

# GlobalEPD

A VERIFIED ENVIRONMENTAL DECLARATION



Environmental  
product  
declaration

**EN ISO 14025:2010**

**EN 50693:2019**



**U-1000 R2V 0,6/1 kV Repero®**

# AENOR

## REPERO® Cable Family U-1000 R2V multipolar

|                    |            |
|--------------------|------------|
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## Bruno Baldassari & F.lli S.p.A.



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.



#### Holder of the Declaration

BRUNO BALADASSARI & F.LLI S.P.A.  
Viale Europa 118-120  
55013 Lammari (LU), ITALIA

Tel. (+39) 0583 43521  
Mail [export@baldassari.it](mailto:export@baldassari.it)  
Web [www.baldassaricavi.it](http://www.baldassaricavi.it)



#### Life cycle assessment

LIFE CYCLE ENGINEERING S.P.A..  
Via Livorno 60 – Environmental Park,  
10144 Torino, ITALIA

Tel. (+39) XXX  
Mail [info@lcengineering.eu](mailto:info@lcengineering.eu)  
Web [www.lcengineering.eu.it](http://www.lcengineering.eu.it)



#### Program operator GlobalEPD

AENOR CONFIA, S.A.U  
C/ Génova 6  
28004 – Madrid,  
Spain

Tel. (+34) 902 102 201  
mail [aenordap@aenor.com](mailto:aenordap@aenor.com)  
web [www.aenor.com](http://www.aenor.com)

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|                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The European standard EN 50693 serves as PCR for this EPD                                                                                                                              |
| <p>Independent verification of the declaration and data in accordance with EN ISO 14025:2010</p> <p><input type="checkbox"/> Internal <input checked="" type="checkbox"/> External</p> |
| <p>Verification body</p> <p><b>AENOR</b></p>                                                                                                                                           |

# 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, CEBC 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 plants 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 50693:2019 standards and the following Category Rule:

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

This Environmental Statement covers the following life cycle phases:

System limitations. Modules considered

|                          |                                          |    |
|--------------------------|------------------------------------------|----|
| <b>Manufacturing</b>     | Raw materials                            | X  |
|                          | Raw materials transport                  | X  |
|                          | Manufacturing                            | X  |
| <b>Distribution</b>      | Distribution                             | X  |
| <b>Installation</b>      | Installation, process and waste          | X  |
| <b>Use</b>               | Use                                      | X  |
|                          | Maintenance                              | NC |
| <b>End of life stage</b> | 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.

### 1.4. Differences form versions of this EPD.

This EPD is an update to the version published on 2024-12-20

## 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  | Approx. conductor Ø     | Average insulation thickness | Minimum sheath thickness | Approx. production Ø    | Approx. cable weight | Max. electrical resistance at 20°C | Current rating<br>Portata di corrente |                               |
|------------|-------------------------|------------------------------|--------------------------|-------------------------|----------------------|------------------------------------|---------------------------------------|-------------------------------|
| Formazione | Ø indicativo conduttore | Spessore medio isolante      | Spessore minimo guaina   | Ø indicativo produzione | Peso indicativo cavo | Resistenza elettrica at 20°C       | Free in air<br>In aria libera 30°C    | Underground<br>Interrato 20°C |
| n° x mm²   | mm                      | mm                           | mm                       | mm                      | kg/km                | ohm/ km                            | A                                     | 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  | Approx. conductor Ø     | Average insulation thickness | Minimum sheath thickness | Approx. production Ø    | Approx. cable weight | Max. electrical resistance at 20°C | Current rating<br>Portata di corrente |                               |
|------------|-------------------------|------------------------------|--------------------------|-------------------------|----------------------|------------------------------------|---------------------------------------|-------------------------------|
| Formazione | Ø indicativo conduttore | Spessore medio isolante      | Spessore minimo guaina   | Ø indicativo produzione | Peso indicativo cavo | Resistenza elettrica max a 20°C    | Free in air<br>In aria libera 30°C    | Underground<br>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-of-life) 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

| <b>Cable</b>            | <b>2x1,5</b> | <b>2x35</b> | <b>3x1,5</b> | <b>3x2,5</b> | <b>3x95</b> | <b>4x1,5</b> | <b>4x150</b> | <b>5x1,5</b> | <b>5x70</b> |
|-------------------------|--------------|-------------|--------------|--------------|-------------|--------------|--------------|--------------|-------------|
| 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<br>(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 kgCO<sub>2</sub>/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:

$$E[J.km^{-1}] = R[\Omega.km^{-1}] \times I^2 [A^2] \times \Delta t [y]$$

Consumption is expressed in J\*km<sup>-1</sup>, 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 Manufacturing

#### Raw Materials:

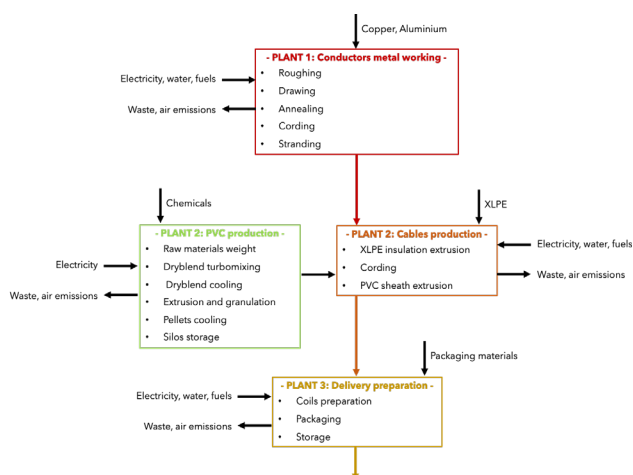
All raw materials used in the production of all cable components were considered. The cables in question are manufactured in the factories of Bruno Baldassari & F.lli S.p.A. located in Capannori, in the province of Lucca, Italy.

#### 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.

#### Manufacturing

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                 | Manufacturing | 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 <sup>2</sup> | kg Sb eq             | 0,33          | 0,00         | 0,00         | 0,00      | 0,00              | -0,06     |
| ADP-fossil <sup>2</sup>              | MJ                   | 7.370,93      | 98,02        | 1,69         | 25.570,72 | 198,84            | -1.489,54 |
| WDP <sup>2</sup>                     | 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 metals** Potential for depletion of abiotic resources for non-fossil resources; **ADP-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                  | Manufacturing | Distribution | Installation | Use    | End of life stage | Benefits  |
|---------------------|-----------------------|---------------|--------------|--------------|--------|-------------------|-----------|
| PM                  | Incidence of diseases | 0             | 0            | 0            | 0      | 0                 | 0         |
| IRP <sup>1</sup>    | kBq U235 eq           | 24,67         | 0,02         | 0,00         | 257,26 | 0,67              | -4,81     |
| ETP-fw <sup>2</sup> | CTUe                  | 21.473,04     | 43,95        | 1,28         | 369,16 | 202,01            | -2.918,98 |
| HTP-c <sup>2</sup>  | CTUh                  | 0,00          | 0,00         | 0,00         | 0,00   | 0,00              | 0,00      |
| HTP-nc <sup>2</sup> | CTUh                  | 0,00          | 0,00         | 0,00         | 0,00   | 0,00              | 0,00      |
| SQP <sup>2</sup>    | -                     | 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 | Manufacturing | 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 | Manufacturing | 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 | Manufacturing | 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              | Manufacturing | 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 <sup>2</sup> | kg Sb eq          | 10,63         | 0,00         | 0,00         | 0,00   | 0,00              | -1,89      |
| ADP-fossil <sup>2</sup>              | MJ                | 146.080,65    | 1.037,59     | 1,69         | 817,84 | 2.787,92          | -36.398,76 |
| WDP <sup>2</sup>                     | 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 metals** Potential for depletion of abiotic resources for non-fossil resources; **ADP-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                  | Manufacturing | Distribution | Installation | Use   | End of life stage | Benefits   |
|---------------------|-----------------------|---------------|--------------|--------------|-------|-------------------|------------|
| PM                  | Incidence of diseases | 0             | 0            | 0            | 0     | 0                 | 0          |
| IRP <sup>1</sup>    | kBq U235 eq           | 568,60        | 0,17         | 0,00         | 8,23  | 9,69              | -102,05    |
| ETP-fw <sup>2</sup> | CTUe                  | 664.113,30    | 465,23       | 1,28         | 11,81 | 1.857,85          | -92.961,92 |
| HTP-c <sup>2</sup>  | CTUh                  | 0,00          | 0,00         | 0,00         | 0,00  | 0,00              | 0,00       |
| HTP-nc <sup>2</sup> | CTUh                  | 0,01          | 0,00         | 0,00         | 0,00  | 0,00              | 0,00       |
| SQP <sup>2</sup>    | -                     | 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 | Manufacturing | 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 | Manufacturing | 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 | Manufacturing | 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              | Manufacturing | 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-fresh 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 <sup>2</sup> | kg Sb eq          | 0,50          | 0,00         | 0,00         | 0,00      | 0,00              | -0,09     |
| ADP-fossil <sup>2</sup>              | MJ                | 9.544,12      | 113,19       | 1,69         | 25.570,72 | 229,07            | -2.014,75 |
| WDP <sup>2</sup>                     | 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 metals**: Potential for depletion of abiotic resources for non-fossil resources; **ADP-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             | Manufacturing | Distribution | Installation | Use    | End of life stage | Benefits  |
|---------------------|-----------------------|---------------|--------------|--------------|--------|-------------------|-----------|
| PM                  | Incidence of diseases | 0             | 0            | 0            | 0      | 0                 | 0         |
| IRP <sup>1</sup>    | kBq U235 eq           | 32,89         | 0,02         | 0,00         | 257,26 | 0,78              | -6,21     |
| ETP-fw <sup>2</sup> | CTUe                  | 31.706,27     | 50,75        | 1,28         | 369,16 | 213,95            | -4.364,78 |
| HTP-c <sup>2</sup>  | CTUh                  | 0,00          | 0,00         | 0,00         | 0,00   | 0,00              | 0,00      |
| HTP-nc <sup>2</sup> | CTUh                  | 0,00          | 0,00         | 0,00         | 0,00   | 0,00              | 0,00      |
| SQP <sup>2</sup>    | -                     | 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 | Manufacturing | 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 | Manufacturing | 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 | Manufacturing | 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             | Manufacturing | 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 <sup>2</sup> | kg Sb eq          | 31,77         | 0,00         | 0,00         | 0,00   | 0,00              | -5,66       |
| ADP-fossil <sup>2</sup>              | MJ                | 399.944,77    | 3.302,83     | 1,69         | 407,86 | 6.762,38          | -103.828,45 |
| WDP <sup>2</sup>                     | 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 metalli** Potenziale 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 relevant

## Ulteriori impatti ambientali

## U-1000 R2V 3X95

| Parameter           | Unità                 | Manufacturing | 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 <sup>1</sup>    | kBq U235 eq           | 1.612,39      | 0,53         | 0,00         | 4,10 | 23,74             | -282,16     |
| ETP-fw <sup>2</sup> | CTUe                  | 1.974.959,40  | 1.480,90     | 1,28         | 5,89 | 3.530,30          | -277.609,84 |
| HTP-c <sup>2</sup>  | CTUh                  | 0,00          | 0,00         | 0,00         | 0,00 | 0,00              | 0,00        |
| HTP-nc <sup>2</sup> | CTUh                  | 0,03          | 0,00         | 0,00         | 0,00 | 0,00              | 0,00        |
| SQP <sup>2</sup>    | -                     | 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 | Manufacturing | 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 | Manufacturing | 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

| Parameter | Unit | Manufacturing | 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                         | Manufacturing | 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 <sup>2</sup> | kg Sb eq                     | 0,81          | 0,00         | 0,00         | 0,00      | 0,00              | -0,14     |
| ADP-fossil <sup>2</sup>              | MJ                           | 13.449,48     | 148,71       | 1,69         | 15.659,43 | 301,11            | -3.048,31 |
| WDP <sup>2</sup>                     | 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 metals** Potential 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:** No relevant

## Additional environmental impacts

## U-1000 R2V 3X2.5

| Parameter           | Unit                  | Manufacturing | 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 <sup>1</sup>    | kBq U235 eq           | 48,96         | 0,02         | 0,00         | 157,55 | 1,03              | -9,06     |
| ETP-fw <sup>2</sup> | CTUe                  | 51.028,77     | 66,68        | 1,28         | 226,07 | 256,12            | -7.078,89 |
| HTP-c <sup>2</sup>  | CTUh                  | 0,00          | 0,00         | 0,00         | 0,00   | 0,00              | 0,00      |
| HTP-nc <sup>2</sup> | CTUh                  | 0,00          | 0,00         | 0,00         | 0,00   | 0,00              | 0,00      |
| SQP <sup>2</sup>    | -                     | 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 | Manufacturing | 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 | Manufacturing | 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 | Manufacturing | 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         | Manufacturing | 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 <sup>2</sup> | kg Sb eq          | 0,66          | 0,00         | 0,00         | 0,00      | 0,00              | -0,12     |
| ADP-fossil <sup>2</sup>              | MJ                | 12.440,69     | 133,82       | 1,69         | 25.570,72 | 271,33            | -2.579,85 |
| WDP <sup>2</sup>                     | 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 metals** Potential 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:** No relevant

## Additional environmental impacts

## U-1000 R2V 4X1.5

| Parameter           | Unit                  | Manufacturing | 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 <sup>1</sup>    | kBq U235 eq           | 41,98         | 0,02         | 0,00         | 257,26 | 0,93              | -7,79     |
| ETP-fw <sup>2</sup> | CTUe                  | 42.098,00     | 60,00        | 1,28         | 369,16 | 241,28            | -5.818,70 |
| HTP-c <sup>2</sup>  | CTUh                  | 0,00          | 0,00         | 0,00         | 0,00   | 0,00              | 0,00      |
| HTP-nc <sup>2</sup> | CTUh                  | 0,00          | 0,00         | 0,00         | 0,00   | 0,00              | 0,00      |
| SQP <sup>2</sup>    | -                     | 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 | Manufacturing | 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 | Manufacturing | 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 | Manufacturing | 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              | Manufacturing | 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 <sup>2</sup> | kg Sb eq          | 65,32         | 0,00         | 0,00         | 0,00   | 0,00              | -11,64      |
| ADP-fossil <sup>2</sup>              | MJ                | 809.071,21    | 6.599,89     | 1,69         | 262,05 | 13.315,49         | -211.642,62 |
| WDP <sup>2</sup>                     | 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 metals** Potential 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:** No relevant

## Additional environmental impacts

## U-1000 R2V 4X150

| Parameter           | Unit                  | Manufacturing | 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 <sup>1</sup>    | kBq U235 eq           | 3.283,58      | 1,05         | 0,00         | 2,64 | 46,85             | -571,63     |
| ETP-fw <sup>2</sup> | CTUe                  | 4.057.447,74  | 2.959,20     | 1,28         | 3,78 | 6.499,14          | -570.774,32 |
| HTP-c <sup>2</sup>  | CTUh                  | 0,00          | 0,00         | 0,00         | 0,00 | 0,00              | 0,00        |
| HTP-nc <sup>2</sup> | CTUh                  | 0,07          | 0,00         | 0,00         | 0,00 | 0,00              | 0,00        |
| SQP <sup>2</sup>    | -                     | 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 | Manufacturing | 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 | Manufacturing | 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 | Manufacturing | 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              | Manufacturing | 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 <sup>2</sup> | kg Sb eq          | 0,83          | 0,00         | 0,00         | 0,00      | 0,00              | -0,15     |
| ADP-fossil <sup>2</sup>              | MJ                | 14.410,99     | 157,95       | 1,69         | 25.570,72 | 320,81            | -3.166,57 |
| WDP <sup>2</sup>                     | 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 metals** Potential 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:** No relevant

### Additional environmental impacts

#### U-1000 R2V 5X1.5

| Parameter           | Unit                  | Manufacturing | 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 <sup>1</sup>    | kBq U235 eq           | 51,08         | 0,03         | 0,00         | 257,26 | 1,10              | -9,47     |
| ETP-fw <sup>2</sup> | CTUe                  | 52.430,73     | 70,82        | 1,28         | 369,16 | 277,98            | -7.269,74 |
| HTP-c <sup>2</sup>  | CTUh                  | 0,00          | 0,00         | 0,00         | 0,00   | 0,00              | 0,00      |
| HTP-nc <sup>2</sup> | CTUh                  | 0,00          | 0,00         | 0,00         | 0,00   | 0,00              | 0,00      |
| SQP <sup>2</sup>    | -                     | 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 | Manufacturing | 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 | Manufacturing | 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 | Manufacturing | 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              | Manufacturing | 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 <sup>2</sup> | kg Sb eq          | 37,83         | 0,00         | 0,00         | 0,00   | 0,00              | -6,74       |
| ADP-fossil <sup>2</sup>              | MJ                | 475.006,51    | 3.917,14     | 1,69         | 566,36 | 7.919,51          | -123.219,03 |
| WDP <sup>2</sup>                     | 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 metals** Potential 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 5X70

| Parametro           | Unit                  | Manufacturing | 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 <sup>1</sup>    | kBq U235 eq           | 1.912,62      | 0,62         | 0,00         | 5,70  | 27,82             | -334,06     |
| ETP-fw <sup>2</sup> | CTUe                  | 2.349.758,34  | 1.756,33     | 1,28         | 8,18  | 4.032,35          | -330.560,19 |
| HTP-c <sup>2</sup>  | CTUh                  | 0,00          | 0,00         | 0,00         | 0,00  | 0,00              | 0,00        |
| HTP-nc <sup>2</sup> | CTUh                  | 0,04          | 0,00         | 0,00         | 0,00  | 0,00              | 0,00        |
| SQP <sup>2</sup>    | -                     | 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

## U-1000 R2V 5X70

| Parameter | Unit | Manufacturing | 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

## U-1000 R2V 5X70

| Parameter | Unit | Manufacturing | 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 | Manufacturing | 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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# AENOR



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