
Issue Date	March 2020
Compliance	EN 50693:2019
Program Operator	AENOR

This Environmental Statement covers the following life cycle phases:

System limitations. Modules considered

Manufacturing	Raw materials	X
	Raw materials transport	X
	Manufacturing	X
Distribution	Distribution	X
Installation	Installation, process and waste	X
Use	Use	X
	Maintenance	NC
End of life stage	Deinstallation	NC
	Transport	X
	Waste treatment	X
	Waste disposal	X
	Benefits and loads beyond the life cycle	X

This EPD may not be comparable with those developed in other programs or according to different reference documents, in particular it may not be comparable with EPDs not drafted in accordance with the EN 50693:2019.

Similarly, this EPD may not be comparable if the source of the data is different (e.g. databases), if not all relevant modules are included, or if they are not based on the same scenarios.

The comparison of construction products must be carried out on the same function, applying the same functional unit and at the level of the building (or the architectural work or engineering), i.e. including the behavior of the product throughout its life cycle, as well as the specifications of section 6.7.2 of the UNE-EN ISO 14025 standard.

2.The product

2.1 Product Identification

The U1000 R2V family of cables consists of energy cables insulated with cross-linked polyethylene under a PVC sheath, flame-retardant and complying with the Construction Products Regulation, with copper conductor and non-hygroscopic material filler. They can have 2, 3, 4 or 5 conductors.

The CPC code is 4634.

The applicable regulations are:

- -Construction Products Regulation: EU Reg. 305/11.
- -Class in accordance with EN 50575:2014 + A1:2016 and EN 13501-6:2014: Eca
- -Build and requirements: XP C 32-321:2014
- -Flame spread: NF EN 60332-1-2
- -Low Voltage Directive: 2014/35/EU

Formation Formazione n° x mm²	*Approx. conductor Ø* Ø indicativo conduttore mm	*Average insulation thickness* Spessore medio isolante mm	*Minimum sheath thickness* Spessore minimo guaina mm	*Approx. production Ø* Ø indicativo produzione mm	*Approx. cable weight* Peso indicativo cavo kg/km	*Max. electrical resistance at 20°C* Resistenza elettrica *at 20°C* ohm/km	*Current rating* Portata di corrente *Free in air* In aria libera *30°C* A	 *Underground* Interrato *20°C* A
2 x 1,5	1,4	0,7	1,24	8,0	96	12,1	26	37
2 x 2,5	1,8	0,7	1,24	8,8	124	7,41	36	48
2 x 4	2,5	0,7	1,24	9,8	170	4,61	49	63
2 x 6	3,1	0,7	1,27	11,7	240	3,08	63	80
2 x 10	3,6	0,7	1,27	13,4	355	1,83	86	104
2 x 16	4,8	0,7	1,27	15,3	505	1,15	115	136
2 x 25	5,9	0,9	1,27	18,5	766	0,727	149	173
2 x 35	7,0	0,9	1,27	20,7	999	0,524	185	208
3 x 1,5	1,4	0,7	1,24	8,4	111	12,1	23	31
3 x 2,5	1,8	0,7	1,24	9,2	147	7,41	31	41
3 x 4	2,5	0,7	1,24	10,5	209	4,61	42	53
3 x 6	3,1	0,7	1,24	12,4	293	3,08	54	66
3 x 10	3,6	0,7	1,24	14,2	444	1,83	75	87
3 x 16	4,8	0,7	1,24	16,3	643	1,15	100	113
3 x 25	5,9	0,9	1,24	19,7	983	0,727	127	144
3 x 35	7,0	0,9	1,24	22,2	1297	0,524	158	174
3 x 50	8,2	1,0	1,24	25,2	1710	0,387	192	206
3 x 70	9,8	1,1	1,32	30,7	2520	0,268	246	254
3 x 95	11,4	1,1	1,40	34,5	3378	0,193	298	301
3 x 120	12,9	1,2	1,48	38,7	4233	0,153	346	343
3 x 150	14,2	1,4	1,64	43,1	5282	0,124	395	387
3 x 185	15,9	1,6	1,72	48,2	6518	0,0991	450	434
3 x 240	18,3	1,7	1,88	54,1	8525	0,0754	538	501
3 x 300	22,5	1,8	2,04	66,6	10736	0,0601	621	565

Formation Formazione	Approx. conductor Ø Ø indicativo conduttore	Average insulation thickness Spessore medio isolante	Minimum sheath thickness Spessore minimo guaina	Approx. production Ø Ø indicativo produzione	Approx. cable weight Peso indicativo cavo	Max. electrical resistance at 20°C Resistenza elettrica max a 20°C	Current rating Portata di corrente Free in air In aria libera 30°C	 Underground Interrato 20°C
n° x mm²	mm	mm	mm	mm	kg/km	ohm/km	A	A
4 x 1,5	1,4	0,7	1,24	9,1	132	12,1	23	31
4 x 2,5	1,8	0,7	1,24	10,1	180	7,41	31	41
4 x 4	2,5	0,7	1,24	11,4	255	4,61	42	53
4 x 6	3,1	0,7	1,24	13,8	362	3,08	54	66
4 x 10	3,6	0,7	1,24	15,9	558	1,83	75	87
4 x 16	4,8	0,7	1,24	18,1	809	1,15	100	113
4 x 25	5,9	0,9	1,24	22,0	1245	0,727	127	144
4 x 35	7,0	0,9	1,24	24,6	1643	0,524	158	174
4 x 50	8,2	1,0	1,32	28,3	2186	0,387	192	206
4 x 70	9,8	1,1	1,40	34,2	3206	0,268	246	254
4 x 95	11,4	1,1	1,48	38,4	4309	0,193	298	301
4 x 120	12,9	1,2	1,64	43,4	5420	0,153	346	343
4 x 150	14,2	1,4	1,72	48,3	6750	0,124	395	387
5 x 1,5	1,4	0,7	1,24	10,2	160	12,1	23	31
5 x 2,5	1,8	0,7	1,24	11,0	214	7,41	31	41
5 x 4	2,5	0,7	1,24	12,4	305	4,61	42	53
5 x 6	3,1	0,7	1,24	15,5	432	3,08	54	66
5 x 10	3,6	0,7	1,24	17,8	648	1,83	75	87
5 x 16	4,8	0,7	1,24	20,6	977	1,15	100	113
5 x 25	5,9	0,9	1,24	25,2	1510	0,727	127	144

2.2 Product Performance

The environmental performance of the cable are shown for 1 km of cable for each module (upstream, core, downstream) and for each stage (Manufacturing, Distribution, Installation, Use and End-oflife) of the life cycle.

The environmental impact indicators are quantified using the characterisation factors and impact assessment methods specified in EN 50693:2019.

The manufacturer declares the following information on the technical specifications of the product:

Product Performance

Cable	2x1,5	2x35	3x1,5	3x2,5	3x95	4x1,5	4x150	5x1,5	5x70
Electrical resistance 20°C (ohm/km)	12,1	0,524	12,1	7,41	0,193	12,1	0,124	12,1	0,268
Useful life (a)	30	30	30	30	30	30	30	30	30
Utilization Percentage	70%	70%	70%	70%	70%	70%	70%	70%	70%
Actual use life (a)	21	21	21	21	21	21	21	21	21

2.3 Product composition

The composition declared by the manufacturer is as follows:

Product composition

Cable	**2x1,5**	**2x35**	**3x1,5**	**3x2,5**	**3x95**	**4x1,5**	**4x150**	**5x1,5**	**5x70**
Copper	27,0%	57,9%	34,9%	42,8%	73,1%	39,2%	75,5%	41,3%	74,6%
PE	7,9%	9,1%	10,0%	9,0%	2,8%	11,2%	4,5%	12,9%	5,5%
PVC	65,1%	33,0%	55,1%	48,2%	24,1%	49,6%	20,0%	45,8%	19,9%
Cable weight (kg/km)	96	999	111	147	3378	132	6750	160	3940

3. LCA information

3.1 Life cycle analysis

This environmental statement aims to analyze the environmental impact of U-1000 R2V Multicore Range® cables.

The life cycle analysis of the cable family was carried out using a special software developed for Bruno Baldassari S.p.A. by the consulting firm LCE, based on the ISO 14040:2021 standard, and the EN 50693:2019.

The software is called “Baldassari WebTool”. The version used is the 1.1.0 and it’s based on the processes of Ecoinvent 3.9. This software has been verified by AENOR.

This EPD has been developed according to the GlobalEPD program.

3.2 Declared unit

The functional unit used for energy wires and cables is defined as follow:

“To transmit energy expressed for 1A over a distance of 1 km during X years and a Y% use rate in accordance with the relevant standard”

Therefore, this report has been drawn up considering the following parameters for functional unit definition:

- 1km for manufacturing, distribution, and end of life stages,
- 1km and 1 A for the usage stage, as suggested by the norm.

For all the aggregate data has been considered as allocation rule the percentage of production of the specific cable compared to the total production of the company

3.3 Reference Useful Life (RSL)

The useful life of the product has been considered in accordance with the reference as defined in the table given in Appendix 1 of the specific rules for wire cables and accessories (PSR0001-ed.4-EN-2022 11 16), considering that the company produces building cable for residential, tertiary and industrial use (except LAN), therefore a useful life of 30 years with a use of 70% (therefore 21 effective years).

3.4 Allocation criteria

Some parameters have been assigned in proportion to the tons of cable produced compared to the total tons produced.

These parameters are:

- The auxiliary materials used in the production
- Emissions from the manufacturing process
- Internal transport
- The waste produced
- Production waste
- The shipping packaging of the cables.
- Water consumption

3.5 Representativeness, quality and selection of data

For the development of this study, we have taken into account the data quality requirements established by the standards:

- UNI EN 15804:2019;
- UNI EN ISO 14040:2021;
- UNI EN ISO 14044:2022;

Global EPD (managed by Aenor) with reference to PCR of PEP Ecopassport: PCR, PSR wire and cables

The software used for LCA calculations is the "Baldassari Webtool" as describes in 3.1.

Primary inventory data was collected through questionnaires filled out and entered into the tool. The entire product covered by this EPD was manufactured in Italy and distributed in France.

The Ecoinvent database 3.9 was used for secondary data.

3.6 Quality data evaluation

Data quality can be classified as follows:

- Primary data: quantified value of a process or an activity obtained from a direct measurement, or a calculation based on direct measurements.
- Site-specific data: primary data obtained within the product system.
- Secondary data: data which do not fulfil the requirements for primary data. They can include data from databases and published literature, default emission factors from national inventories, calculated data, estimates or other representative data, validated by competent authorities.

Background database to model each involved material and energy flow and other data is Ecoinvent 3.9, implemented in SimaPro 9.3.0.2 software. The evaluation of the used process is reported in LCA report.

Further details on data quality are specified in the following paragraphs, per each phase considered.

3.7 Cut-off criteria

Cut-off criteria are used to exclude from the analysis critical aspects which impact is expected to be low or negligible and which primary data are rather hard to collect. In this study the following flows have been included in the cut-off:

- Packaging of raw materials as they are delivered to the manufacturer.
- Temporary packaging for internal transport.
- Wastewater from core processes.
- Considering the wide range of possible installation of the products, as suggested by reference PCR, installation processes are excluded from the system boundaries. Yet, the packaging treatment of the product is considered as a waste flow in this phase.
- Maintenance, Repair, Replacement and Refurbishment are not part of the life cycle of these products. Their contribution to cable life cycle impacts is considered negligible according to technology review provided by cable manufacturers.
- Considering the wide range of possible removal process of these products, the removal process and/or dismantling of cables are excluded from the perimeter.

3.8 Other calculation Criteria and hypotheses

The main assumptions made during the study are detailed below.

- For Ecoinvent processes, the "Cut-off" criterion applies.
- For the consumption and energy mix data related to the cable manufacturing process, the energy supplier's data was used. The company has a self-generated energy only for self-consumption. The impact of the energy is:

  0,7843 kgCO2/Kwh

- For the end-of-life scenario of the waste generated at different stages of the life cycle, recycling landfill and incineration percentages have been applied,
- In the use phase, it was held that energy dissipated on the basis of electrical resistance and service life of each Cable according to the following formula:

$$E[J.km-1] = R[\Omega.km-1] \times I2\ [A2] \times \Delta t\ [y]$$

Consumption is expressed in J*km-1, considering that the functional unit is given for 1A and 1km of cable. Electrical resistance is a characteristic of the cable, described in the data sheets. A service life of 30 years is taken into account, and usage ratio of 70%, as indicated on by the SPECIFIC RULES FOR Wires, Cables and Appendix 1 of PEP ecopassport® – PSR.

4. System boundaries, Scenarios and Additional Technical info

4.1 Manufactoring

Raw Materials:

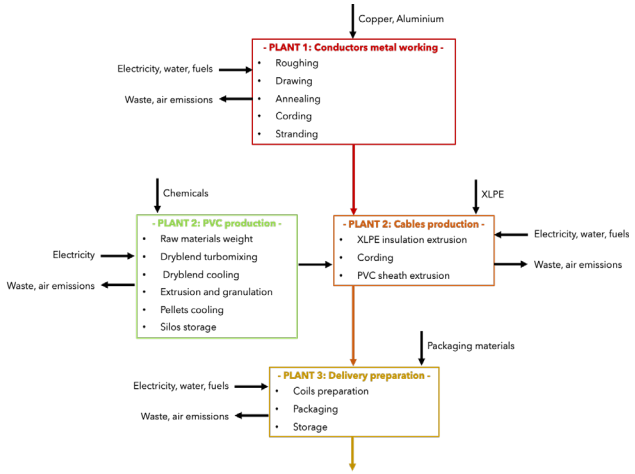
All raw materials used in the production of all cable components were considered. The cables in question are manufactured in the factories of Bruno Baldassari & F.lli S.p.A. located in Capannori, in the province of Lucca, Italy.

Raw material transport

The transport of raw materials was calculated on the basis of the distance between the suppliers and the Bruno Baldassari & F.lli S.p.A. plant. Transport by trucks that comply with the EURO VI standard was considered.

Manufactoring

This module includes all the production that takes place within the Bruno Baldassari & F.lli S.p.A. plants, including the use of auxiliary materials, water, natural gas, production waste, which have been considered in proportion to the production of the cables considered. The scheme below shows the main steps inside each plant, where plants 1 is Marlia, plants 2 is Lammari and plants 3 is Salanetti.



4.2 Distribution

Transport by truck to the cable's reference country, in this case France, was considered. We considered an average distance of 950km

4.3 Installation

The installation of the cables was not considered due to the possible different method, but the packaging waste are considered in this phase.

4.4 Use

For the use phase, the energy consumption during the use of the cable that is based on the dissipated energy calculated on the basis of the electrical resistance and the useful life of the product, as specified in point 3.3, with the energy mix of the reference country, in this case France.

4.5 End of life stage

The end of life of the product has been established as follows following the % suggested by the PEP for recovery, recycling, incineration and landfill.

- Everything that is identified as SHEATH: 50% energy recovery, 50% in landfill.
- Everything that is identified as METAL: 60% recycling, 40% landfill (conservative hypothesis of copper, aluminium associated with this hypothesis for simplicity).

In addition, the entire cable is associated with a 50km transport by road with light vehicle and a manual disassembly process.

All the stages in the module are added in a unique result in chapter 5.

4.7 Benefits and burdens beyond the system

This considers the advantages of recycling beyond the boundaries of the system, representing the amount of virgin raw material replaced by recycled raw material, and therefore with a positive impact, but outside the limits of the system. To logically evaluate this module, the criteria of the EN 50693 standard are followed, applying the recyclability values recommended by the European Commission. In addition, it is considered a parameter that identifies the quality of the waste leaving as recyclable material on the market.

5. LCA and Environmental Parameters Declaration

Environmental impacts

U-1000 R2V 2X1.5

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

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
GWP-Total	kg CO2 eq	448,73	7,42	0,39	155,69	97,28	-114,38
GWP-fossil	kg CO2 eq	445,83	7,42	0,28	155,02	97,23	-114,00
GWP-biogenic	kg CO2 eq	2,28	0,00	0,11	0,60	0,03	-0,17
GWP-luluc	kg CO2 eq	0,62	0,00	0,00	0,07	0,03	-0,21
ODP	kg CFC11 eq	0,00	0,00	0,00	0,00	0,00	0,00
AP	Equalizer of mole H+	24,46	0,03	0,00	0,56	0,08	-1,25
EP-water sweet	kg P eq	0,08	0,00	0,00	0,00	0,00	-0,01
EP-marine	kg N eq	1,01	0,01	0,00	0,13	0,02	-0,20
EP-terrestrial	Mole N eq	14,18	0,12	0,00	1,32	0,25	-2,68
POCP	Kg NMVOC eq	4,52	0,04	0,00	0,46	0,07	-0,66
ADP-Minerals and metals [2]	kg Sb eq	0,33	0,00	0,00	0,00	0,00	-0,06
ADP-fossil [2]	MJ	7.370,93	98,02	1,69	25.570,72	198,84	-1.489,54
WDP [2]	m3	433,59	0,09	-0,01	50,05	5,68	-54,98

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 reaching the final seawater compartment; **EP-terrestrial**: eutrophication potential, accumulated surplus; **POCP:** Ground-level ozone formation potential; **ADP-minerals and metalsPotential for depletion of abiotic resources for non-fossil resources; APD-fossil**: potential for depletion of abiotic resources for fossil resources; **WDP**: Water deprivation potential (user), weighted deprivation consumption for water. **NR:** Not relevant

Additional environmental impacts

U-1000 R2V 2X1.5

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PM	Incidence of diseases	0	0	0	0	0	0
IRP [1]	kBq U235 eq	24,67	0,02	0,00	257,26	0,67	-4,81
ETP-fw [2]	CTUe	21.473,04	43,95	1,28	369,16	202,01	-2.918,98
HTP-c [2]	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
HTP-nc [2]	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
SQP [2]	-	7.709,41	0,19	0,25	554,06	24,63	-1.189,59

PM: Potential incidence of diseases due to emissions of particulate matter (PM); IRP : Human potential exposure efficiency relative to U235; ETP-fw : Comparative potential of toxic unit for ecosystems - freshwater; HTP-c : Comparative potential of toxic unit for ecosystems - carcinogenic effects; HTP-nc : Comparative potential of toxic unit for ecosystems non-carcinogenic effects; SQP : Soil quality potential index; NR: Not relevant

Notice 1: This impact category deals mainly with the eventual impacts of low doses of ionizing radiation on human health, of 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 potential for ionizing radiation of the soil, due to radon or some building materials is not measured with this parameter either.

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

Resource Utilization

U-1000 R2V 2X1.5

Parameter	Parameter	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PERE	MJ	1.031,46	0,26	0,01	1.778,79	18,86	-311,44
PERM	MJ	54,42	0,00	0,00	0,00	0,00	0,00
PERT	MJ	1.085,88	0,26	0,01	1.778,79	18,86	-311,44
PENRE	MJ	7.691,63	99,05	1,74	25.891,96	251,48	-1.851,83
PENRM	MJ	1.034,06	0,00	0,00	0,00	0,00	0,00
PENRT	MJ	8.725,69	99,05	1,74	25.891,96	251,48	-1.851,83
SM	Kg	0,17	0,00	0,00	0,00	0,00	5,63
RSF (RSF)	MJ	0,11	0,00	0,00	0,00	0,00	0,00
NRSF	MJ	0,00	0,00	0,00	0,00	0,00	0,00
FW	m3	10,39	0,00	0,00	6,82	0,20	-2,39

PERE: Use of renewable primary energy, excluding renewable primary energy resources used as feedstocks; **PERM:** Use of renewable primary energy used as a feedstock; **PERT:** Total use of renewable primary energy; **PENRE:** Use of non-renewable primary energy, excluding non-renewable primary energy resources used as feedstocks; **PENRM:** Use of non-renewable primary energy used as a feedstock; **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 piped water resources; **NR:** Not relevant

Waste Categories

U-1000 R2V 2X1.5

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
HWD	Kg	0,04	0,00	0,00	0,00	0,00	-0,02
NHWD	Kg	1,06	0,00	0,02	0,00	45,29	-5,11
RWD	Kg	0,00	0,00	0,00	0,00	0,00	0,00

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

Output flows

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
CRU	Kg	0,00	0,00	0,00	0,00	0,00	0,00
MFR	Kg	3,11	0,00	0,12	0,00	15,50	0,14
MER	Kg	0,24	0,00	0,00	0,00	34,95	0,00
USA	MJ	0,00	0,00	0,00	0,00	0,00	0,00

CRU: Components for reuse; **MFRs**: Recycling Materials; **MER:** Materials for energy recovery; **EE:** Exported energy; **NR:** Not relevant

Biogenic Carbon Content Information

Biogenic carbon content	Unit	Profit per reported functional unit
Biogenic carbon content product - KgC	Kg C	
Biogenic carbon content packaging- KgC	Kg C	3482.46

Environmental impacts

U-1000 R2V 2X35

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	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
GWP-total	kg CO2 eq	10.426,35	78,57	0,39	4,98	865,70	-3.025,43
GWP-fossil	kg CO2 eq	10.339,19	78,56	0,28	4,96	864,96	-3.015,11
GWP-biogenic	kg CO2 eq	69,39	0,00	0,11	0,02	0,38	-4,17
GWP-luluc	kg CO2 eq	17,77	0,00	0,00	0,00	0,36	-6,16
ODP	kg CFC11 eq	0,00	0,00	0,00	0,00	0,00	0,00
AP	Mole Equalizer H+	769,16	0,28	0,00	0,02	1,10	-38,81
EP-fresh water	kg P eq	2,41	0,00	0,00	0,00	0,01	-0,41
EP-marine	kg N eq	29,64	0,12	0,00	0,00	0,27	-6,07
EP-terrestrial	Mole N eq	423,82	1,27	0,00	0,04	2,95	-83,37
POCP	Kg NMVOC eq	132,55	0,43	0,00	0,01	0,86	-20,04
ADP-Minerals and metals [2]	kg Sb eq	10,63	0,00	0,00	0,00	0,00	-1,89
ADP-fossil [2]	MJ	146.080,65	1.037,59	1,69	817,84	2.787,92	-36.398,76
WDP [2]	m3	12.225,38	0,95	-0,01	1,60	58,02	-1.704,83

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 reaching the final seawater compartment; **EP-terrestrial**: eutrophication potential, accumulated surplus; **POCP:** Ground-level ozone formation potential; **ADP-minerals and metalsPotential for depletion of abiotic resources for non-fossil resources; APD-fossil**: potential for depletion of abiotic resources for fossil resources; **WDP**: Water deprivation potential (user), weighted deprivation consumption for water. **NR:** Not relevant

Additional environmental impacts

U-1000 R2V 2X35

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PM	Incidence of diseases	0	0	0	0	0	0
IRP [1]	kBq U235 eq	568,60	0,17	0,00	8,23	9,69	-102,05
ETP-fw [2]	CTUe	664.113,30	465,23	1,28	11,81	1.857,85	-92.961,92
HTP-c [2]	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
HTP-nc [2]	CTUh	0,01	0,00	0,00	0,00	0,00	0,00
SQP [2]	-	219.763,24	1,97	0,25	17,72	337,04	-37.449,24

PM: Potential incidence of diseases due to emissions of particulate matter (PM); IRP : Human potential exposure efficiency relative to U235; ETP-fw : Comparative potential of toxic unit for ecosystems - freshwater; HTP-c : Comparative potential of toxic unit for ecosystems - carcinogenic effects; HTP-nc : Comparative potential of toxic unit for ecosystems non-carcinogenic effects; SQP : Soil quality potential index; NR: Not relevant

Notice 1: This impact category deals mainly with the eventual impacts of low doses of ionizing radiation on human health, of 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 potential for ionizing radiation of the soil, due to radon or some building materials is not measured with this parameter either.

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

Resource Utilization

U-1000 R2V 2X35

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PERE	MJ	29.574,73	2,73	0,01	56,89	269,58	-8.906,84
PERM	MJ	54,42	0,00	0,00	0,00	0,00	0,00
PERT	MJ	29.629,15	2,73	0,01	56,89	269,58	-8.906,84
PENRE	MJ	171.771,57	1.048,48	1,74	828,11	3.534,51	-46.261,67
PENRM	MJ	7.820,19	0,00	0,00	0,00	0,00	0,00
PENRT	MJ	179.591,76	1.048,48	1,74	828,11	3.534,51	-46.261,67
SM	Kg	0,17	0,00	0,00	0,00	0,00	180,53
RSF (RSF)	MJ	0,11	0,00	0,00	0,00	0,00	0,00
NRSF	MJ	0,00	0,00	0,00	0,00	0,00	0,00
FW	m3	297,21	0,04	0,00	0,22	2,13	-72,35

PERE: Use of renewable primary energy, excluding renewable primary energy resources used as feedstocks; **PERM:** Use of renewable primary energy used as a feedstock; **PERT:** Total use of renewable primary energy; **PENRE:** Use of non-renewable primary energy, excluding non-renewable primary energy resources used as feedstocks; **PENRM:** Use of non-renewable primary energy used as a feedstock; **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 piped water resources; **NR:** Not relevant

Waste Categories

U-1000 R2V 2X35

Parametro	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
HWD	Kg	0,04	0,00	0,00	0,00	0,00	-0,66
NHWD	Kg	1,12	0,00	0,02	0,00	609,29	-164,01
RWD	Kg	0,00	0,00	0,00	0,00	0,00	0,00

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

Output flows

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
CRU	Kg	0,00	0,00	0,00	0,00	0,00	0,00
MFR	Kg	3,11	0,00	0,12	0,00	497,57	4,37
MER	Kg	0,24	0,00	0,00	0,00	277,58	0,00
USA	MJ	0,00	0,00	0,00	0,00	0,00	0,00

CRU: Components for reuse; **MFRs**: Recycling Materials; **MER:** Materials for energy recovery; **EE:** Exported energy; **NR:** Not relevant

Biogenic Carbon Content Information

Biogenic carbon content	Unit	Profit per reported functional unit
Biogenic carbon content product - KgC	Kg C	
Biogenic carbon content packaging- KgC	Kg C	117.72

Environmental impacts

U-1000 R2V 3X1.5

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	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
GWP-total	kg CO2 eq	604,26	8,57	0,39	155,69	102,48	-159,15
GWP-fossil	kg CO2 eq	600,01	8,57	0,28	155,02	102,41	-158,61
GWP-biogenic	kg CO2 eq	3,36	0,00	0,11	0,60	0,03	-0,23
GWP-luluc	kg CO2 eq	0,90	0,00	0,00	0,07	0,03	-0,30
ODP	kg CFC11 eq	0,00	0,00	0,00	0,00	0,00	0,00
AP	Mole Equalizer H+	36,41	0,03	0,00	0,56	0,10	-1,85
EP-freash water	kg P eq	0,12	0,00	0,00	0,00	0,00	-0,02
EP-marine	kg N eq	1,47	0,01	0,00	0,13	0,03	-0,29
EP-terrestrial	Mole N eq	20,71	0,14	0,00	1,32	0,27	-3,97
POCP	Kg NMVOC eq	6,57	0,05	0,00	0,46	0,08	-0,97
ADP-Minerals and metals [2]	kg Sb eq	0,50	0,00	0,00	0,00	0,00	-0,09
ADP-fossil [2]	MJ	9.544,12	113,19	1,69	25.570,72	229,07	-2.014,75
WDP [2]	m3	626,07	0,10	-0,01	50,05	6,13	-81,33

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 reaching the final seawater compartment; **EP-terrestrial**: eutrophication potential, accumulated surplus; **POCP:** Ground-level ozone formation potential; **ADP-minerals and metalsPotential for depletion of abiotic resources for non-fossil resources; APD-fossil**: potential for depletion of abiotic resources for fossil resources; **WDP**: Water deprivation potential (user), weighted deprivation consumption for water. **NR:** Not relevant

Additional environmental impacts

U-1000 R2V 3X1.5

Parameter	Parameter	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PM	Incidence of diseases	0	0	0	0	0	0
IRP [1]	kBq U235 eq	32,89	0,02	0,00	257,26	0,78	-6,21
ETP-fw [2]	CTUe	31.706,27	50,75	1,28	369,16	213,95	-4.364,78
HTP-c [2]	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
HTP-nc [2]	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
SQP [2]	-	11.071,73	0,22	0,25	554,06	28,21	-1.770,41

PM: Potential incidence of diseases due to emissions of particulate matter (PM); IRP : Human potential exposure efficiency relative to U235; ETP-fw : Comparative potential of toxic unit for ecosystems - freshwater; HTP-c : Comparative potential of toxic unit for ecosystems - carcinogenic effects; HTP-nc : Comparative potential of toxic unit for ecosystems non-carcinogenic effects; SQP : Soil quality potential index; NR: Not relevant

Notice 1: This impact category deals mainly with the eventual impacts of low doses of ionizing radiation on human health, of 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 potential for ionizing radiation of the soil, due to radon or some building materials is not measured with this parameter either.

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

Resource Usage

U-1000 R2V 3X1.5

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PERE	MJ	1.491,25	0,30	0,01	1.778,79	21,83	-446,22
PERM	MJ	54,42	0,00	0,00	0,00	0,00	0,00
PERT	MJ	1.545,66	0,30	0,01	1.778,79	21,83	-446,22
PENRE	MJ	10.220,36	114,38	1,74	25.891,96	289,88	-2.524,23
PENRM	MJ	1.184,41	0,00	0,00	0,00	0,00	0,00
PENRT	MJ	11.404,76	114,38	1,74	25.891,96	289,88	-2.524,23
SM	Kg	0,17	0,00	0,00	0,00	0,00	8,44
RSF (RSF)	MJ	0,11	0,00	0,00	0,00	0,00	0,00
NRSF	MJ	0,00	0,00	0,00	0,00	0,00	0,00
FW	m3	14,99	0,00	0,00	6,82	0,22	-3,50

PERE: Use of renewable primary energy, excluding renewable primary energy resources used as feedstocks; **PERM:** Use of renewable primary energy used as a feedstock; **PERT:** Total use of renewable primary energy; **PENRE:** Use of non-renewable primary energy, excluding non-renewable primary energy resources used as feedstocks; **PENRM:** Use of non-renewable primary energy used as a feedstock; **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 piped water resources; **NR:** Not relevant

Waste Categories

U-1000 R2V 3X1.5

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
HWD	Kg	0,04	0,00	0,00	0,00	0,00	-0,03
NHWD	Kg	1,06	0,00	0,02	0,00	51,68	-7,67
RWD	Kg	0,00	0,00	0,00	0,00	0,00	0,00

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

Output flows

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
CRU	Kg	0,00	0,00	0,00	0,00	0,00	0,00
MFR	Kg	3,11	0,00	0,12	0,00	23,26	0,20
MER	Kg	0,24	0,00	0,00	0,00	36,18	0,00
USA	MJ	0,00	0,00	0,00	0,00	0,00	0,00

CRU: Components for reuse; **MFRs**: Recycling Materials; **MER:** Materials for energy recovery; **EE:** Exported energy; **NR:** Not relevant

Biogenic Carbon Content Information

Biogenic carbon content	Unit	Profit per reported functional unit
Biogenic carbon content product - KgC	Kg C	
Biogenic carbon content packaging- KgC	Kg C	26495.89

Environmental impacts

U-1000 R2V 3X95

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	Unità	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
GWP-total	kg CO2 eq	29.502,44	250,10	0,39	2,48	1.600,77	-8.762,59
GWP-fossil	kg CO2 eq	29.243,83	250,08	0,28	2,47	1.598,97	-8.732,57
GWP-biogenic	kg CO2 eq	206,31	0,01	0,11	0,01	0,91	-11,88
GWP-luluc	kg CO2 eq	52,30	0,00	0,00	0,00	0,89	-18,14
ODP	kg CFC11 eq	0,00	0,00	0,00	0,00	0,00	0,00
AP	Mole Equalizer H+	2.292,89	0,88	0,00	0,01	2,58	-115,42
EP-fresh water	kg P eq	7,16	0,00	0,00	0,00	0,02	-1,20
EP-marine	kg N eq	87,45	0,38	0,00	0,00	0,62	-18,05
EP-terrestre	Talpa N eq	1.254,09	4,05	0,00	0,02	6,67	-248,05
POCP	Kg NMVOC eq	390,99	1,36	0,00	0,01	1,97	-59,37
ADP-Minerals and metals [2]	kg Sb eq	31,77	0,00	0,00	0,00	0,00	-5,66
ADP-fossil [2]	MJ	399.944,77	3.302,83	1,69	407,86	6.762,38	-103.828,45
WDP [2]	m3	35.908,68	3,02	-0,01	0,80	119,11	-5.070,67

GWP - totale: potenziale di riscaldamento globale; **GWP - fossile**: Potenziale di riscaldamento globale dei combustibili fossili; **GWP - biogenico**: Potenziale biogenico di riscaldamento globale; **GWP - luluc** : Potenziale di riscaldamento globale dell'uso del suolo e del cambiamento di uso del suolo; **ODP**: Potenziale di riduzione dell'ozono stratosferico; **AP:** Potenziale di acidificazione, eccedenza accumulata; **EP-acqua dolce**: Potenziale di eutrofizzazione, frazione di nutrienti che raggiungono il comparto finale di acqua dolce; **EP-marine**: Potenziale di eutrofizzazione, frazione di nutrienti che raggiungono il compartimento finale dell'acqua di mare; **EP-terrestre**: potenziale di eutrofizzazione, surplus accumulato; **POCP:** Potenziale di formazione di ozono troposferico; **ADP-minerali e metalliPotenziale di esaurimento delle risorse abiotiche per le risorse non fossili; APD-fossile**: potenziale di esaurimento delle risorse abiotiche per le risorse fossili; **WDP**: Potenziale di privazione idrica (utente), consumo di deprivazione ponderato per l'acqua. **NR:** Non rilevante

Ulteriori impatti ambientali

U-1000 R2V 3X95

Parameter	Unità	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PM	Incidence of diseases	0,00	0,00	0,00	0,00	0,00	0,00
IRP [1]	kBq U235 eq	1.612,39	0,53	0,00	4,10	23,74	-282,16
ETP-fw [2]	CTUe	1.974.959,40	1.480,90	1,28	5,89	3.530,30	-277.609,84
HTP-c [2]	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
HTP-nc [2]	CTUh	0,03	0,00	0,00	0,00	0,00	0,00
SQP [2]	-	649.958,75	6,28	0,25	8,84	809,27	-111.641,38

PM: Potential incidence of diseases due to emissions of particulate matter (PM); IRP : Human potential exposure efficiency relative to U235; ETP-fw : Comparative potential of toxic unit for ecosystems - freshwater; HTP-c : Comparative potential of toxic unit for ecosystems - carcinogenic effects; HTP-nc : Comparative potential of toxic unit for ecosystems non-carcinogenic effects; SQP : Soil quality potential index; NR: Not relevant

Notice 1: This impact category deals mainly with the eventual impacts of low doses of ionizing radiation on human health, of 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 potential for ionizing radiation of the soil, due to radon or some building materials is not measured with this parameter either.

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

Resource Usage

U-1000 R2V 3X95

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PERE	MJ	87.225,43	8,68	0,01	28,37	658,99	-26.152,12
PERM	MJ	54,42	0,00	0,00	0,00	0,00	0,00
PERT	MJ	87.279,85	8,68	0,01	28,37	658,99	-26.152,12
PENRE	MJ	481.992,84	3.337,50	1,74	412,99	8.581,83	-132.543,23
PENRM	MJ	13.936,98	0,00	0,00	0,00	0,00	0,00
PENRT	MJ	495.929,82	3.337,50	1,74	412,99	8.581,83	-132.543,23
SM	Kg	0,17	0,00	0,00	0,00	0,00	539,73
RSF (RSF)	MJ	0,11	0,00	0,00	0,00	0,00	0,00
NRSF	MJ	0,00	0,00	0,00	0,00	0,00	0,00
FW	m3	873,91	0,14	0,00	0,11	4,50	-214,34

PERE: Use of renewable primary energy, excluding renewable primary energy resources used as feedstocks; **PERM:** Use of renewable primary energy used as a feedstock; **PERT:** Total use of renewable primary energy; **PENRE:** Use of non-renewable primary energy, excluding non-renewable primary energy resources used as feedstocks; **PENRM:** Use of non-renewable primary energy used as a feedstock; **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 piped water resources; **NR:** Not relevant

Waste Categories

U-1000 R2V 3X95

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
HWD	Kg	0,04	0,00	0,00	0,00	0,00	-1,99
NHWD	Kg	1,16	0,00	0,02	0,00	1.452,11	-490,32
RWD	Kg	0,00	0,00	0,00	0,00	0,00	0,00

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

Output flows

Parameterr	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
CRU	Kg	0,00	0,00	0,00	0,00	0,00	0,00
MFR	Kg	3,11	0,00	0,12	0,00	1.487,55	13,07
MER	Kg	0,24	0,00	0,00	0,00	460,41	0,00
USA	MJ	0,00	0,00	0,00	0,00	0,00	0,00

CRU: Components for reuse; **MFRs**: Recycling Materials; **MER:** Materials for energy recovery; **EE:** Exported energy; **NR:** Not relevant

Biogenic Carbon Content Information

Biogenic carbon content	Unit	Profit per reported functional unit
Biogenic carbon content product - KgC	Kg C	0
Biogenic carbon content product - KgC	Kg C	1.24

Environmental impacts

U-1000 R2V 3X2.5

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	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
GWP-total	kg CO2 eq	886,52	11,26	0,39	95,34	121,86	-245,85
GWP-fossil	kg CO2 eq	879,73	11,26	0,28	94,93	121,78	-245,01
GWP-biogenic	kg CO2 eq	5,38	0,00	0,11	0,37	0,04	-0,35
GWP-luluc	kg CO2 eq	1,41	0,00	0,00	0,04	0,04	-0,48
ODP	kg CFC11 eq	0,00	0,00	0,00	0,00	0,00	0,00
AP	Equalizzatore della talpa H+	58,81	0,04	0,00	0,34	0,12	-2,98
EP-acqua dolce	kg P eq	0,19	0,00	0,00	0,00	0,00	-0,03
EP-marine	kg N eq	2,32	0,02	0,00	0,08	0,03	-0,47
EP-terrestrial	Talpa N eq	32,95	0,18	0,00	0,81	0,35	-6,40
POCP	Kg NMVOC eq	10,38	0,06	0,00	0,28	0,10	-1,55
ADP-Minerals and metals [2]	kg Sb eq	0,81	0,00	0,00	0,00	0,00	-0,14
ADP-fossil [2]	MJ	13.449,48	148,71	1,69	15.659,43	301,11	-3.048,31
WDP [2]	m3	978,66	0,14	-0,01	30,65	7,50	-130,98

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 reaching the final seawater compartment; **EP-terrestrial**: eutrophication potential, accumulated surplus; **POCP:** Ground-level ozone formation potential; **ADP-minerals and metalsPotential for depletion of abiotic resources for non-fossil resources; APD-fossil**: potential for depletion of abiotic resources for fossil resources; **WDP**: Water deprivation potential (user), weighted deprivation consumption for water. **NR:** Not relevant

Additional environmental impacts

U-1000 R2V 3X2.5

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PM	Incidence of diseases	0,00	0,00	0,00	0,00	0,00	0,00
IRP [1]	kBq U235 eq	48,96	0,02	0,00	157,55	1,03	-9,06
ETP-fw [2]	CTUe	51.028,77	66,68	1,28	226,07	256,12	-7.078,89
HTP-c [2]	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
HTP-nc [2]	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
SQP [2]	-	17.442,18	0,28	0,25	339,31	36,87	-2.862,62

PM: Potential incidence of diseases due to emissions of particulate matter (PM); IRP : Human potential exposure efficiency relative to U235; ETP-fw : Comparative potential of toxic unit for ecosystems - freshwater; HTP-c : Comparative potential of toxic unit for ecosystems - carcinogenic effects; HTP-nc : Comparative potential of toxic unit for ecosystems non-carcinogenic effects; SQP : Soil quality potential index; NR: Not relevant

Notice 1: This impact category deals mainly with the eventual impacts of low doses of ionizing radiation on human health, of 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 potential for ionizing radiation of the soil, due to radon or some building materials is not measured with this parameter either.

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

Resource Usage

U-1000 R2V 3X2.5

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PERE	MJ	2.344,35	0,39	0,01	1.089,33	28,83	-703,59
PERM	MJ	54,42	0,00	0,00	0,00	0,00	0,00
PERT	MJ	2.398,77	0,39	0,01	1.089,33	28,83	-703,59
PENRE	MJ	14.852,99	150,27	1,74	15.856,15	381,26	-3.841,32
PENRM	MJ	1.379,19	0,00	0,00	0,00	0,00	0,00
PENRT	MJ	16.232,17	150,27	1,74	15.856,15	381,26	-3.841,32
SM	Kg	0,17	0,00	0,00	0,00	0,00	13,71
RSF (RSF)	MJ	0,11	0,00	0,00	0,00	0,00	0,00
NRSF	MJ	0,00	0,00	0,00	0,00	0,00	0,00
FW	m3	23,55	0,01	0,00	4,17	0,27	-5,61

PERE: Use of renewable primary energy, excluding renewable primary energy resources used as feedstocks; **PERM:** Use of renewable primary energy used as a feedstock; **PERT:** Total use of renewable primary energy; **PENRE:** Use of non-renewable primary energy, excluding non-renewable primary energy resources used as feedstocks; **PENRM:** Use of non-renewable primary energy used as a feedstock; **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 piped water resources; **NR:** Not relevant

Waste Categories

U-1000 R2V 3X2.5

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
HWD	Kg	0,04	0,00	0,00	0,00	0,00	-0,05
NHWD	Kg	1,06	0,00	0,02	0,00	67,27	-12,46
RWD	Kg	0,00	0,00	0,00	0,00	0,00	0,00

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

Output flows

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
CRU	Kg	0,00	0,00	0,00	0,00	0,00	0,00
MFR	Kg	3,11	0,00	0,12	0,00	37,79	0,33
MER	Kg	0,24	0,00	0,00	0,00	42,07	0,00
USA	MJ	0,00	0,00	0,00	0,00	0,00	0,00

CRU: Components for reuse; **MFRs**: Recycling Materials; **MER:** Materials for energy recovery; **EE:** Exported energy; **NR:** Not relevant

Biogenic Carbon Content Information

Biogenic carbon content	Unità	Profit per reported functional unit
Profit per reported functional unit- KgC	Kg C	
Biogenic carbon content packaging- KgC	Kg C	50.94

Environmental impacts

U-1000 R2V 4X1.5

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	Parameter	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
GWP-Total	kg CO2 eq	806,95	10,13	0,39	155,69	115,17	-206,23
GWP-fossil	kg CO2 eq	801,31	10,13	0,28	155,02	115,10	-205,53
GWP-biogenic	kg CO2 eq	4,46	0,00	0,11	0,60	0,04	-0,30
GWP-luluc	kg CO2 eq	1,18	0,00	0,00	0,07	0,03	-0,40
ODP	kg CFC11 eq	0,00	0,00	0,00	0,00	0,00	0,00
AP	Mole Equalizer H+	48,55	0,04	0,00	0,56	0,11	-2,46
EP-fresh water	kg P eq	0,15	0,00	0,00	0,00	0,00	-0,03
EP-marine	kg N eq	1,95	0,02	0,00	0,13	0,03	-0,39
EP-terrestrial	Mole N eq	27,56	0,16	0,00	1,32	0,32	-5,27
POCP	Kg NMVOC eq	8,76	0,06	0,00	0,46	0,09	-1,28
ADP-Minerals and metals [2]	kg Sb eq	0,66	0,00	0,00	0,00	0,00	-0,12
ADP-fossil [2]	MJ	12.440,69	133,82	1,69	25.570,72	271,33	-2.579,85
WDP [2]	m3	829,51	0,12	-0,01	50,05	6,99	-107,97

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 reaching the final seawater compartment; **EP-terrestrial**: eutrophication potential, accumulated surplus; **POCP:** Ground-level ozone formation potential; **ADP-minerals and metalsPotential for depletion of abiotic resources for non-fossil resources; APD-fossil**: potential for depletion of abiotic resources for fossil resources; **WDP**: Water deprivation potential (user), weighted deprivation consumption for water. **NR:** Not relevant

Additional environmental impacts

U-1000 R2V 4X1.5

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PM	Incidence of diseases	0,00	0,00	0,00	0,00	0,00	0,00
IRP [1]	kBq U235 eq	41,98	0,02	0,00	257,26	0,93	-7,79
ETP-fw [2]	CTUe	42.098,00	60,00	1,28	369,16	241,28	-5.818,70
HTP-c [2]	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
HTP-nc [2]	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
SQP [2]	-	14.502,65	0,25	0,25	554,06	33,31	-2.355,95

PM: Potential incidence of diseases due to emissions of particulate matter (PM); IRP : Human potential exposure efficiency relative to U235; ETP-fw : Comparative potential of toxic unit for ecosystems - freshwater; HTP-c : Comparative potential of toxic unit for ecosystems - carcinogenic effects; HTP-nc : Comparative potential of toxic unit for ecosystems non-carcinogenic effects; SQP : Soil quality potential index; NR: Not relevant

Notice 1: This impact category deals mainly with the eventual impacts of low doses of ionizing radiation on human health, of 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 potential for ionizing radiation of the soil, due to radon or some building materials is not measured with this parameter either.

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

Resource Usage

U-1000 R2V 4X1.5

Parametro	Unità	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PERE	MJ	1.975,50	0,35	0,01	1.778,79	25,92	-585,14
PERM	MJ	54,42	0,00	0,00	0,00	0,00	0,00
PERT	MJ	2.029,92	0,35	0,01	1.778,79	25,92	-585,14
PENRE	MJ	13.532,95	135,23	1,74	25.891,96	343,46	-3.242,94
PENRM	MJ	1.395,70	0,00	0,00	0,00	0,00	0,00
PENRT	MJ	14.928,65	135,23	1,74	25.891,96	343,46	-3.242,94
SM	Kg	0,17	0,00	0,00	0,00	0,00	11,26
RSF (RSF)	MJ	0,11	0,00	0,00	0,00	0,00	0,00
NRSF	MJ	0,00	0,00	0,00	0,00	0,00	0,00
FW	m3	19,86	0,01	0,00	6,82	0,25	-4,63

PERE: Use of renewable primary energy, excluding renewable primary energy resources used as feedstocks; **PERM:** Use of renewable primary energy used as a feedstock; **PERT:** Total use of renewable primary energy; **PENRE:** Use of non-renewable primary energy, excluding non-renewable primary energy resources used as feedstocks; **PENRM:** Use of non-renewable primary energy used as a feedstock; **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 piped water resources; **NR:** Not relevant

Waste Categories

U-1000 R2V 4X1.5

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
HWD	Kg	0,04	0,00	0,00	0,00	0,00	-0,04
NHWD	Kg	1,06	0,00	0,02	0,00	60,90	-10,23
RWD	Kg	0,00	0,00	0,00	0,00	0,00	0,00

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

Output flows

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
CRU	Kg	0,00	0,00	0,00	0,00	0,00	0,00
MFR	Kg	3,11	0,00	0,12	0,00	31,04	0,27
MER	Kg	0,24	0,00	0,00	0,00	40,20	0,00
USA	MJ	0,00	0,00	0,00	0,00	0,00	0,00

CRU: Components for reuse; **MFRs**: Recycling Materials; **MER:** Materials for energy recovery; **EE:** Exported energy; **NR:** Not relevant

Biogenic Carbon Content Information

Biogenic carbon content	Biogenic carbon content	Profit per reported functional unit
Biogenic carbon content product - KgC	Kg C	0
Biogenic carbon content product - KgC	Kg C	887.72

Environmental impacts

U-1000 R2V 4X150

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	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
GWP-total	kg CO2 eq	60.047,49	499,77	0,39	1,60	2.920,79	-17.913,73
GWP-fossil	kg CO2 eq	59.516,36	499,73	0,28	1,59	2.917,25	-17.852,32
GWP-biogenic	kg CO2 eq	423,87	0,03	0,11	0,01	1,78	-24,22
GWP-luluc	kg CO2 eq	107,26	0,01	0,00	0,00	1,76	-37,20
ODP	kg CFC11 eq	0,00	0,00	0,00	0,00	0,00	0,00
AP	Mole Equalizer H+	4.712,75	1,77	0,00	0,01	5,05	-237,12
EP-fresh water	kg P eq	14,71	0,00	0,00	0,00	0,04	-2,47
EP-marine	kg N eq	179,40	0,76	0,00	0,00	1,19	-37,08
EP-terrestrial	Talpa N eq	2.574,13	8,08	0,00	0,01	12,90	-509,67
POCP	Kg NMVOC eq	802,09	2,73	0,00	0,00	3,82	-121,88
ADP-Minerals and metals [2]	kg Sb eq	65,32	0,00	0,00	0,00	0,00	-11,64
ADP-fossil [2]	MJ	809.071,21	6.599,89	1,69	262,05	13.315,49	-211.642,62
WDP [2]	m3	73.614,27	6,04	-0,01	0,51	224,51	-10.417,78

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 reaching the final seawater compartment; **EP-terrestrial**: eutrophication potential, accumulated surplus; **POCP:** Ground-level ozone formation potential; **ADP-minerals and metalsPotential for depletion of abiotic resources for non-fossil resources; APD-fossil**: potential for depletion of abiotic resources for fossil resources; **WDP**: Water deprivation potential (user), weighted deprivation consumption for water. **NR:** Not relevant

Additional environmental impacts

U-1000 R2V 4X150

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PM	Incidence of diseases	0,01	0,00	0,00	0,00	0,00	0,00
IRP [1]	kBq U235 eq	3.283,58	1,05	0,00	2,64	46,85	-571,63
ETP-fw [2]	CTUe	4.057.447,74	2.959,20	1,28	3,78	6.499,14	-570.774,32
HTP-c [2]	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
HTP-nc [2]	CTUh	0,07	0,00	0,00	0,00	0,00	0,00
SQP [2]	-	1.333.883,20	12,54	0,25	5,68	1.589,66	-229.465,73

PM: Potential incidence of diseases due to emissions of particulate matter (PM); IRP : Human potential exposure efficiency relative to U235; ETP-fw : Comparative potential of toxic unit for ecosystems - freshwater; HTP-c : Comparative potential of toxic unit for ecosystems - carcinogenic effects; HTP-nc : Comparative potential of toxic unit for ecosystems non-carcinogenic effects; SQP : Soil quality potential index; NR: Not relevant

Notice 1: This impact category deals mainly with the eventual impacts of low doses of ionizing radiation on human health, of 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 potential for ionizing radiation of the soil, due to radon or some building materials is not measured with this parameter either.

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

Resource Usage

U-1000 R2V 4X150

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PERE	MJ	178.937,27	17,35	0,01	18,23	1.299,95	-53.601,68
PERM	MJ	54,42	0,00	0,00	0,00	0,00	0,00
PERT	MJ	178.991,69	17,35	0,01	18,23	1.299,95	-53.601,68
PENRE	MJ	979.506,10	6.669,17	1,74	265,34	16.902,01	-270.403,14
PENRM	MJ	25.393,10	0,00	0,00	0,00	0,00	0,00
PENRT	MJ	1.004.899,19	6.669,17	1,74	265,34	16.902,01	-270.403,14
SM	Kg	0,17	0,00	0,00	0,00	0,00	1.109,92
RSF (RSF)	MJ	0,11	0,00	0,00	0,00	0,00	0,00
NRSF	MJ	0,00	0,00	0,00	0,00	0,00	0,00
FW	m3	1.791,73	0,28	0,00	0,07	8,54	-440,05

PERE: Use of renewable primary energy, excluding renewable primary energy resources used as feedstocks; **PERM:** Use of renewable primary energy used as a feedstock; **PERT:** Total use of renewable primary energy; **PENRE:** Use of non-renewable primary energy, excluding non-renewable primary energy resources used as feedstocks; **PENRM:** Use of non-renewable primary energy used as a feedstock; **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 piped water resources; **NR:** Not relevant

Waste Categories

U-1000 R2V 4X150

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
HWD	Kg	0,04	0,00	0,00	0,00	0,00	-4,09
NHWD	Kg	1,25	0,00	0,02	0,00	2.847,33	-1.008,32
RWD	Kg	0,00	0,00	0,00	0,00	0,00	0,00

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

Output flows

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
CRU	Kg	0,00	0,00	0,00	0,00	0,00	0,00
MFR	Kg	3,11	0,00	0,12	0,00	3.059,07	26,88
MER	Kg	0,24	0,00	0,00	0,00	807,95	0,00
USA	MJ	0,00	0,00	0,00	0,00	0,00	0,00

CRU: Components for reuse; **MFRs**: Recycling Materials; **MER:** Materials for energy recovery; **EE:** Exported energy; **NR:** Not relevant

Biogenic Carbon Content Information

Biogenic carbon content	Unit	Profit per reported functional unit
Biogenic carbon content product - KgC	Kg C	
Biogenic carbon content packaging- KgC	Kg C	5.12

Environmental impacts

U-1000 R2V 5X1.5

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	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
GWP-total	kg CO2 eq	934,90	11,96	0,39	155,69	132,44	-254,49
GWP-fossil	kg CO2 eq	927,90	11,96	0,28	155,02	132,35	-253,63
GWP-biogenic	kg CO2 eq	5,55	0,00	0,11	0,60	0,05	-0,36
GWP-luluc	kg CO2 eq	1,46	0,00	0,00	0,07	0,04	-0,50
ODP	kg CFC11 eq	0,00	0,00	0,00	0,00	0,00	0,00
AP	Mole Equalizer H+	60,46	0,04	0,00	0,56	0,13	-3,07
EP-fresh water	kg P eq	0,19	0,00	0,00	0,00	0,00	-0,03
EP-marine	kg N eq	2,40	0,02	0,00	0,13	0,03	-0,48
EP-terrestre	Talpa N eq	33,99	0,19	0,00	1,32	0,37	-6,58
POCP	Kg NMVOC eq	10,74	0,07	0,00	0,46	0,11	-1,60
ADP-Minerals and metals [2]	kg Sb eq	0,83	0,00	0,00	0,00	0,00	-0,15
ADP-fossil [2]	MJ	14.410,99	157,95	1,69	25.570,72	320,81	-3.166,57
WDP [2]	m3	1.020,62	0,14	-0,01	50,05	8,10	-134,66

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 reaching the final seawater compartment; **EP-terrestrial**: eutrophication potential, accumulated surplus; **POCP:** Ground-level ozone formation potential; **ADP-minerals and metalsPotential for depletion of abiotic resources for non-fossil resources; APD-fossil**: potential for depletion of abiotic resources for fossil resources; **WDP**: Water deprivation potential (user), weighted deprivation consumption for water. **NR:** Not relevant

Additional environmental impacts

U-1000 R2V 5X1.5

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PM	Incidence of diseases	0,00	0,00	0,00	0,00	0,00	0,00
IRP [1]	kBq U235 eq	51,08	0,03	0,00	257,26	1,10	-9,47
ETP-fw [2]	CTUe	52.430,73	70,82	1,28	369,16	277,98	-7.269,74
HTP-c [2]	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
HTP-nc [2]	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
SQP [2]	-	17.940,66	0,30	0,25	554,06	39,33	-2.941,23

PM: Potential incidence of diseases due to emissions of particulate matter (PM); IRP : Human potential exposure efficiency relative to U235; ETP-fw : Comparative potential of toxic unit for ecosystems - freshwater; HTP-c : Comparative potential of toxic unit for ecosystems - carcinogenic effects; HTP-nc : Comparative potential of toxic unit for ecosystems non-carcinogenic effects; SQP : Soil quality potential index; NR: Not relevant

Notice 1: This impact category deals mainly with the eventual impacts of low doses of ionizing radiation on human health, of 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 potential for ionizing radiation of the soil, due to radon or some building materials is not measured with this parameter either.

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

Resource Usage

U-1000 R2V 5X1.5

Parametro	Unità	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PERE	MJ	2.429,14	0,42	0,01	1.778,79	30,69	-725,87
PERM	MJ	54,42	0,00	0,00	0,00	0,00	0,00
PERT	MJ	2.483,55	0,42	0,01	1.778,79	30,69	-725,87
PENRE	MJ	15.686,87	159,61	1,74	25.891,96	406,16	-3.986,44
PENRM	MJ	1.645,32	0,00	0,00	0,00	0,00	0,00
PENRT	MJ	17.332,19	159,61	1,74	25.891,96	406,16	-3.986,44
SM	Kg	0,17	0,00	0,00	0,00	0,00	14,08
RSF (RSF)	MJ	0,11	0,00	0,00	0,00	0,00	0,00
NRSF	MJ	0,00	0,00	0,00	0,00	0,00	0,00
FW	m3	24,43	0,01	0,00	6,82	0,29	-5,77

PERE: Use of renewable primary energy, excluding renewable primary energy resources used as feedstocks; **PERM:** Use of renewable primary energy used as a feedstock; **PERT:** Total use of renewable primary energy; **PENRE:** Use of non-renewable primary energy, excluding non-renewable primary energy resources used as feedstocks; **PENRM:** Use of non-renewable primary energy used as a feedstock; **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 piped water resources; **NR:** Not relevant

Waste Categories

U-1000 R2V 5X1.5

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
HWD	Kg	0,04	0,00	0,00	0,00	0,00	-0,05
NHWD	Kg	1,06	0,00	0,02	0,00	71,81	-12,79
RWD	Kg	0,00	0,00	0,00	0,00	0,00	0,00

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

Output flows

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
CRU	Kg	0,00	0,00	0,00	0,00	0,00	0,00
MFR	Kg	3,11	0,00	0,12	0,00	38,80	0,34
MER	Kg	0,24	0,00	0,00	0,00	45,94	0,00
USA	MJ	0,00	0,00	0,00	0,00	0,00	0,00

CRU: Components for reuse; **MFRs**: Recycling Materials; **MER:** Materials for energy recovery; **EE:** Exported energy; **NR:** Not relevant

Biogenic Carbon Content Information

Biogenic carbon content	Unit	Biogenic carbon content
Biogenic carbon content product - KgC	Kg C	0
Biogenic carbon content packaging- KgC	Kg C	11544.28

Environmental impacts

U-1000 R2V 5X70

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	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
GWP-total	kg CO2 eq	34.884,36	296,62	0,39	3,45	1.822,51	-10.410,83
GWP-fossil	kg CO2 eq	34.576,23	296,60	0,28	3,43	1.820,41	-10.375,15
GWP-biogenic	kg CO2 eq	245,88	0,02	0,11	0,01	1,06	-14,10
GWP-luluc	kg CO2 eq	62,25	0,01	0,00	0,00	1,04	-21,58
ODP	kg CFC11 eq	0,00	0,00	0,00	0,00	0,00	0,00
AP	Mole Equalizer H+	2.729,52	1,05	0,00	0,01	3,02	-137,39
EP-fresh water	kg P eq	8,52	0,00	0,00	0,00	0,03	-1,43
EP-marine	kg N eq	103,98	0,45	0,00	0,00	0,72	-21,49
EP-terrestrial	Talpa N eq	1.491,58	4,80	0,00	0,03	7,76	-295,29
POCP	Kg NMVOC eq	465,14	1,62	0,00	0,01	2,29	-70,65
ADP-Minerals and metals [2]	kg Sb eq	37,83	0,00	0,00	0,00	0,00	-6,74
ADP-fossil [2]	MJ	475.006,51	3.917,14	1,69	566,36	7.919,51	-123.219,03
WDP [2]	m3	42.873,94	3,59	-0,01	1,11	137,23	-6.036,10

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 reaching the final seawater compartment; **EP-terrestrial**: eutrophication potential, accumulated surplus; **POCP:** Ground-level ozone formation potential; **ADP-minerals and metalsPotential for depletion of abiotic resources for non-fossil resources; APD-fossil**: potential for depletion of abiotic resources for fossil resources; **WDP**: Water deprivation potential (user), weighted deprivation consumption for water. **NR:** Not relevant

Additional environmental impacts

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Parametro	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PM	Incidence of diseases	0,01	0,00	0,00	0,00	0,00	0,00
IRP [1]	kBq U235 eq	1.912,62	0,62	0,00	5,70	27,82	-334,06
ETP-fw [2]	CTUe	2.349.758,34	1.756,33	1,28	8,18	4.032,35	-330.560,19
HTP-c [2]	CTUh	0,00	0,00	0,00	0,00	0,00	0,00
HTP-nc [2]	CTUh	0,04	0,00	0,00	0,00	0,00	0,00
SQP [2]	-	773.143,89	7,44	0,25	12,27	946,88	-132.919,15

PM: Potential incidence of diseases due to emissions of particulate matter (PM); IRP : Human potential exposure efficiency relative to U235; ETP-fw : Comparative potential of toxic unit for ecosystems - freshwater; HTP-c : Comparative potential of toxic unit for ecosystems - carcinogenic effects; HTP-nc : Comparative potential of toxic unit for ecosystems non-carcinogenic effects; SQP : Soil quality potential index; NR: Not relevant

Notice 1: This impact category deals mainly with the eventual impacts of low doses of ionizing radiation on human health, of 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 potential for ionizing radiation of the soil, due to radon or some building materials is not measured with this parameter either.

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

Resource Usage

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Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
PERE	MJ	103.897,08	10,30	0,01	39,40	772,29	-31.102,41
PERM	MJ	54,42	0,00	0,00	0,00	0,00	0,00
PERT	MJ	103.951,50	10,30	0,01	39,40	772,29	-31.102,41
PENRE	MJ	569.701,17	3.958,26	1,74	573,47	10.051,17	-157.348,05
PENRM	MJ	18.988,31	0,00	0,00	0,00	0,00	0,00
PENRT	MJ	588.689,47	3.958,26	1,74	573,47	10.051,17	-157.348,05
SM	Kg	0,17	0,00	0,00	0,00	0,00	642,72
RSF (RSF)	MJ	0,11	0,00	0,00	0,00	0,00	0,00
NRSF	MJ	0,00	0,00	0,00	0,00	0,00	0,00
FW	m3	1.040,92	0,16	0,00	0,15	5,19	-255,08

PERE: Use of renewable primary energy, excluding renewable primary energy resources used as feedstock; **PERM:** Use of renewable primary energy used as a feedstock; **PERT:** Total use of renewable primary energy; **PENRE:** Use of non-renewable primary energy, excluding non-renewable primary energy resources used as feedstocks; **PENRM:** Use of non-renewable primary energy used as a feedstock; **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 piped water resources; **NR:** Not relevant

Categories of waste

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Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
HWD	Kg	0,04	0,00	0,00	0,00	0,00	-2,37
NHWD	Kg	1,17	0,00	0,02	0,00	1.697,89	-583,89
RWD	Kg	0,00	0,00	0,00	0,00	0,00	0,00

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

Output flows

Parameter	Unit	Manufactoring	Distribution	Installation	Use	End of life stage	Benefits
CRU	Kg	0,00	0,00	0,00	0,00	0,00	0,00
MFR	Kg	3,11	0,00	0,12	0,00	1.771,42	15,57
MER	Kg	0,24	0,00	0,00	0,00	516,94	0,00
USA	MJ	0,00	0,00	0,00	0,00	0,00	0,00

CRU: Components for reuse; **MFRs**: Material for recycling; **MER:** Materials for energy recovery; **EE:** Exported energy; **NR:** Not relevant

Biogenic Carbon Content Information

Biogenic carbon content	Unit	Profit per reported functional unit
Biogenic carbon content product - KgC	Kg C	0
Biogenic carbon content packaging- KgC	Kg C	88711.21

References

(1) General Instructions of GlobalEPD Programme 3rd revision (09-10-2023)

(2) UNE-EN ISO 14025:2010 Environmental labels. Type III environmental claims. Principles and procedures (ISO 14025:2006).

(3) Standard EN 50693:2019 Product category rules for life cycle assessments of electronic and electrical products and systems

(4) UNE-EN ISO 14040 standard. Environmental management. Life cycle analysis. Principles and framework. 2006.

(5) UNE-EN ISO 14044 standard. Environmental management. Life cycle analysis. Requirements and guidelines. 2006

(6) Functional analysis WEBTOOL Baldassari, rev.3

(7) PCR PEP Ecopassport V4 e PSR-0001 wire and cables.

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