

Owner: VOLA A/S  
No.: MD-23086-EN  
Issued: 16-05-2024  
Valid to: 16-05-2029

3<sup>rd</sup> PARTY VERIFIED

**EPD**

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



**Owner of the declaration**

VOLA A/S  
Lunavej 2  
8700 Horsens  
Denmark  
VAT no.: 17531328



**Issued:**  
16-05-2024

**Valid to:**  
16-05-2029

**Basis of calculation**

This EPD is developed in accordance with the European standard EN 15804+A2 and Part B (cPCR) Requirements on the EPD for Fittings and showers.

**Comparability**

EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

**Validity**

This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

**Use**

The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

**EPD type**

- Cradle-to-gate with modules C1-C4 and D
- Cradle-to-gate with options, modules C1-C4 and D
- Cradle-to-grave and module D
- Cradle-to-gate
- Cradle-to-gate with options

**Programme**

EPD Danmark  
[www.epddanmark.dk](http://www.epddanmark.dk)



- Industry EPD
- Product EPD

**Declared products**

12 products:  
4821-16      4822-16  
4821-19      4822-19  
4821-40      4822-40  
4821-27      4822-27  
4821-60      4822-60  
4821-64      4822-64

**Production site**

VOLA A/S  
Lunavej 2  
8700 Horsens  
Denmark

**Product(s) use**

VOLA fixtures are used in kitchens and bathrooms.

**Declared/ functional unit**

1 fixture with RSL of 30 years

**Year of data**

2022

**EPD version**

The first issue.

CEN standard EN 15804 serves as the core PCR

Independent verification of the declaration and data, according to EN ISO 14025

- internal
- external

Third party verifier:

Charlotte Merlin

Martha Katrine Sørensen  
EPD Danmark

**Life cycle stages and modules (MND = module not declared)**

Product			Construction process		Use							End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery, and recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

# Product information

## Product description

The product components are shown in Table 1. Values are given as intervals covering the eight products with six different surfaces. Specific recipes are used, and the composition of input materials is 100 % in mass -% of declared products.

**Table 1: Material composition of products**

Material	Amount [%]
Battery	3,49 - 3,95
Brass	23,33 - 45,22
Ceramics	0,00
Electronic (Net cable, Heating cable, transformer, ventilation)	1,05 - 1,19
Other metals	0,10 - 0,52
Plastic	14,56 - 16,47
Rubber	0,31 - 0,35
Steel	1,25 - 22,40
Hot dip galvanized steel	32,34 - 38,61

## Product packaging:

The composition of the product's sales and transport packaging is shown in the table below.

**Table 2: Material composition of Sales and Transport Packaging for the final VOLA product**

Material	Amount [%]	Amount [kg]
LDPE	2,58	0,033
PU foam	0,01	0,0004
Cardboard	93,75	1,208
Paper	3,66	0,047
<b>Total</b>	<b>100,00</b>	<b>1,29</b>

## Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of 1 fixture from VOLA on the production site located in Denmark. Product-specific data are based on average values covering the period from 01.01.2022 to 31.12.2022. Background data are based on Ecoinvent 3.9.1 (2023), modelled in SimaPro 9.3 and are less than 10 years old.

Generally, the used background datasets are of high quality, and the majority of the datasets are only a few years old. VOLA buys certified electricity produced from wind energy in the EPD validity period.

## Hazardous substances

Declared products do not contain substances listed in the "Candidate List of Substances of Very High Concern for authorization", version of 14<sup>th</sup> of June 2023 with 235 substances, with the exception of lead contained in brass with a concentration above 0,1%

(<http://echa.europa.eu/candidate-list-table>)

## Essential characteristics

There is no harmonized specification, but VOLA produces products according to relevant product standards. Components that are in contact with water are produced in lead-free brass, according to 4MS and California Assembly Bill AB1953. Components in stainless steel are produced in the material according to EN10088-3:2014 and AISI316 (American Iron and Steel Institute).

Further technical information can be obtained by contacting the manufacturer or on the manufacturer's website:

<http://www.vola.com>

## Reference Service Life (RSL)

A reference service life (RSL) for all products is 30 years. The lifespan of products has been provided by the manufacturer VOLA based on "BUILD REPORT 2021" Version 2021 – lifetime tables: group 53 (3) = lifetime of 30 years (BUILD REPORT 2021).

Picture of products



**Figure 1: 4311, 4321, 4811, 4821**



**Figure 2: 4312, 4322, 4812, 4822**

Eight products (4311, 4321, 4811, 4821, 4312, 4322, 4812, 4822) are calculated in six different surfaces (16 and 20, 19, 40, 27, 60, 64) and twelve product groups, see Figure 1 and Figure 2.

Group 4 called "Colors" have more surfaces: Grey (02), Blue (04), Orange (05), Light green (06), Yellow (08), Dark grey (09), Mocca (12), Bright red (14), Dark blue (15), Gloss black (17), Gloss white (18), Carmine red (21), Pink (25), Matt black (27), and Matt white (28).

Group 5 called "Exclusive color with PVD on Brass" have also more surfaces: Black (60), Deep black (62), Copper (63), Gold (65), and Nickel (68).

Group 6 called "Exclusive color with PVD on Stainless steel" have also more surfaces: Brushed black (61), Brushed copper (64), Brushed gold (70), and Dark brushed copper (71).

# LCA background

## Declared unit

The declared unit is 1 piece of product.

The LCI and LCIA results in this EPD relate to 1 fixture from VOLA for the types: 4311, 4321, 4811, 4821, 4312, 4322, 4812, and 4822.

Table 3 shows weights and conversion factors to 1 kg for the declared unit covering 12 product groups with 6 different surfaces (16 and 20, 19, 40, 27, 60, 64) and 8 different variations of products (4311, 4321, 4811, 4821, 4312, 4322, 4812, and 4822).

### The results for:

- Group no. 1 refers to Table 7 to Table 11
- Group no. 2 refers to Table 12 to Table 16
- Group no. 3 refers to Table 17 to Table 21
- Group no. 4 refers to Table 22 to Table 26
- Group no. 5 refers to Table 27 to Table 31
- Group no. 6 refers to Table 32 to Table 36
- Group no. 7 refers to Table 37 to Table 41
- Group no. 8 refers to Table 42 to Table 46
- Group no. 9 refers to Table 47 to Table 51

- Group no. 10 refers to Table 52 to Table 56
- Group no. 11 refers to Table 57 to Table 61
- Group no. 12 refers to Table 62 to Table 66

## PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804, and Part B/ PCR-Part B: Requirements on the EPD for Bathroom and showers.

## Guarantee of Origin – certificates

### Foreground system:

The product is produced using electricity from wind energy sources covered by GO for the EPD validity period. The LCA is modelled with electricity from wind energy.

### Background system:

Upstream and downstream processes are modelled using a European electricity grid mix. This choice is made because data for the generation of electricity used in modules B-D shall be based on the electricity consumption mix on the market.

**Table 3: Declared unit**

Group no.	Surface/Material		Surface no.	Name / Value								Conversion factor to 1 kg
				4311	4321	4811	4821	4312	4322	4812	4822	
				[kg/piece]								
1	Polished and brushed chrome	Polished chrome	16, 20	3,04	3,09	3,23	3,26					0,32
		Brushed chrome										
2	Natural brass	Natural brass	19	3,04	3,07	3,22	3,25					0,32
3	Stainless steel	Stainless steel	40	3,09	3,09	3,23	3,27					0,32
4	Colors	Matt black	27	3,05	3,08	3,24	3,26					0,32
5	Exclusive color (PVD on Brass)	Black	60	3,10	3,14	3,29	3,33					0,31
6	Exclusive color (PVD on Stainless steel)	Brushed copper	64	3,10	3,15	3,28	3,34					0,31
7	Polished and brushed chrome	Polished chrome	16, 20					3,09	3,13	3,31	3,34	0,31
		Brushed chrome										
8	Natural brass	Natural brass	19					3,12	3,15	3,34	3,37	0,31
9	Stainless steel	Stainless steel	40					3,15	3,20	3,15	3,38	0,31
10	Colors	Matt black	27					3,23	3,25	3,41	3,43	0,30
11	Exclusive color (PVD on Brass)	Black	60					3,13	3,18	3,35	3,40	0,31

12	Exclusive color (PVD on Stainless steel)	Brushed copper	64					3,19	3,25	3,38	3,43	0,30
Declared unit							1 piece					0,30-0,32

The Flow diagram (

Figure 3) conforms with the requirements of the modular approach and shows all phases. All phases are described below.

Flow diagram

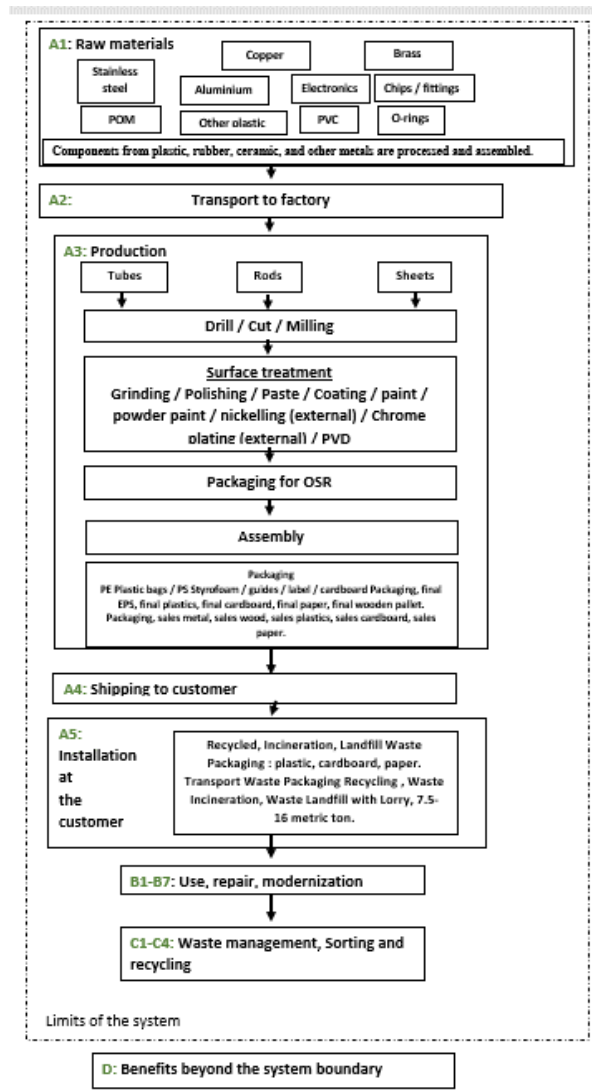


Figure 3: Flow diagram of product system with modules A1-D

## System boundary

This EPD is based on a cradle-to-grave LCA, in which 100 weight-% have been accounted for.

The general rules for the exclusion of inputs and outputs follow the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

### Product stage (A1-A3) includes:

This product stage includes the acquisition of all raw materials, components and energy, transport to the production site, packaging, and waste processing up to the "end-of-waste" state or final disposal. The LCA results are declared in aggregated form for the product stage, which means, that the sub-modules A1, A2, and A3 are declared as one module A1-A3. The manufacturing process is taking place in Denmark.

#### A1: Extraction and processing of raw materials

VOLA uses the purest (primary) steel and brass to make sure the products are built to last. Components from plastic, rubber, ceramic, and other metals are provided by suppliers which are then processed and assembled.

The materials that are used to pack all raw materials are metal strips, cardboard, paper, wood, and plastic.

#### A2: Transport to the production site in Horsens, Denmark

The raw materials are transported to the manufacturing site. The modelling includes road and/or flight transportation of each raw material. The transportation of all raw materials is by trucks.

#### A3: Manufacturing processes

The production of packaging materials is taken into account at this stage. The processing of any waste arising from this stage is also included. The main raw materials are stainless steel and brass. These materials constitute 55 % of the total product. Stainless steel components have different qualities: 304L and 316L. The brass components are of different qualities: CW508L, CW511, CW608N, and CW614N. The rest of the components are mainly made of different kinds of rubber and plastic materials.

From solid brass/stainless steel rods or pipes, components are rotated, drilled, or milled on CNC machines. Subsequently, the components are ground/polished to create a unique surface, either by manual or automatic processes. Some components are hand-soldered or soldered by induction. The finished polished components are treated with a surface finish depending on the finish the customer wishes. Production is based on LEAN-production, where stocks are minimized and where products are put into production as soon as they are sold (Make to order, MTO).

The wooden pallets for the transportation of products are part of a return system, and therefore only 1/25 is accounted for due to the average 25 times reuse rate.

The colored surfaces in product group no 4. and 10. represented by surface no. 27 also include powder coating material. Powder coating waste from production is 45 %.

The steel waste from production is 57-60 % for groups no. 3, 4, 6, 7, 9, 10, 11, and 12, and 0 % for groups no. 1, 2, 5, and 8.

The brass waste from production is 65 % for groups no. 1-6; 61 % of brass waste is from groups no. 7-12.

The waste of brass, steel, and powder coating during manufacturing processes is recycled and transported by lorry to the sorting and collecting center.



In this phase, the disposal of raw material packaging is considered. Waste packaging from raw materials (paper, cardboard, wood, metal) is transported to a sorting and collection center, where 100 % recycling is expected.

Transportation to the sorting and collecting center is covered by a European average EURO 5 lorry 16 t with a diesel engine, and distance to the recycling and incineration station is covered by a European average EURO 5 lorry >32 tons with a diesel engine.

**The construction process stage (A4-A5) includes:**

**A4: Transportation from the VOLA production site in Horsens, Denmark to customers**

Distribution to customers is based on the current European market situation and takes into account not only the current fleet mix with primarily Euro 5 vehicles but also vehicle loading with an average of 5 t and effective distances, see Table 67. It is implemented within Europe using diesel-powered trucks.

**A5: Installation of products**

Installation is simple and does not require any relevant energy consumption or use of materials, due to manual installment by technicians.

Mounting instructions are included with the product or can be downloaded on: [www.VOLA.com](http://www.VOLA.com)

Apart from the waste of sales and transport packaging for the final VOLA product (paper, cardboard, and plastics), no additional material flows are generated during installation.

Overall, 73,8 % of Sales and Transport Packaging for the final VOLA product is recycled, 11,8 % is transported to the landfill, and 14,4 % is incinerated, with the potential benefits reported in module D.

Waste packaging materials are transported 300 km to the recycling center, 100 km to the incineration station, and 50 km to the landfill. Transportation is covered by a European average EURO 5 lorry 16 t with a diesel engine.

**Use stage (B1-B7) includes:**

**B1: Use**

The product has a reference service life of a minimum of 30 years. The scenario in this LCA is that the product will last at least 30 years provided that the requirements for maintenance and repair throughout this period are kept. The lifespan of products has been provided by the manufacturer, VOLA. This LCA phase scenario includes a use stage based in Europe. There are no direct emissions from the use of VOLA products.



**B2: Maintenance**

Maintenance instructions are part of the VOLA product, which also can be downloaded at: [www.VOLA.com](http://www.VOLA.com)

Waste packaging materials resulting from the maintenance are omitted.

**B3: Repair**

The product is made of a few parts that can easily be changed and replaced by new parts. The service interval for the VOLA parts depends on use and water quality scenarios. The estimated service interval is approx. 10 years. Parts that are calculated for repair are hoses, cartridges, and pilators. This module includes the waste handling of the disposed parts and production of those.

VOLA guarantees that it is possible to get spare parts a minimum of 30 years from the day the product is ordered. Service drawing is available on: [www.VOLA.com](http://www.VOLA.com)

**B4: Replacement**

There is no calculated replacement due to the declaration for a product life of 30 years.

**B5: Refurbishment**

No refurbishment is taken into account within 30 years.

**(B6-B7) Consumption data**

This use stage consists of energy and water consumption for the users with a scenario to be used in bathrooms and kitchens for 30 years. The water use calculation follows the formula provided in the reference cPCR: "Product-group-specific LCA calculation rules from PCR part A - Sanitary fittings and showers". The formula serves as a basis for calculating the usage scenario for the described product and its application (according to the NWO 10-14 Profile on drinking water requirements and wastewater output of the DGNB Building Certification – New Buildings - Residential Buildings):

The number of users is calculated in Profile 14 according to the area of the building. In the event of a declared product, average household size in Germany is assumed: 2.05 users per household according to the Federal Statistics Agency. The energy has been chosen to be the European grid consumption mix. Water consumption has been chosen to be the European market for tap water.

Sensor "hand-free" washbasin taps ensure low water consumption thanks to efficient control electronics. The actual amount of water and energy that is consumed during use partly depends on user behavior. Water and energy consumption are based on the European market.

The actual amount of water that is consumed during use partly depends on user behaviour. The technical operating scenario is available in Table 4, Table 5, and Table 6.

The estimation has been made for the usage of tap aerators with 1,9 l/min water consumption, an average of 100 cycles per day, and a cycle time of 5 seconds. Basically the Tap aerators use batteries to reduce the water flow to 1.9 l/min while the standard option is 5 l/min per cycles to be run according to sensor settings.

The 1,9 l/min flow rate refers to different water-saving tap aerators, so the battery is consumed quicker or lasts longer depending on the flow rate in the Net freshwater consumption scenario of 175 m<sup>3</sup> (100 cycles per day, 5 sec. lengths of use cycle, lifespan of 30 years). Sensors runs on PSU (power Supply Unit) has its own energy consumption data.

**Table 4: Consumption data in the use stage - Operational energy use and water use**

Technical data		Battery (2 x AA)	Main part of the tap aerator (PSU)
Flow rate	l/min	1,9	1,9
Standby consumption of the PSU	W	-	≤ 0,3
Energy consumption of the PSU (100 cycles per day in 1 year)	kWh	-	0,9
Battery lifetime when used 100 times a day (type AA batteries)	years	2	-
Possible Cycle time settings.	Sec.	(0 – 1 – 3 – 5 – 8 – 10 – 15 – 20)	(0 – 1 – 3 – 5 – 8 – 10 – 15 – 20)

**Table 5: Consumption data - cycle time (1,9 l/min)**

1,9 l/min water-saving aerators and Cycle time Settings of 5 sec. (Default sensor setting 120mm)								
Use scenario		Intensity of use			Water consumption		Energy consumption	
		Per day	Per year	Per RSL	[Litres] per year	[Litres] per RSL	[kWh] per year	[kWh] per RSL
High use (Public buildings)	0,16 liter per use	300	109.500	3.285.000	17.520	525.600	5,328	159,84
Medium (Office buildings)	0,16 liter per use	150	547.50	1.642.500	8.760	262.800	3,978	119,34
<b>Average building</b>	<b>0,16 liter per use</b>	<b>100</b>	<b>365.00</b>	<b>1.095.000</b>	<b>5.840</b>	<b>175.200</b>	<b>3,528</b>	<b>105,84</b>
Low (Private homes)	0,16 liter per use	30	109.50	328.500	1.752	52.560	2,898	86,94

**Table 6: Construction data**

Name	Value	Unit
Maximum load temperature permanent operation	60	°C
Maximum load temperature temporary operation	70	°C
Flow rate (indications for a pressure range of 1-3 bar)	0,3	m <sup>3</sup> /h
Sound emissions	0-20	dB

**End of Life (C1-C4) includes:**

The end-of-life stage consists of the deconstruction/demolition, transport, waste management, and disposal processes to manage the product as waste after the use phase of 30 years life span.

The generated waste in modules C1-C4 is included up to the "end-of-waste" state or final disposal, with the potential net benefits reported in module D. The end-of-life stage is based on the European market.

**C1: Deconstruction, Demolition**

For the demolition of water basin mixers, the energy consumption is 0,1 kWh. The electricity is based on the European grid mix.

**C2: Transport**

This stage includes the transportation of the demolished product. It is considered that 5,9-6,6 % of product parts are transported 100 km to the incineration station, 82,6-84 % of the product is recycled and transported 300 km, and 10,1-10,9 % of the product is transported 50 km to the landfill. Transport is covered by a European average EURO 5 lorry 16 t with a diesel engine.

**C3: Waste Processing**

5,9-6,6 % of the product parts are incinerated in module C3 with energy recovery accounted for in module D. Overall, 82,6-84 % of the product is recycled based on recycling of Battery, Brass, Electronic, Other metals, Plastic, Steel and Hot dip galvanized steel fractions, while materials for recovery are accounted for in module D.

**C4: Disposal**

Overall, 10,1-10,9 % of the product is transported to a landfill.

**Re-use, recovery and recycling potential (D) includes:**

Module D includes reuse, recovery, and/or recycling potential, expressed as net impact and benefits, due to reuse, recycling, and incineration of materials with energy recovery in modules A5, B3, and C3.

The recycled components made from raw materials in the product stage were assumed to replace similar components used as raw materials. The plastic and rubber parts of the product are assumed to be incinerated at the end-of-life stage in module C3, whereas an energy recovery (75 % heat, 25 % electricity) and energy efficiency (80 % for heat, 25 % for electricity) from the incineration process is accounted for in module D.

## LCA results

The variation in environmental impact caused between products within the same groups lies in the base material amount i.e. steel, brass and the hot dip galvanisation steel treatment, and not in the product manufacturing. Therefore, the potential environmental impacts per surface treatments (no. 1-12) are presented in the next page. The potential environmental impact variation between the products and colors is below 10 % within the twelve groups, thus justifying their grouping in one group and represented by the results of one product.

Group no. 1. Polished and brushed chrome, represented by 4821-16 – Polished chrome

Group no. 2. Natural brass, represented by 4821-19 – Natural brass

Group no. 3. Stainless steel, represented by 4821-40 – Stainless steel

Group no. 4. Colors, represented by 4821-27 – Matt black

Group no. 5. Exclusive color (PVD on Brass), represented by 4821-60 – Black

Group no. 6. Exclusive color (PVD on Stainless steel), represented by 4821-64 – Brushed copper

Group no. 7. Polished and brushed chrome, represented by 4822-16 – Polished chrome

Group no. 8. Natural brass, represented by 4822-19 – Natural brass

Group no. 9. Stainless steel, represented by 4822-40 – Stainless steel

Group no. 10. Colors, represented by 4822-27 – Matt black

Group no. 11. Exclusive color (PVD on Brass), represented by 4822-60 – Black

Group no. 12. Exclusive color (PVD on Stainless steel), represented by 4822-64 – Brushed copper

**Group 1: Polished and brushed chrome is represented by 4821-16**

**Table 7: Environmental impact indicators**

ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP- total	kg CO <sub>2</sub> -eq.	3,17E+01	1,95E+00	6,23E-01	0,00E+00	8,93E+00	3,17E-02	0,00E+00	0,00E+00	3,88E+01	5,50E+01	3,67E-02	2,00E-01	8,15E-01	4,35E-02	-6,69E-01
GWP-fossil	kg CO <sub>2</sub> -eq.	3,18E+01	1,95E+00	1,52E-01	0,00E+00	1,59E+01	3,16E-02	0,00E+00	0,00E+00	3,74E+01	5,38E+01	3,54E-02	2,00E-01	8,02E-01	1,15E-02	-6,49E-01
GWP-biogenic	kg CO <sub>2</sub> -eq.	-3,61E-01	0,00E+00	4,52E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	1,31E+00	1,13E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-2,20E-03
GWP-luluc	kg CO <sub>2</sub> -eq.	7,34E-02	1,14E-03	5,38E-05	0,00E+00	1,11E+01	1,46E-06	0,00E+00	0,00E+00	9,34E-02	9,39E-02	8,83E-05	9,16E-05	5,57E-04	3,14E-06	-5,41E-04
ODP	kg CFC11 -eq.	4,61E-07	4,23E-08	2,36E-09	0,00E+00	1,03E-06	5,60E-11	0,00E+00	0,00E+00	7,14E-07	1,52E-06	6,75E-10	4,36E-09	3,03E-09	9,08E-11	-1,84E-08
AP	mol H <sup>+</sup> -eq.	1,60E+00	5,96E-03	5,23E-04	0,00E+00	1,42E-01	1,21E-04	0,00E+00	0,00E+00	2,15E-01	2,94E-01	2,03E-04	6,23E-04	1,58E-03	2,96E-05	-1,77E-03
EP-freshwater	kg P-eq.	1,25E-01	1,65E-04	1,24E-05	0,00E+00	5,92E-03	1,64E-06	0,00E+00	0,00E+00	3,55E-02	3,57E-02	3,35E-05	1,38E-05	1,25E-04	1,05E-06	-1,45E-04
EP-marine	kg N-eq.	9,30E-02	1,92E-03	4,13E-04	0,00E+00	1,13E-01	4,63E-05	0,00E+00	0,00E+00	3,47E-02	5,74E-02	3,28E-05	2,13E-04	3,94E-04	8,43E-05	-4,71E-04
EP-terrestrial	mol N-eq.	1,21E+00	2,02E-02	2,00E-03	0,00E+00	4,62E-01	2,42E-04	0,00E+00	0,00E+00	3,14E-01	5,51E-01	2,97E-04	2,25E-03	3,82E-03	1,10E-04	-4,61E-03
POCP	kg NMVOC-eq.	3,44E-01	8,62E-03	8,08E-04	0,00E+00	9,33E-02	7,65E-05	0,00E+00	0,00E+00	1,01E-01	2,02E-01	9,54E-05	9,34E-04	1,16E-03	4,78E-05	-1,81E-03
ADPE	kg Sb-eq.	2,16E-02	8,49E-06	4,41E-07	0,00E+00	1,76E-04	1,92E-08	0,00E+00	0,00E+00	4,54E-04	2,83E-04	4,29E-07	6,38E-07	1,22E-06	8,69E-09	-1,82E-06
ADPF	MJ	4,19E+02	2,74E+01	1,56E+00	0,00E+00	2,69E+02	4,37E-01	0,00E+00	0,00E+00	8,52E+02	9,67E+02	8,05E-01	2,81E+00	4,06E+00	8,33E-02	-9,29E+00
WDP	m <sup>3</sup>	2,21E+01	1,13E-01	1,49E-02	0,00E+00	6,47E+01	3,14E-02	0,00E+00	0,00E+00	9,60E+00	7,38E+03	9,07E-03	1,07E-02	6,57E-02	3,44E-03	-5,88E-02
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimer	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.															

**Table 8: Additional environmental impact indicators**

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	4,11E-06	1,13E-07	1,02E-08	0,00E+00	2,02E-06	1,27E-09	0,00E+00	0,00E+00	7,88E-07	3,05E-06	7,44E-10	1,37E-08	1,60E-08	5,80E-10	-1,80E-08
IRP	kBq U235 eq	2,58E+01	5,46E-02	3,93E-03	0,00E+00	1,26E+00	7,32E-05	0,00E+00	0,00E+00	2,40E+01	2,05E+01	2,27E-02	4,55E-03	3,75E-02	1,37E-04	-6,56E-02
ETP-fw	CTUe	2,30E+03	1,45E+01	1,59E+00	0,00E+00	5,34E+02	4,99E-02	0,00E+00	0,00E+00	1,43E+02	2,47E+02	1,35E-01	1,42E+00	2,09E+00	1,54E-01	-1,46E+00
HTP-c	CTUh	2,61E-07	9,98E-10	8,41E-11	0,00E+00	2,96E-08	3,92E-12	0,00E+00	0,00E+00	1,76E-08	2,38E-07	1,66E-11	8,38E-11	1,78E-10	3,49E-12	-2,09E-10
HTP-nc	CTUh	2,10E-05	1,91E-08	1,96E-09	0,00E+00	6,85E-07	5,44E-11	0,00E+00	0,00E+00	7,01E-07	3,11E-06	6,63E-10	1,87E-09	4,82E-09	9,25E-11	-4,08E-09
SQP	-	5,71E+02	1,14E+01	7,58E-01	0,00E+00	8,50E+02	1,58E-02	0,00E+00	0,00E+00	1,66E+02	2,11E+02	1,57E-01	1,44E+00	1,17E+00	1,79E-01	-1,35E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless) The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimers	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 2 This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.															

**Table 9: Parameters describing resource use**

RESOURCE USE PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2,12E+02	5,96E-01	-1,64E+01	0,00E+00	4,59E+02	5,07E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	4,91E-02	2,35E+00	1,78E-03	-1,76E+00
PERM	MJ	2,02E-01	0,00E+00	1,65E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,12E+02	5,96E-01	4,12E-02	0,00E+00	4,59E+02	5,07E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	4,91E-02	2,35E+00	1,78E-03	-1,76E+00
PENRE	MJ	4,30E+02	2,91E+01	4,67E-01	0,00E+00	3,04E+02	4,70E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	2,99E+00	4,32E+00	8,86E-02	-1,01E+01
PENRM	MJ	1,79E+01	0,00E+00	1,19E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,48E+02	2,91E+01	1,65E+00	0,00E+00	3,04E+02	4,70E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	2,99E+00	4,32E+00	8,86E-02	-1,01E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	2,27E+01	1,13E-01	1,49E-02	0,00E+00	6,27E+01	2,99E-02	0,00E+00	0,00E+00	9,55E+00	7,04E+03	5,81E-06	1,11E-06	9,20E-06	3,31E-08	-1,65E-05
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 10: End-of-life (waste categories and output flows)**

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1,19E-02	1,74E-04	9,55E-06	0,00E+00	1,15E-03	2,01E-07	0,00E+00	0,00E+00	1,50E-03	2,81E-03	1,41E-06	1,79E-05	9,22E-06	4,36E-07	-3,31E-05
NHWD	kg	1,02E+01	8,73E-01	1,84E-01	0,00E+00	3,64E+00	2,44E-03	0,00E+00	0,00E+00	3,42E+00	1,12E+01	3,24E-03	1,16E-01	7,95E-02	3,44E-01	-7,78E-02
RWD	kg	7,85E-04	1,35E-05	9,81E-07	0,00E+00	3,15E-04	1,81E-08	0,00E+00	0,00E+00	6,15E-03	5,24E-03	5,81E-06	1,11E-06	9,20E-06	3,31E-08	-1,65E-05
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	2,50E+00	0,00E+00	7,81E-01	0,00E+00	0,00E+00	3,62E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,72E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	2,99E-03	0,00E+00	1,71E-01	0,00E+00	0,00E+00	1,37E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,44E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,64E+00	0,00E+00	0,00E+00	1,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,26E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 11: Biogenic carbon content**

BIOGENIC CARBON CONTENT PER FIXTURE		
Parameter	Unit	At the factory gate
Biogenic carbon content in a product	kg C	0
Biogenic carbon content in accompanying packaging	kg C	0,52
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

**Group 2: Natural brass is represented by 4821-19**

**Table 12: Environmental impact indicators**

ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP- total	kg CO <sub>2</sub> -eq.	3,20E+01	1,95E+00	6,23E-01	0,00E+00	8,93E+00	3,17E-02	0,00E+00	0,00E+00	3,88E+01	5,50E+01	3,67E-02	2,00E-01	8,15E-01	4,35E-02	-6,69E-01
GWP-fossil	kg CO <sub>2</sub> -eq.	3,21E+01	1,94E+00	1,52E-01	0,00E+00	1,59E+01	3,16E-02	0,00E+00	0,00E+00	3,74E+01	5,38E+01	3,54E-02	2,00E-01	8,02E-01	1,15E-02	-6,49E-01
GWP-biogenic	kg CO <sub>2</sub> -eq.	-3,61E-01	0,00E+00	4,52E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	1,31E+00	1,13E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-2,20E-03
GWP-luluc	kg CO <sub>2</sub> -eq.	7,35E-02	1,14E-03	5,38E-05	0,00E+00	1,11E+01	1,46E-06	0,00E+00	0,00E+00	9,34E-02	9,39E-02	8,83E-05	9,14E-05	5,57E-04	3,13E-06	-5,40E-04
ODP	kg CFC11 -eq.	4,82E-07	4,22E-08	2,36E-09	0,00E+00	1,03E-06	5,60E-11	0,00E+00	0,00E+00	7,14E-07	1,52E-06	6,75E-10	4,35E-09	3,03E-09	9,01E-11	-1,84E-08
AP	mol H <sup>+</sup> -eq.	1,60E+00	5,94E-03	5,23E-04	0,00E+00	1,42E-01	1,21E-04	0,00E+00	0,00E+00	2,15E-01	2,94E-01	2,03E-04	6,21E-04	1,58E-03	2,94E-05	-1,77E-03
EP-freshwater	kg P-eq.	1,25E-01	1,65E-04	1,24E-05	0,00E+00	5,92E-03	1,64E-06	0,00E+00	0,00E+00	3,55E-02	3,57E-02	3,35E-05	1,38E-05	1,25E-04	1,05E-06	-1,45E-04
EP-marine	kg N-eq.	9,32E-02	1,92E-03	4,13E-04	0,00E+00	1,13E-01	4,63E-05	0,00E+00	0,00E+00	3,47E-02	5,74E-02	3,28E-05	2,13E-04	3,94E-04	8,42E-05	-4,71E-04
EP-terrestrial	mol N-eq.	1,21E+00	2,02E-02	2,00E-03	0,00E+00	4,62E-01	2,42E-04	0,00E+00	0,00E+00	3,14E-01	5,51E-01	2,97E-04	2,25E-03	3,81E-03	1,09E-04	-4,61E-03
POCP	kg NMVOC-eq.	3,44E-01	8,60E-03	8,08E-04	0,00E+00	9,33E-02	7,65E-05	0,00E+00	0,00E+00	1,01E-01	2,02E-01	9,54E-05	9,32E-04	1,16E-03	4,75E-05	-1,81E-03
ADPE	kg Sb-eq.	2,16E-02	8,47E-06	4,41E-07	0,00E+00	1,76E-04	1,92E-08	0,00E+00	0,00E+00	4,54E-04	2,83E-04	4,29E-07	6,36E-07	1,22E-06	8,66E-09	-1,82E-06
ADPF	MJ	4,23E+02	2,73E+01	1,56E+00	0,00E+00	2,69E+02	4,37E-01	0,00E+00	0,00E+00	8,52E+02	9,67E+02	8,05E-01	2,81E+00	4,06E+00	8,27E-02	-9,29E+00
WDP	m <sup>3</sup>	2,22E+01	1,13E-01	1,49E-02	0,00E+00	6,47E+01	3,14E-02	0,00E+00	0,00E+00	9,60E+00	7,38E+03	9,07E-03	1,06E-02	6,57E-02	3,41E-03	-5,88E-02
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimer	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															

**Table 13: Additional environmental impact indicators**

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	4,12E-06	1,13E-07	1,02E-08	0,00E+00	2,02E-06	1,27E-09	0,00E+00	0,00E+00	7,88E-07	3,05E-06	7,44E-10	1,36E-08	1,60E-08	5,76E-10	-1,80E-08
IRP	kBq U235 eq	2,58E+01	5,45E-02	3,93E-03	0,00E+00	1,26E+00	7,32E-05	0,00E+00	0,00E+00	2,40E+01	2,05E+01	2,27E-02	4,54E-03	3,75E-02	1,37E-04	-6,56E-02
ETP-fw	CTUe	2,30E+03	1,44E+01	1,59E+00	0,00E+00	5,34E+02	4,99E-02	0,00E+00	0,00E+00	1,43E+02	2,47E+02	1,35E-01	1,42E+00	2,09E+00	1,54E-01	-1,46E+00
HTP-c	CTUh	2,58E-07	9,95E-10	8,41E-11	0,00E+00	2,96E-08	3,92E-12	0,00E+00	0,00E+00	1,76E-08	2,38E-07	1,66E-11	8,36E-11	1,78E-10	3,48E-12	-2,09E-10
HTP-nc	CTUh	2,10E-05	1,91E-08	1,96E-09	0,00E+00	6,85E-07	5,44E-11	0,00E+00	0,00E+00	7,01E-07	3,11E-06	6,63E-10	1,86E-09	4,82E-09	9,24E-11	-4,08E-09
SQP	-	5,71E+02	1,14E+01	7,58E-01	0,00E+00	8,50E+02	1,58E-02	0,00E+00	0,00E+00	1,66E+02	2,11E+02	1,57E-01	1,44E+00	1,16E+00	1,78E-01	-1,35E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless) The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimers	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 2 This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.															



**Table 14: Parameters describing resource use**

RESOURCE USE PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2,33E+02	5,94E-01	-1,64E+01	0,00E+00	4,59E+02	5,07E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	4,90E-02	2,35E+00	1,77E-03	-1,76E+00
PERM	MJ	2,02E-01	0,00E+00	1,65E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,33E+02	5,94E-01	4,12E-02	0,00E+00	4,59E+02	5,07E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	4,90E-02	2,35E+00	1,77E-03	-1,76E+00
PENRE	MJ	4,35E+02	2,90E+01	4,67E-01	0,00E+00	3,04E+02	4,70E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	2,98E+00	4,32E+00	8,80E-02	-1,01E+01
PENRM	MJ	1,79E+01	0,00E+00	1,19E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,53E+02	2,90E+01	1,65E+00	0,00E+00	3,04E+02	4,70E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	2,98E+00	4,32E+00	8,80E-02	-1,01E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	2,27E+01	1,12E-01	1,49E-02	0,00E+00	6,27E+01	2,99E-02	0,00E+00	0,00E+00	9,55E+00	7,04E+03	5,81E-06	1,11E-06	9,19E-06	3,30E-08	-1,65E-05
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 15: End-of-life (waste categories and output flows)**

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1,19E-02	1,73E-04	9,55E-06	0,00E+00	1,15E-03	2,01E-07	0,00E+00	0,00E+00	1,50E-03	2,81E-03	1,41E-06	1,78E-05	9,22E-06	4,33E-07	-3,31E-05
NHWD	kg	1,02E+01	8,70E-01	1,84E-01	0,00E+00	3,64E+00	2,44E-03	0,00E+00	0,00E+00	3,42E+00	1,12E+01	3,24E-03	1,16E-01	7,95E-02	3,40E-01	-7,77E-02
RWD	kg	7,86E-04	1,34E-05	9,81E-07	0,00E+00	3,15E-04	1,81E-08	0,00E+00	0,00E+00	6,15E-03	5,24E-03	5,81E-06	1,11E-06	9,19E-06	3,30E-08	-1,65E-05
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	2,50E+00	0,00E+00	7,81E-01	0,00E+00	0,00E+00	3,62E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,71E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	2,99E-03	0,00E+00	1,71E-01	0,00E+00	0,00E+00	1,37E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,44E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,64E+00	0,00E+00	0,00E+00	1,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,26E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 16: Biogenic carbon content**

BIOGENIC CARBON CONTENT PER FIXTURE		
Parameter	Unit	At the factory gate
Biogenic carbon content in a product	kg C	0
Biogenic carbon content in accompanying packaging	kg C	0,52
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

**Group 3: Stainless steel is represented by 4821-40**

**Table 17: Environmental impact indicators**

ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP- total	kg CO <sub>2</sub> -eq.	3,02E+01	1,96E+00	6,23E-01	0,00E+00	8,93E+00	3,17E-02	0,00E+00	0,00E+00	3,88E+01	5,50E+01	3,67E-02	2,01E-01	8,14E-01	4,35E-02	-6,68E-01
GWP-fossil	kg CO <sub>2</sub> -eq.	3,03E+01	1,95E+00	1,52E-01	0,00E+00	1,59E+01	3,16E-02	0,00E+00	0,00E+00	3,74E+01	5,38E+01	3,54E-02	2,01E-01	8,01E-01	1,14E-02	-6,49E-01
GWP-biogenic	kg CO <sub>2</sub> -eq.	-3,61E-01	0,00E+00	4,52E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	1,31E+00	1,13E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-2,20E-03
GWP-luluc	kg CO <sub>2</sub> -eq.	6,45E-02	1,14E-03	5,38E-05	0,00E+00	1,11E+01	1,46E-06	0,00E+00	0,00E+00	9,34E-02	9,39E-02	8,83E-05	9,20E-05	5,57E-04	3,13E-06	-5,40E-04
ODP	kg CFC11 -eq.	4,37E-07	4,25E-08	2,36E-09	0,00E+00	1,03E-06	5,60E-11	0,00E+00	0,00E+00	7,14E-07	1,52E-06	6,75E-10	4,38E-09	3,03E-09	9,00E-11	-1,84E-08
AP	mol H <sup>+</sup> -eq.	1,20E+00	5,98E-03	5,23E-04	0,00E+00	1,42E-01	1,21E-04	0,00E+00	0,00E+00	2,15E-01	2,94E-01	2,03E-04	6,26E-04	1,58E-03	2,94E-05	-1,77E-03
EP-freshwater	kg P-eq.	9,29E-02	1,65E-04	1,24E-05	0,00E+00	5,92E-03	1,64E-06	0,00E+00	0,00E+00	3,55E-02	3,57E-02	3,35E-05	1,39E-05	1,25E-04	1,05E-06	-1,45E-04
EP-marine	kg N-eq.	7,50E-02	1,93E-03	4,13E-04	0,00E+00	1,13E-01	4,63E-05	0,00E+00	0,00E+00	3,47E-02	5,74E-02	3,28E-05	2,14E-04	3,94E-04	8,42E-05	-4,71E-04
EP-terrestrial	mol N-eq.	9,49E-01	2,03E-02	2,00E-03	0,00E+00	4,62E-01	2,42E-04	0,00E+00	0,00E+00	3,14E-01	5,51E-01	2,97E-04	2,26E-03	3,82E-03	1,09E-04	-4,61E-03
POCP	kg NMVOC-eq.	2,73E-01	8,65E-03	8,08E-04	0,00E+00	9,33E-02	7,65E-05	0,00E+00	0,00E+00	1,01E-01	2,02E-01	9,54E-05	9,38E-04	1,16E-03	4,75E-05	-1,81E-03
ADPE	kg Sb-eq.	1,57E-02	8,52E-06	4,41E-07	0,00E+00	1,76E-04	1,92E-08	0,00E+00	0,00E+00	4,54E-04	2,83E-04	4,29E-07	6,41E-07	1,22E-06	8,65E-09	-1,82E-06
ADPF	MJ	3,95E+02	2,74E+01	1,56E+00	0,00E+00	2,69E+02	4,37E-01	0,00E+00	0,00E+00	8,52E+02	9,67E+02	8,05E-01	2,83E+00	4,06E+00	8,26E-02	-9,29E+00
WDP	m <sup>3</sup>	1,63E+01	1,14E-01	1,49E-02	0,00E+00	6,47E+01	3,14E-02	0,00E+00	0,00E+00	9,60E+00	7,38E+03	9,07E-03	1,07E-02	6,57E-02	3,41E-03	-5,88E-02
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimer	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															

**Table 18: Additional environmental impacts**

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	3,48E-06	1,14E-07	1,02E-08	0,00E+00	2,02E-06	1,27E-09	0,00E+00	0,00E+00	7,88E-07	3,05E-06	7,44E-10	1,37E-08	1,60E-08	5,76E-10	-1,80E-08
IRP	kBq U235 eq	2,54E+01	5,48E-02	3,93E-03	0,00E+00	1,26E+00	7,32E-05	0,00E+00	0,00E+00	2,40E+01	2,05E+01	2,27E-02	4,57E-03	3,75E-02	1,36E-04	-6,56E-02
ETP-fw	CTUe	1,69E+03	1,45E+01	1,59E+00	0,00E+00	5,34E+02	4,99E-02	0,00E+00	0,00E+00	1,43E+02	2,47E+02	1,35E-01	1,43E+00	2,09E+00	1,53E-01	-1,46E+00
HTP-c	CTUh	2,21E-07	1,00E-09	8,41E-11	0,00E+00	2,96E-08	3,92E-12	0,00E+00	0,00E+00	1,76E-08	2,38E-07	1,66E-11	8,41E-11	1,78E-10	3,48E-12	-2,09E-10
HTP-nc	CTUh	1,53E-05	1,92E-08	1,96E-09	0,00E+00	6,85E-07	5,44E-11	0,00E+00	0,00E+00	7,01E-07	3,11E-06	6,63E-10	1,88E-09	4,82E-09	9,24E-11	-4,08E-09
SQP	-	4,56E+02	1,14E+01	7,58E-01	0,00E+00	8,50E+02	1,58E-02	0,00E+00	0,00E+00	1,66E+02	2,11E+02	1,57E-01	1,45E+00	1,17E+00	1,77E-01	-1,35E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless) The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimers	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 2 This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.															

Table 19: Parameters describing resource use

RESOURCE USE PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2,20E+02	5,97E-01	-1,64E+01	0,00E+00	4,59E+02	5,07E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	4,93E-02	2,35E+00	1,77E-03	-1,76E+00
PERM	MJ	2,02E-01	0,00E+00	1,65E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,21E+02	5,97E-01	4,12E-02	0,00E+00	4,59E+02	5,07E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	4,93E-02	2,35E+00	1,77E-03	-1,76E+00
PENRE	MJ	4,04E+02	2,92E+01	4,67E-01	0,00E+00	3,04E+02	4,70E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,00E+00	4,32E+00	8,79E-02	-1,01E+01
PENRM	MJ	1,79E+01	0,00E+00	1,19E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,22E+02	2,92E+01	1,65E+00	0,00E+00	3,04E+02	4,70E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,00E+00	4,32E+00	8,79E-02	-1,01E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	1,71E+01	1,13E-01	1,49E-02	0,00E+00	6,27E+01	2,99E-02	0,00E+00	0,00E+00	9,55E+00	7,04E+03	5,81E-06	1,12E-06	9,20E-06	3,30E-08	-1,65E-05
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

Table 20: End-of-life (waste categories and output flows)

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	8,90E-03	1,74E-04	9,55E-06	0,00E+00	1,15E-03	2,01E-07	0,00E+00	0,00E+00	1,50E-03	2,81E-03	1,41E-06	1,80E-05	9,23E-06	4,32E-07	-3,30E-05
NHWD	kg	1,30E+01	8,76E-01	1,84E-01	0,00E+00	3,64E+00	2,44E-03	0,00E+00	0,00E+00	3,42E+00	1,12E+01	3,24E-03	1,17E-01	7,96E-02	3,40E-01	-7,79E-02
RWD	kg	6,94E-04	1,35E-05	9,81E-07	0,00E+00	3,15E-04	1,81E-08	0,00E+00	0,00E+00	6,15E-03	5,24E-03	5,81E-06	1,12E-06	9,20E-06	3,30E-08	-1,65E-05
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	2,44E+00	0,00E+00	7,81E-01	0,00E+00	0,00E+00	3,62E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,73E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	2,99E-03	0,00E+00	1,71E-01	0,00E+00	0,00E+00	1,37E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,43E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,64E+00	0,00E+00	0,00E+00	1,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,25E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

Table 21: Biogenic carbon content

BIOGENIC CARBON CONTENT PER FIXTURE		
Parameter	Unit	At the factory gate
Biogenic carbon content in a product	kg C	0
Biogenic carbon content in accompanying packaging	kg C	0,52
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

**Group 4: Colors is represented by 4821-27 – Matt Black**

**Table 22: Environmental impact indicators**

ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP- total	kg CO <sub>2</sub> -eq.	3,14E+01	1,95E+00	6,21E-01	0,00E+00	8,93E+00	3,17E-02	0,00E+00	0,00E+00	3,88E+01	5,50E+01	3,67E-02	2,00E-01	8,14E-01	4,37E-02	-6,67E-01
GWP-fossil	kg CO <sub>2</sub> -eq.	3,15E+01	1,95E+00	1,50E-01	0,00E+00	1,59E+01	3,16E-02	0,00E+00	0,00E+00	3,74E+01	5,38E+01	3,54E-02	2,00E-01	8,02E-01	1,17E-02	-6,48E-01
GWP-biogenic	kg CO <sub>2</sub> -eq.	-3,61E-01	0,00E+00	4,52E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	1,31E+00	1,13E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-2,20E-03
GWP-luluc	kg CO <sub>2</sub> -eq.	7,20E-02	1,14E-03	5,37E-05	0,00E+00	1,11E+01	1,46E-06	0,00E+00	0,00E+00	9,34E-02	9,39E-02	8,83E-05	9,16E-05	5,57E-04	3,14E-06	-5,40E-04
ODP	kg CFC11 -eq.	4,77E-07	4,23E-08	2,35E-09	0,00E+00	1,03E-06	5,60E-11	0,00E+00	0,00E+00	7,14E-07	1,52E-06	6,75E-10	4,36E-09	3,02E-09	9,04E-11	-1,84E-08
AP	mol H <sup>+</sup> -eq.	1,53E+00	5,96E-03	5,22E-04	0,00E+00	1,42E-01	1,21E-04	0,00E+00	0,00E+00	2,15E-01	2,94E-01	2,03E-04	6,23E-04	1,58E-03	2,95E-05	-1,77E-03
EP-freshwater	kg P-eq.	1,20E-01	1,65E-04	1,24E-05	0,00E+00	5,92E-03	1,64E-06	0,00E+00	0,00E+00	3,55E-02	3,57E-02	3,35E-05	1,38E-05	1,25E-04	1,05E-06	-1,45E-04
EP-marine	kg N-eq.	8,99E-02	1,92E-03	4,12E-04	0,00E+00	1,13E-01	4,63E-05	0,00E+00	0,00E+00	3,47E-02	5,74E-02	3,28E-05	2,13E-04	3,93E-04	8,43E-05	-4,70E-04
EP-terrestrial	mol N-eq.	1,16E+00	2,02E-02	1,99E-03	0,00E+00	4,62E-01	2,42E-04	0,00E+00	0,00E+00	3,14E-01	5,51E-01	2,97E-04	2,25E-03	3,81E-03	1,10E-04	-4,60E-03
POCP	kg NMVOC-eq.	3,32E-01	8,62E-03	8,06E-04	0,00E+00	9,33E-02	7,65E-05	0,00E+00	0,00E+00	1,01E-01	2,02E-01	9,54E-05	9,34E-04	1,16E-03	4,77E-05	-1,80E-03
ADPE	kg Sb-eq.	2,06E-02	8,49E-06	4,40E-07	0,00E+00	1,76E-04	1,92E-08	0,00E+00	0,00E+00	4,54E-04	2,83E-04	4,29E-07	6,38E-07	1,22E-06	8,70E-09	-1,82E-06
ADPF	MJ	4,17E+02	2,74E+01	1,55E+00	0,00E+00	2,69E+02	4,37E-01	0,00E+00	0,00E+00	8,52E+02	9,67E+02	8,05E-01	2,81E+00	4,05E+00	8,30E-02	-9,27E+00
WDP	m <sup>3</sup>	2,13E+01	1,13E-01	1,48E-02	0,00E+00	6,47E+01	3,14E-02	0,00E+00	0,00E+00	9,60E+00	7,38E+03	9,07E-03	1,07E-02	6,57E-02	3,42E-03	-5,87E-02
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimer	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															

**Table 23: Additional environmental impacts**

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	4,00E-06	1,13E-07	1,02E-08	0,00E+00	2,02E-06	1,27E-09	0,00E+00	0,00E+00	7,88E-07	3,05E-06	7,44E-10	1,37E-08	1,60E-08	5,78E-10	-1,80E-08
IRP	kBq U235 eq	2,58E+01	5,46E-02	3,92E-03	0,00E+00	1,26E+00	7,32E-05	0,00E+00	0,00E+00	2,40E+01	2,05E+01	2,27E-02	4,55E-03	3,75E-02	1,37E-04	-6,55E-02
ETP-fw	CTUe	2,21E+03	1,45E+01	1,58E+00	0,00E+00	5,34E+02	4,99E-02	0,00E+00	0,00E+00	1,43E+02	2,47E+02	1,35E-01	1,43E+00	2,09E+00	1,54E-01	-1,46E+00
HTP-c	CTUh	2,49E-07	9,97E-10	8,38E-11	0,00E+00	2,96E-08	3,92E-12	0,00E+00	0,00E+00	1,76E-08	2,38E-07	1,66E-11	8,38E-11	1,77E-10	3,51E-12	-2,09E-10
HTP-nc	CTUh	2,00E-05	1,91E-08	1,96E-09	0,00E+00	6,85E-07	5,44E-11	0,00E+00	0,00E+00	7,01E-07	3,11E-06	6,63E-10	1,87E-09	4,82E-09	9,28E-11	-4,07E-09
SQP	-	5,51E+02	1,14E+01	7,55E-01	0,00E+00	8,50E+02	1,58E-02	0,00E+00	0,00E+00	1,66E+02	2,11E+02	1,57E-01	1,44E+00	1,16E+00	1,78E-01	-1,34E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless) The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimers	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 2 This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.															

**Table 24: Parameters describing resource use**

RESOURCE USE PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2,01E+02	5,95E-01	-1,64E+01	0,00E+00	4,59E+02	5,07E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	4,91E-02	2,35E+00	1,78E-03	-1,76E+00
PERM	MJ	2,02E-01	0,00E+00	1,65E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,01E+02	5,95E-01	4,11E-02	0,00E+00	4,59E+02	5,07E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	4,91E-02	2,35E+00	1,78E-03	-1,76E+00
PENRE	MJ	4,27E+02	2,91E+01	5,29E-01	0,00E+00	3,04E+02	4,70E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	2,99E+00	4,31E+00	8,83E-02	-1,01E+01
PENRM	MJ	1,79E+01	0,00E+00	1,12E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,45E+02	2,91E+01	1,65E+00	0,00E+00	3,04E+02	4,70E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	2,99E+00	4,31E+00	8,83E-02	-1,01E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	2,19E+01	1,12E-01	1,48E-02	0,00E+00	6,27E+01	2,99E-02	0,00E+00	0,00E+00	9,55E+00	7,04E+03	5,81E-06	1,12E-06	9,20E-06	3,31E-08	-1,65E-05
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 25: End-of-life (waste categories and output flows)**

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1,14E-02	1,74E-04	9,54E-06	0,00E+00	1,15E-03	2,01E-07	0,00E+00	0,00E+00	1,50E-03	2,81E-03	1,41E-06	1,79E-05	9,19E-06	4,34E-07	-3,30E-05
NHWD	kg	1,05E+01	8,73E-01	1,84E-01	0,00E+00	3,64E+00	2,44E-03	0,00E+00	0,00E+00	3,42E+00	1,12E+01	3,24E-03	1,16E-01	7,92E-02	3,41E-01	-7,74E-02
RWD	kg	7,81E-04	1,35E-05	9,79E-07	0,00E+00	3,15E-04	1,81E-08	0,00E+00	0,00E+00	6,15E-03	5,24E-03	5,81E-06	1,12E-06	9,20E-06	3,31E-08	-1,65E-05
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	2,46E+00	0,00E+00	7,80E-01	0,00E+00	0,00E+00	3,62E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,72E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	2,99E-03	0,00E+00	1,69E-01	0,00E+00	0,00E+00	1,37E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,44E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,62E+00	0,00E+00	0,00E+00	1,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,26E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 26: Biogenic carbon content**

BIOGENIC CARBON CONTENT PER FIXTURE		
Parameter	Unit	At the factory gate
Biogenic carbon content in a product	kg C	0
Biogenic carbon content in accompanying packaging	kg C	0,51
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

**Group 5: Exclusive color (PVD on Brass) is represented by 4821-60 – Black**

**Table 27: Environmental impact indicators**

ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP- total	kg CO <sub>2</sub> -eq.	3,21E+01	1,99E+00	6,23E-01	0,00E+00	8,93E+00	3,17E-02	0,00E+00	0,00E+00	3,88E+01	5,50E+01	3,67E-02	2,05E-01	8,15E-01	4,39E-02	-6,69E-01
GWP-fossil	kg CO <sub>2</sub> -eq.	3,22E+01	1,99E+00	1,52E-01	0,00E+00	1,59E+01	3,16E-02	0,00E+00	0,00E+00	3,74E+01	5,38E+01	3,54E-02	2,04E-01	8,02E-01	1,18E-02	-6,49E-01
GWP-biogenic	kg CO <sub>2</sub> -eq.	-3,61E-01	0,00E+00	4,52E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	1,31E+00	1,13E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-2,20E-03
GWP-luluc	kg CO <sub>2</sub> -eq.	7,38E-02	1,16E-03	5,38E-05	0,00E+00	1,11E+01	1,46E-06	0,00E+00	0,00E+00	9,34E-02	9,39E-02	8,83E-05	9,36E-05	5,58E-04	3,17E-06	-5,41E-04
ODP	kg CFC11 -eq.	4,89E-07	4,32E-08	2,36E-09	0,00E+00	1,03E-06	5,60E-11	0,00E+00	0,00E+00	7,14E-07	1,52E-06	6,75E-10	4,45E-09	3,03E-09	9,17E-11	-1,84E-08
AP	mol H <sup>+</sup> -eq.	1,60E+00	6,08E-03	5,23E-04	0,00E+00	1,42E-01	1,21E-04	0,00E+00	0,00E+00	2,15E-01	2,94E-01	2,03E-04	6,37E-04	1,58E-03	2,99E-05	-1,77E-03
EP-freshwater	kg P-eq.	1,25E-01	1,68E-04	1,24E-05	0,00E+00	5,92E-03	1,64E-06	0,00E+00	0,00E+00	3,55E-02	3,57E-02	3,35E-05	1,41E-05	1,25E-04	1,06E-06	-1,45E-04
EP-marine	kg N-eq.	9,34E-02	1,96E-03	4,13E-04	0,00E+00	1,13E-01	4,63E-05	0,00E+00	0,00E+00	3,47E-02	5,74E-02	3,28E-05	2,18E-04	3,94E-04	8,44E-05	-4,71E-04
EP-terrestrial	mol N-eq.	1,21E+00	2,06E-02	2,00E-03	0,00E+00	4,62E-01	2,42E-04	0,00E+00	0,00E+00	3,14E-01	5,51E-01	2,97E-04	2,30E-03	3,82E-03	1,11E-04	-4,61E-03
POCP	kg NMVOC-eq.	3,45E-01	8,79E-03	8,08E-04	0,00E+00	9,33E-02	7,65E-05	0,00E+00	0,00E+00	1,01E-01	2,02E-01	9,54E-05	9,55E-04	1,16E-03	4,82E-05	-1,81E-03
ADPE	kg Sb-eq.	2,16E-02	8,67E-06	4,41E-07	0,00E+00	1,76E-04	1,92E-08	0,00E+00	0,00E+00	4,54E-04	2,83E-04	4,29E-07	6,52E-07	1,22E-06	8,77E-09	-1,82E-06
ADPF	MJ	4,26E+02	2,79E+01	1,56E+00	0,00E+00	2,69E+02	4,37E-01	0,00E+00	0,00E+00	8,52E+02	9,67E+02	8,05E-01	2,88E+00	4,06E+00	8,41E-02	-9,30E+00
WDP	m <sup>3</sup>	2,24E+01	1,16E-01	1,49E-02	0,00E+00	6,47E+01	3,14E-02	0,00E+00	0,00E+00	9,60E+00	7,38E+03	9,07E-03	1,09E-02	6,57E-02	3,47E-03	-5,89E-02
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimer	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															

**Table 28: Additional environmental impacts**

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	4,14E-06	1,16E-07	1,02E-08	0,00E+00	2,02E-06	1,27E-09	0,00E+00	0,00E+00	7,88E-07	3,05E-06	7,44E-10	1,40E-08	1,60E-08	5,86E-10	-1,80E-08
IRP	kBq U235 eq	2,58E+01	5,57E-02	3,93E-03	0,00E+00	1,26E+00	7,32E-05	0,00E+00	0,00E+00	2,40E+01	2,05E+01	2,27E-02	4,65E-03	3,75E-02	1,38E-04	-6,56E-02
ETP-fw	CTUe	2,31E+03	1,48E+01	1,59E+00	0,00E+00	5,34E+02	4,99E-02	0,00E+00	0,00E+00	1,43E+02	2,47E+02	1,35E-01	1,46E+00	2,09E+00	1,54E-01	-1,46E+00
HTP-c	CTUh	2,61E-07	1,02E-09	8,41E-11	0,00E+00	2,96E-08	3,92E-12	0,00E+00	0,00E+00	1,76E-08	2,38E-07	1,66E-11	8,56E-11	1,78E-10	3,54E-12	-2,09E-10
HTP-nc	CTUh	2,10E-05	1,95E-08	1,96E-09	0,00E+00	6,85E-07	5,44E-11	0,00E+00	0,00E+00	7,01E-07	3,11E-06	6,63E-10	1,91E-09	4,83E-09	9,33E-11	-4,08E-09
SQP	-	5,73E+02	1,16E+01	7,58E-01	0,00E+00	8,50E+02	1,58E-02	0,00E+00	0,00E+00	1,66E+02	2,11E+02	1,57E-01	1,48E+00	1,17E+00	1,81E-01	-1,35E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless) The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimers	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 2 This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.															

Table 29: Parameters describing resource use

RESOURCE USE PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2,13E+02	6,08E-01	-1,64E+01	0,00E+00	4,59E+02	5,07E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	5,02E-02	2,35E+00	1,79E-03	-1,76E+00
PERM	MJ	2,02E-01	0,00E+00	1,65E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,13E+02	6,08E-01	4,12E-02	0,00E+00	4,59E+02	5,07E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	5,02E-02	2,35E+00	1,79E-03	-1,76E+00
PENRE	MJ	4,37E+02	2,97E+01	4,67E-01	0,00E+00	3,04E+02	4,70E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,06E+00	4,32E+00	8,95E-02	-1,01E+01
PENRM	MJ	1,79E+01	0,00E+00	1,19E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,55E+02	2,97E+01	1,65E+00	0,00E+00	3,04E+02	4,70E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,06E+00	4,32E+00	8,95E-02	-1,01E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	2,30E+01	1,15E-01	1,49E-02	0,00E+00	6,27E+01	2,99E-02	0,00E+00	0,00E+00	9,55E+00	7,04E+03	5,81E-06	1,14E-06	9,20E-06	3,34E-08	-1,65E-05
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

Table 30: End-of-life (waste categories and output flows)

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1,19E-02	1,77E-04	9,55E-06	0,00E+00	1,15E-03	2,01E-07	0,00E+00	0,00E+00	1,50E-03	2,81E-03	1,41E-06	1,83E-05	9,23E-06	4,40E-07	-3,31E-05
NHWD	kg	1,04E+01	8,91E-01	1,84E-01	0,00E+00	3,64E+00	2,44E-03	0,00E+00	0,00E+00	3,42E+00	1,12E+01	3,24E-03	1,19E-01	7,95E-02	3,47E-01	-7,78E-02
RWD	kg	8,01E-04	1,37E-05	9,81E-07	0,00E+00	3,15E-04	1,81E-08	0,00E+00	0,00E+00	6,15E-03	5,24E-03	5,81E-06	1,14E-06	9,20E-06	3,34E-08	-1,65E-05
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	2,50E+00	0,00E+00	7,81E-01	0,00E+00	0,00E+00	3,62E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,78E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	2,99E-03	0,00E+00	1,71E-01	0,00E+00	0,00E+00	1,37E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,44E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,64E+00	0,00E+00	0,00E+00	1,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,26E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

Table 31: Biogenic carbon content

BIOGENIC CARBON CONTENT PER FIXTURE		
Parameter	Unit	At the factory gate
Biogenic carbon content in a product	kg C	0
Biogenic carbon content in accompanying packaging	kg C	0,52
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	



**Group 6: Exclusive color (PVD on Stainless steel) is represented by 4821-64 - Brushed copper**

**Table 32: Environmental impact indicators**

ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP- total	kg CO <sub>2</sub> -eq.	3,06E+01	1,99E+00	6,23E-01	0,00E+00	8,93E+00	3,17E-02	0,00E+00	0,00E+00	3,88E+01	5,50E+01	3,67E-02	2,05E-01	8,15E-01	4,38E-02	-6,69E-01
GWP-fossil	kg CO <sub>2</sub> -eq.	3,07E+01	1,99E+00	1,52E-01	0,00E+00	1,59E+01	3,16E-02	0,00E+00	0,00E+00	3,74E+01	5,38E+01	3,54E-02	2,05E-01	8,02E-01	1,18E-02	-6,49E-01
GWP-biogenic	kg CO <sub>2</sub> -eq.	-3,60E-01	0,00E+00	4,52E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	1,31E+00	1,13E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-2,20E-03
GWP-luluc	kg CO <sub>2</sub> -eq.	6,49E-02	1,17E-03	5,38E-05	0,00E+00	1,11E+01	1,46E-06	0,00E+00	0,00E+00	9,34E-02	9,39E-02	8,83E-05	9,39E-05	5,58E-04	3,16E-06	-5,41E-04
ODP	kg CFC11-eq.	4,65E-07	4,33E-08	2,35E-09	0,00E+00	1,03E-06	5,60E-11	0,00E+00	0,00E+00	7,14E-07	1,52E-06	6,75E-10	4,47E-09	3,03E-09	9,10E-11	-1,84E-08
AP	mol H <sup>+</sup> -eq.	1,20E+00	6,10E-03	5,23E-04	0,00E+00	1,42E-01	1,21E-04	0,00E+00	0,00E+00	2,15E-01	2,94E-01	2,03E-04	6,39E-04	1,58E-03	2,97E-05	-1,78E-03
EP-freshwater	kg P-eq.	9,31E-02	1,69E-04	1,24E-05	0,00E+00	5,92E-03	1,64E-06	0,00E+00	0,00E+00	3,55E-02	3,57E-02	3,35E-05	1,41E-05	1,25E-04	1,06E-06	-1,45E-04
EP-marine	kg N-eq.	7,54E-02	1,96E-03	4,12E-04	0,00E+00	1,13E-01	4,63E-05	0,00E+00	0,00E+00	3,47E-02	5,74E-02	3,28E-05	2,19E-04	3,95E-04	8,43E-05	-4,71E-04
EP-terrestrial	mol N-eq.	9,53E-01	2,07E-02	2,00E-03	0,00E+00	4,62E-01	2,42E-04	0,00E+00	0,00E+00	3,14E-01	5,51E-01	2,97E-04	2,31E-03	3,82E-03	1,11E-04	-4,62E-03
POCP	kg NMVOC-eq.	2,75E-01	8,81E-03	8,08E-04	0,00E+00	9,33E-02	7,65E-05	0,00E+00	0,00E+00	1,01E-01	2,02E-01	9,54E-05	9,58E-04	1,16E-03	4,80E-05	-1,81E-03
ADPE	kg Sb-eq.	1,57E-02	8,69E-06	4,40E-07	0,00E+00	1,76E-04	1,92E-08	0,00E+00	0,00E+00	4,54E-04	2,83E-04	4,29E-07	6,54E-07	1,22E-06	8,73E-09	-1,82E-06
ADPF	MJ	4,02E+02	2,80E+01	1,56E+00	0,00E+00	2,69E+02	4,37E-01	0,00E+00	0,00E+00	8,52E+02	9,67E+02	8,05E-01	2,89E+00	4,06E+00	8,35E-02	-9,30E+00
WDP	m <sup>3</sup>	1,66E+01	1,16E-01	1,49E-02	0,00E+00	6,47E+01	3,14E-02	0,00E+00	0,00E+00	9,60E+00	7,38E+03	9,07E-03	1,09E-02	6,58E-02	3,44E-03	-5,89E-02
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimer	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															

**Table 33: Additional environmental impacts**

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	3,51E-06	1,16E-07	1,02E-08	0,00E+00	2,02E-06	1,27E-09	0,00E+00	0,00E+00	7,88E-07	3,05E-06	7,44E-10	1,40E-08	1,61E-08	5,82E-10	-1,81E-08
IRP	kBq U235 eq	2,55E+01	5,58E-02	3,93E-03	0,00E+00	1,26E+00	7,32E-05	0,00E+00	0,00E+00	2,40E+01	2,05E+01	2,27E-02	4,66E-03	3,75E-02	1,38E-04	-6,56E-02
ETP-fw	CTUe	1,70E+03	1,48E+01	1,59E+00	0,00E+00	5,34E+02	4,99E-02	0,00E+00	0,00E+00	1,43E+02	2,47E+02	1,35E-01	1,46E+00	2,09E+00	1,54E-01	-1,46E+00
HTP-c	CTUh	2,21E-07	1,02E-09	8,41E-11	0,00E+00	2,96E-08	3,92E-12	0,00E+00	0,00E+00	1,76E-08	2,38E-07	1,66E-11	8,59E-11	1,78E-10	3,53E-12	-2,09E-10
HTP-nc	CTUh	1,53E-05	1,95E-08	1,96E-09	0,00E+00	6,85E-07	5,44E-11	0,00E+00	0,00E+00	7,01E-07	3,11E-06	6,63E-10	1,92E-09	4,83E-09	9,31E-11	-4,08E-09
SQP	-	4,58E+02	1,16E+01	7,57E-01	0,00E+00	8,50E+02	1,58E-02	0,00E+00	0,00E+00	1,66E+02	2,11E+02	1,57E-01	1,48E+00	1,17E+00	1,79E-01	-1,35E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless) The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimers	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 2 This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.															

**Table 34: Parameters describing resource use**

RESOURCE USE PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2,29E+02	6,09E-01	-1,64E+01	0,00E+00	4,59E+02	5,07E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	5,03E-02	2,35E+00	1,79E-03	-1,76E+00
PERM	MJ	2,02E-01	0,00E+00	1,65E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,29E+02	6,09E-01	4,12E-02	0,00E+00	4,59E+02	5,07E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	5,03E-02	2,35E+00	1,79E-03	-1,76E+00
PENRE	MJ	4,12E+02	2,97E+01	4,66E-01	0,00E+00	3,04E+02	4,70E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,07E+00	4,32E+00	8,88E-02	-1,01E+01
PENRM	MJ	1,79E+01	0,00E+00	1,19E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,30E+02	2,97E+01	1,65E+00	0,00E+00	3,04E+02	4,70E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,07E+00	4,32E+00	8,88E-02	-1,01E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	1,74E+01	1,15E-01	1,49E-02	0,00E+00	6,27E+01	2,99E-02	0,00E+00	0,00E+00	9,55E+00	7,04E+03	5,81E-06	1,14E-06	9,20E-06	3,33E-08	-1,65E-05
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 35: End-of-life (waste categories and output flows)**

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	8,91E-03	1,78E-04	9,55E-06	0,00E+00	1,15E-03	2,01E-07	0,00E+00	0,00E+00	1,50E-03	2,81E-03	1,41E-06	1,83E-05	9,24E-06	4,37E-07	-3,31E-05
NHWD	kg	1,31E+01	8,93E-01	1,84E-01	0,00E+00	3,64E+00	2,44E-03	0,00E+00	0,00E+00	3,42E+00	1,12E+01	3,24E-03	1,19E-01	7,97E-02	3,43E-01	-7,79E-02
RWD	kg	7,10E-04	1,38E-05	9,81E-07	0,00E+00	3,15E-04	1,81E-08	0,00E+00	0,00E+00	6,15E-03	5,24E-03	5,81E-06	1,14E-06	9,20E-06	3,33E-08	-1,65E-05
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	2,44E+00	0,00E+00	7,81E-01	0,00E+00	0,00E+00	3,62E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,79E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	2,99E-03	0,00E+00	1,71E-01	0,00E+00	0,00E+00	1,37E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,44E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,64E+00	0,00E+00	0,00E+00	1,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,26E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 36: Biogenic carbon content**

BIOGENIC CARBON CONTENT PER FIXTURE		
Parameter	Unit	At the factory gate
Biogenic carbon content in a product	kg C	0
Biogenic carbon content in accompanying packaging	kg C	0,51
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

**Group 7: Polished and brushed chrome is represented by 4822-16 – Polished chrome**

**Table 37: Environmental impact indicators**

ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP- total	kg CO <sub>2</sub> -eq.	2,93E+01	2,12E+00	6,37E-01	0,00E+00	8,93E+00	3,19E-02	0,00E+00	0,00E+00	3,88E+01	5,50E+01	3,67E-02	2,06E-01	8,15E-01	4,35E-02	-6,71E-01
GWP-fossil	kg CO <sub>2</sub> -eq.	2,94E+01	2,11E+00	1,49E-01	0,00E+00	1,59E+01	3,17E-02	0,00E+00	0,00E+00	3,74E+01	5,38E+01	3,54E-02	2,05E-01	8,03E-01	1,15E-02	-6,50E-01
GWP-biogenic	kg CO <sub>2</sub> -eq.	-3,71E-01	0,00E+00	4,68E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	1,31E+00	1,13E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-2,20E-03
GWP-luluc	kg CO <sub>2</sub> -eq.	6,39E-02	1,24E-03	5,50E-05	0,00E+00	1,11E+01	1,52E-06	0,00E+00	0,00E+00	9,34E-02	9,39E-02	8,83E-05	9,41E-05	5,58E-04	3,15E-06	-5,41E-04
ODP	kg CFC11-eq.	4,23E-07	4,59E-08	2,41E-09	0,00E+00	1,03E-06	5,84E-11	0,00E+00	0,00E+00	7,14E-07	1,52E-06	6,75E-10	4,47E-09	3,04E-09	9,13E-11	-1,84E-08
AP	mol H <sup>+</sup> -eq.	1,17E+00	6,46E-03	5,36E-04	0,00E+00	1,42E-01	1,22E-04	0,00E+00	0,00E+00	2,15E-01	2,94E-01	2,03E-04	6,40E-04	1,59E-03	2,97E-05	-1,78E-03
EP-freshwater	kg P-eq.	9,07E-02	1,79E-04	1,27E-05	0,00E+00	5,92E-03	1,65E-06	0,00E+00	0,00E+00	3,55E-02	3,57E-02	3,35E-05	1,42E-05	1,25E-04	1,05E-06	-1,45E-04
EP-marine	kg N-eq.	7,32E-02	2,08E-03	4,25E-04	0,00E+00	1,13E-01	4,64E-05	0,00E+00	0,00E+00	3,47E-02	5,74E-02	3,28E-05	2,19E-04	3,96E-04	8,44E-05	-4,75E-04
EP-terrestrial	mol N-eq.	9,25E-01	2,19E-02	2,05E-03	0,00E+00	4,62E-01	2,44E-04	0,00E+00	0,00E+00	3,14E-01	5,51E-01	2,97E-04	2,31E-03	3,83E-03	1,11E-04	-4,65E-03
POCP	kg NMVOC-eq.	2,66E-01	9,35E-03	8,30E-04	0,00E+00	9,33E-02	7,70E-05	0,00E+00	0,00E+00	1,01E-01	2,02E-01	9,54E-05	9,59E-04	1,17E-03	4,80E-05	-1,82E-03
ADPE	kg Sb-eq.	1,55E-02	9,21E-06	4,52E-07	0,00E+00	1,76E-04	1,97E-08	0,00E+00	0,00E+00	4,54E-04	2,83E-04	4,29E-07	6,55E-07	1,22E-06	8,71E-09	-1,83E-06
ADPF	MJ	3,83E+02	2,97E+01	1,60E+00	0,00E+00	2,69E+02	4,38E-01	0,00E+00	0,00E+00	8,52E+02	9,67E+02	8,05E-01	2,89E+00	4,07E+00	8,38E-02	-9,31E+00
WDP	m <sup>3</sup>	1,57E+01	1,23E-01	1,50E-02	0,00E+00	6,47E+01	3,14E-02	0,00E+00	0,00E+00	9,60E+00	7,38E+03	9,07E-03	1,10E-02	6,58E-02	3,46E-03	-5,89E-02
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimer	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															

**Table 38: Additional environmental impacts**

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	3,38E-06	1,23E-07	1,05E-08	0,00E+00	2,02E-06	1,27E-09	0,00E+00	0,00E+00	7,88E-07	3,05E-06	7,44E-10	1,40E-08	1,61E-08	5,83E-10	-1,82E-08
IRP	kBq U235 eq	2,54E+01	5,92E-02	4,02E-03	0,00E+00	1,26E+00	7,63E-05	0,00E+00	0,00E+00	2,40E+01	2,05E+01	2,27E-02	4,67E-03	3,75E-02	1,37E-04	-6,56E-02
ETP-fw	CTUe	1,66E+03	1,57E+01	1,63E+00	0,00E+00	5,34E+02	5,07E-02	0,00E+00	0,00E+00	1,43E+02	2,47E+02	1,35E-01	1,46E+00	2,09E+00	1,54E-01	-1,47E+00
HTP-c	CTUh	2,16E-07	1,08E-09	8,56E-11	0,00E+00	2,96E-08	3,97E-12	0,00E+00	0,00E+00	1,76E-08	2,38E-07	1,66E-11	8,60E-11	1,78E-10	3,50E-12	-2,10E-10
HTP-nc	CTUh	1,50E-05	2,07E-08	2,00E-09	0,00E+00	6,85E-07	5,55E-11	0,00E+00	0,00E+00	7,01E-07	3,11E-06	6,63E-10	1,92E-09	4,83E-09	9,26E-11	-4,09E-09
SQP	-	4,46E+02	1,23E+01	7,74E-01	0,00E+00	8,50E+02	1,64E-02	0,00E+00	0,00E+00	1,66E+02	2,11E+02	1,57E-01	1,48E+00	1,17E+00	1,80E-01	-1,36E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless) The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimers	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 2 This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.															

**Table 39: Parameters describing resource use**

RESOURCE USE PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1,96E+02	6,46E-01	-1,70E+01	0,00E+00	4,59E+02	5,10E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	5,04E-02	2,35E+00	1,78E-03	-1,76E+00
PERM	MJ	2,02E-01	0,00E+00	1,70E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,96E+02	6,46E-01	4,21E-02	0,00E+00	4,59E+02	5,10E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	5,04E-02	2,35E+00	1,78E-03	-1,76E+00
PENRE	MJ	3,92E+02	3,15E+01	7,46E-01	0,00E+00	3,04E+02	4,71E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,07E+00	4,33E+00	8,91E-02	-1,01E+01
PENRM	MJ	1,79E+01	0,00E+00	9,51E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,10E+02	3,15E+01	1,70E+00	0,00E+00	3,04E+02	4,71E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,07E+00	4,33E+00	8,91E-02	-1,01E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	1,64E+01	1,22E-01	1,50E-02	0,00E+00	6,27E+01	2,99E-02	0,00E+00	0,00E+00	9,55E+00	7,04E+03	5,81E-06	1,15E-06	9,20E-06	3,31E-08	-1,65E-05
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 40: End-of-life (waste categories and output flows)**

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	8,68E-03	1,88E-04	9,82E-06	0,00E+00	1,15E-03	2,11E-07	0,00E+00	0,00E+00	1,50E-03	2,81E-03	1,41E-06	1,84E-05	9,29E-06	4,38E-07	-3,32E-05
NHWD	kg	1,23E+01	9,46E-01	1,88E-01	0,00E+00	3,64E+00	2,49E-03	0,00E+00	0,00E+00	3,42E+00	1,12E+01	3,24E-03	1,19E-01	8,02E-02	3,47E-01	-7,87E-02
RWD	kg	6,73E-04	1,46E-05	1,01E-06	0,00E+00	3,15E-04	1,89E-08	0,00E+00	0,00E+00	6,15E-03	5,24E-03	5,81E-06	1,15E-06	9,20E-06	3,31E-08	-1,65E-05
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	2,21E+00	0,00E+00	8,05E-01	0,00E+00	0,00E+00	3,62E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,80E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	2,99E-03	0,00E+00	1,70E-01	0,00E+00	0,00E+00	1,37E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,44E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,63E+00	0,00E+00	0,00E+00	1,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,26E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 41: Biogenic carbon content**

BIOGENIC CARBON CONTENT PER FIXTURE		
Parameter	Unit	At the factory gate
Biogenic carbon content in a product	kg C	0
Biogenic carbon content in accompanying packaging	kg C	0,53
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

**Group 8: Natural brass is represented by 4822-19 – Natural brass**

**Table 42: Environmental impact indicators**

ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP- total	kg CO <sub>2</sub> -eq.	3,11E+01	2,13E+00	6,37E-01	0,00E+00	8,93E+00	3,19E-02	0,00E+00	0,00E+00	3,88E+01	5,50E+01	3,67E-02	2,08E-01	8,16E-01	4,35E-02	-6,71E-01
GWP-fossil	kg CO <sub>2</sub> -eq.	3,13E+01	2,13E+00	1,49E-01	0,00E+00	1,59E+01	3,17E-02	0,00E+00	0,00E+00	3,74E+01	5,38E+01	3,54E-02	2,07E-01	8,03E-01	1,15E-02	-6,51E-01
GWP-biogenic	kg CO <sub>2</sub> -eq.	-3,71E-01	0,00E+00	4,68E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	1,31E+00	1,13E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-2,20E-03
GWP- luluc	kg CO <sub>2</sub> -eq.	7,26E-02	1,25E-03	5,50E-05	0,00E+00	1,11E+01	1,52E-06	0,00E+00	0,00E+00	9,34E-02	9,39E-02	8,83E-05	9,50E-05	5,58E-04	3,15E-06	-5,41E-04
ODP	kg CFC 11 -eq.	4,67E-07	4,63E-08	2,41E-09	0,00E+00	1,03E-06	5,84E-11	0,00E+00	0,00E+00	7,14E-07	1,52E-06	6,75E-10	4,52E-09	3,05E-09	9,12E-11	-1,84E-08
AP	mol H <sup>+</sup> eq.	1,55E+00	6,52E-03	5,36E-04	0,00E+00	1,42E-01	1,22E-04	0,00E+00	0,00E+00	2,15E-01	2,94E-01	2,03E-04	6,46E-04	1,59E-03	2,97E-05	-1,78E-03
EP-freshwater	kg P-eq.	1,21E-01	1,80E-04	1,27E-05	0,00E+00	5,92E-03	1,65E-06	0,00E+00	0,00E+00	3,55E-02	3,57E-02	3,35E-05	1,43E-05	1,25E-04	1,05E-06	-1,45E-04
EP-marine	kg N-eq.	9,05E-02	2,10E-03	4,25E-04	0,00E+00	1,13E-01	4,64E-05	0,00E+00	0,00E+00	3,47E-02	5,74E-02	3,28E-05	2,21E-04	3,96E-04	8,43E-05	-4,75E-04
EP-terrestrial	mol N-eq.	1,17E+00	2,21E-02	2,05E-03	0,00E+00	4,62E-01	2,44E-04	0,00E+00	0,00E+00	3,14E-01	5,51E-01	2,97E-04	2,33E-03	3,84E-03	1,11E-04	-4,65E-03
POCP	kg NMVOC-eq.	3,34E-01	9,42E-03	8,30E-04	0,00E+00	9,33E-02	7,70E-05	0,00E+00	0,00E+00	1,01E-01	2,02E-01	9,54E-05	9,69E-04	1,17E-03	4,79E-05	-1,82E-03
ADPE	kg Sb-eq.	2,09E-02	9,29E-06	4,52E-07	0,00E+00	1,76E-04	1,97E-08	0,00E+00	0,00E+00	4,54E-04	2,83E-04	4,29E-07	6,62E-07	1,22E-06	8,71E-09	-1,83E-06
ADPF	MJ	4,13E+02	2,99E+01	1,60E+00	0,00E+00	2,69E+02	4,38E-01	0,00E+00	0,00E+00	8,52E+02	9,67E+02	8,05E-01	2,92E+00	4,07E+00	8,36E-01	-9,31E+00
WDP	m <sup>3</sup>	2,14E+01	1,24E-01	1,50E-02	0,00E+00	6,47E+01	3,14E-02	0,00E+00	0,00E+00	9,60E+00	7,38E+03	9,07E-03	1,11E-02	6,58E-02	3,45E-03	-5,89E-02
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimer	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															

**Table 43: Additional environmental impacts**

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	4,00E-06	1,24E-07	1,05E-08	0,00E+00	2,02E-06	1,27E-09	0,00E+00	0,00E+00	7,88E-07	3,05E-06	7,44E-10	1,42E-08	1,61E-08	5,82E-10	-1,83E-08
IRP	kBq U235 eq	2,57E+01	5,97E-02	4,02E-03	0,00E+00	1,26E+00	7,63E-05	0,00E+00	0,00E+00	2,40E+01	2,05E+01	2,27E-02	4,72E-03	3,75E-02	1,37E-04	-6,56E-02
ETP-fw	CTUe	2,23E+03	1,58E+01	1,63E+00	0,00E+00	5,34E+02	5,07E-02	0,00E+00	0,00E+00	1,43E+02	2,47E+02	1,35E-01	1,48E+00	2,10E+00	1,54E-01	-1,48E+00
HTP-c	CTUh	2,49E-07	1,09E-09	8,56E-11	0,00E+00	2,96E-08	3,97E-12	0,00E+00	0,00E+00	1,76E-08	2,38E-07	1,66E-11	8,69E-11	1,78E-10	3,50E-12	-2,10E-10
HTP-nc	CTUh	2,03E-05	2,09E-08	2,00E-09	0,00E+00	6,85E-07	5,55E-11	0,00E+00	0,00E+00	7,01E-07	3,11E-06	6,63E-10	1,94E-09	4,84E-09	9,26E-11	-4,09E-09
SQP	-	5,55E+02	1,25E+01	7,74E-01	0,00E+00	8,50E+02	1,64E-02	0,00E+00	0,00E+00	1,66E+02	2,11E+02	1,57E-01	1,50E+00	1,18E+00	1,79E-01	-1,36E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless) The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimers	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 2 This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.															

**Table 44: Parameters describing resource use**

RESOURCE USE PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2,25E+02	6,51E-01	-1,70E+01	0,00E+00	4,59E+02	5,10E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	5,09E-02	2,35E+00	1,78E-03	-1,76E+00
PERM	MJ	2,02E-01	0,00E+00	1,70E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,25E+02	6,51E-01	4,21E-02	0,00E+00	4,59E+02	5,10E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	5,09E-02	2,35E+00	1,78E-03	-1,76E+00
PENRE	MJ	4,23E+02	3,18E+01	7,46E-01	0,00E+00	3,04E+02	4,71E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,10E+00	4,33E+00	8,89E-02	-1,01E+01
PENRM	MJ	1,79E+01	0,00E+00	9,51E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,41E+02	3,18E+01	1,70E+00	0,00E+00	3,04E+02	4,71E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,10E+00	4,33E+00	8,89E-02	-1,01E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	2,19E+01	1,23E-01	1,50E-02	0,00E+00	6,27E+01	2,99E-02	0,00E+00	0,00E+00	9,55E+00	7,04E+03	5,81E-06	1,16E-06	9,20E-06	3,31E-08	-1,65E-05
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 45: End-of-life (waste categories and output flows)**

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1,16E-02	1,90E-04	9,82E-06	0,00E+00	1,15E-03	2,11E-07	0,00E+00	0,00E+00	1,50E-03	2,81E-03	1,41E-06	1,85E-05	9,32E-06	4,37E-07	-3,32E-05
NHWD	kg	9,93E+00	9,54E-01	1,88E-01	0,00E+00	3,64E+00	2,49E-03	0,00E+00	0,00E+00	3,42E+00	1,12E+01	3,24E-03	1,20E-01	8,05E-02	3,46E-01	-7,90E-02
RWD	kg	7,63E-04	1,47E-05	1,01E-06	0,00E+00	3,15E-04	1,89E-08	0,00E+00	0,00E+00	6,15E-03	5,24E-03	5,81E-06	1,16E-06	9,20E-06	3,31E-08	-1,65E-05
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	2,26E+00	0,00E+00	8,05E-01	0,00E+00	0,00E+00	3,62E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,82E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	2,99E-03	0,00E+00	1,70E-01	0,00E+00	0,00E+00	1,37E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,44E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,63E+00	0,00E+00	0,00E+00	1,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,26E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 46: Biogenic carbon content**

BIOGENIC CARBON CONTENT PER FIXTURE		
Parameter	Unit	At the factory gate
Biogenic carbon content in a product	kg C	0
Biogenic carbon content in accompanying packaging	kg C	0,53
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

**Group 9: Stainless steel is represented by 4822-40 – Stainless steel**

**Table 47: Environmental impact indicators**

ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP- total	kg CO <sub>2</sub> -eq.	2,84E+01	2,14E+00	6,37E-01	0,00E+00	8,93E+00	3,19E-02	0,00E+00	0,00E+00	3,88E+01	5,50E+01	3,67E-02	2,09E-01	8,16E-01	4,35E-02	-6,71E-01
GWP-fossil	kg CO <sub>2</sub> -eq.	2,85E+01	2,14E+00	1,49E-01	0,00E+00	1,59E+01	3,17E-02	0,00E+00	0,00E+00	3,74E+01	5,38E+01	3,54E-02	2,08E-01	8,03E-01	1,15E-02	-6,51E-01
GWP-biogenic	kg CO <sub>2</sub> -eq.	-3,71E-01	0,00E+00	4,68E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	1,31E+00	1,13E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-2,20E-03
GWP- luluc	kg CO <sub>2</sub> -eq.	5,85E-02	1,25E-03	5,50E-05	0,00E+00	1,11E+01	1,52E-06	0,00E+00	0,00E+00	9,34E-02	9,39E-02	8,83E-05	9,54E-05	5,58E-04	3,15E-06	-5,41E-04
ODP	kg CFC 11 -eq.	4,01E-07	4,64E-08	2,41E-09	0,00E+00	1,03E-06	5,84E-11	0,00E+00	0,00E+00	7,14E-07	1,52E-06	6,75E-10	4,54E-09	3,05E-09	9,11E-11	-1,85E-08
AP	mol H <sup>+</sup> -eq.	9,19E-01	6,54E-03	5,36E-04	0,00E+00	1,42E-01	1,22E-04	0,00E+00	0,00E+00	2,15E-01	2,94E-01	2,03E-04	6,48E-04	1,59E-03	2,97E-05	-1,78E-03
EP-freshwater	kg P-eq.	7,06E-02	1,81E-04	1,27E-05	0,00E+00	5,92E-03	1,65E-06	0,00E+00	0,00E+00	3,55E-02	3,57E-02	3,35E-05	1,44E-05	1,25E-04	1,05E-06	-1,45E-04
EP-marine	kg N-eq.	6,21E-02	2,11E-03	4,25E-04	0,00E+00	1,13E-01	4,64E-05	0,00E+00	0,00E+00	3,47E-02	5,74E-02	3,28E-05	2,22E-04	3,96E-04	8,43E-05	-4,75E-04
EP-terrestrial	mol N-eq.	7,65E-01	2,22E-02	2,05E-03	0,00E+00	4,62E-01	2,44E-04	0,00E+00	0,00E+00	3,14E-01	5,51E-01	2,97E-04	2,34E-03	3,84E-03	1,10E-04	-4,66E-03
POCP	kg NMVOC-eq.	2,23E-01	9,45E-03	8,30E-04	0,00E+00	9,33E-02	7,70E-05	0,00E+00	0,00E+00	1,01E-01	2,02E-01	9,54E-05	9,73E-04	1,17E-03	4,79E-05	-1,82E-03
ADPE	kg Sb-eq.	1,18E-02	9,32E-06	4,52E-07	0,00E+00	1,76E-04	1,97E-08	0,00E+00	0,00E+00	4,54E-04	2,83E-04	4,29E-07	6,64E-07	1,22E-06	8,70E-09	-1,83E-06
ADPF	MJ	3,69E+02	3,00E+01	1,60E+00	0,00E+00	2,69E+02	4,38E-01	0,00E+00	0,00E+00	8,52E+02	9,67E+02	8,05E-01	2,93E+00	4,07E+00	8,35E-01	-9,31E+00
WDP	m <sup>3</sup>	1,22E+01	1,24E-01	1,50E-02	0,00E+00	6,47E+01	3,14E-02	0,00E+00	0,00E+00	9,60E+00	7,38E+03	9,07E-03	1,11E-02	6,58E-02	3,45E-03	-5,89E-02
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimer	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															

**Table 48: Additional environmental impacts**

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	3,01E-06	1,24E-07	1,05E-08	0,00E+00	2,02E-06	1,27E-09	0,00E+00	0,00E+00	7,88E-07	3,05E-06	7,44E-10	1,42E-08	1,61E-08	5,82E-10	-1,83E-08
IRP	kBq U235 eq	2,52E+01	5,99E-02	4,02E-03	0,00E+00	1,26E+00	7,63E-05	0,00E+00	0,00E+00	2,40E+01	2,05E+01	2,27E-02	4,74E-03	3,75E-02	1,37E-04	-6,56E-02
ETP-fw	CTUe	1,28E+03	1,59E+01	1,63E+00	0,00E+00	5,34E+02	5,07E-02	0,00E+00	0,00E+00	1,43E+02	2,47E+02	1,35E-01	1,48E+00	2,10E+00	1,54E-01	-1,48E+00
HTP-c	CTUh	1,92E-07	1,09E-09	8,56E-11	0,00E+00	2,96E-08	3,97E-12	0,00E+00	0,00E+00	1,76E-08	2,38E-07	1,66E-11	8,72E-11	1,78E-10	3,50E-12	-2,10E-10
HTP-nc	CTUh	1,15E-05	2,10E-08	2,00E-09	0,00E+00	6,85E-07	5,55E-11	0,00E+00	0,00E+00	7,01E-07	3,11E-06	6,63E-10	1,95E-09	4,84E-09	9,26E-11	-4,10E-09
SQP	-	3,76E+02	1,25E+01	7,74E-01	0,00E+00	8,50E+02	1,64E-02	0,00E+00	0,00E+00	1,66E+02	2,11E+02	1,57E-01	1,50E+00	1,18E+00	1,79E-01	-1,36E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless) The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimers	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 2 This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.															



**Table 49: Parameters describing resource use**

RESOURCE USE PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1,94E+02	6,53E-01	-1,70E+01	0,00E+00	4,59E+02	5,10E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	5,11E-02	2,35E+00	1,78E-03	-1,76E+00
PERM	MJ	2,02E-01	0,00E+00	1,70E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,94E+02	6,53E-01	4,21E-02	0,00E+00	4,59E+02	5,10E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	5,11E-02	2,35E+00	1,78E-03	-1,76E+00
PENRE	MJ	3,76E+02	3,19E+01	7,46E-01	0,00E+00	3,04E+02	4,71E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,11E+00	4,34E+00	8,89E-02	-1,01E+01
PENRM	MJ	1,79E+01	0,00E+00	9,51E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	3,94E+02	3,19E+01	1,70E+00	0,00E+00	3,04E+02	4,71E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,11E+00	4,34E+00	8,89E-02	-1,01E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	1,30E+01	1,23E-01	1,50E-02	0,00E+00	6,27E+01	2,99E-02	0,00E+00	0,00E+00	9,55E+00	7,04E+03	5,81E-06	1,16E-06	9,20E-06	3,31E-08	-1,65E-05
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 50: End-of-life (waste categories and output flows)**

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	6,80E-03	1,91E-04	9,82E-06	0,00E+00	1,15E-03	2,11E-07	0,00E+00	0,00E+00	1,50E-03	2,81E-03	1,41E-06	1,86E-05	9,33E-06	4,37E-07	-3,32E-05
NHWD	kg	1,42E+01	9,57E-01	1,88E-01	0,00E+00	3,64E+00	2,49E-03	0,00E+00	0,00E+00	3,42E+00	1,12E+01	3,24E-03	1,21E-01	8,06E-02	3,46E-01	-7,91E-02
RWD	kg	6,20E-04	1,48E-05	1,01E-06	0,00E+00	3,15E-04	1,89E-08	0,00E+00	0,00E+00	6,15E-03	5,24E-03	5,81E-06	1,16E-06	9,20E-06	3,31E-08	-1,65E-05
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	2,18E+00	0,00E+00	8,05E-01	0,00E+00	0,00E+00	3,62E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,84E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	2,99E-03	0,00E+00	1,70E-01	0,00E+00	0,00E+00	1,37E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,44E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,63E+00	0,00E+00	0,00E+00	1,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,26E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 51: Biogenic carbon content**

BIOGENIC CARBON CONTENT PER FIXTURE		
Parameter	Unit	At the factory gate
Biogenic carbon content in a product	kg C	0
Biogenic carbon content in accompanying packaging	kg C	0,53
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

**Group 10: Colors is represented by 4822-27 – Matt black**

**Table 52: Environmental impact indicators**

ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP- total	kg CO <sub>2</sub> -eq.	2,95E+01	2,17E+00	6,37E-01	0,00E+00	8,93E+00	3,19E-02	0,00E+00	0,00E+00	3,88E+01	5,50E+01	3,67E-02	2,12E-01	8,16E-01	4,39E-02	-6,71E-01
GWP-fossil	kg CO <sub>2</sub> -eq.	2,96E+01	2,17E+00	1,49E-01	0,00E+00	1,59E+01	3,17E-02	0,00E+00	0,00E+00	3,74E+01	5,38E+01	3,54E-02	2,12E-01	8,03E-01	1,19E-02	-6,51E-01
GWP-biogenic	kg CO <sub>2</sub> -eq.	-3,71E-01	0,00E+00	4,68E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	1,31E+00	1,13E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-2,20E-03
GWP- luluc	kg CO <sub>2</sub> -eq.	6,33E-02	1,27E-03	5,50E-05	0,00E+00	1,11E+01	1,52E-06	0,00E+00	0,00E+00	9,34E-02	9,39E-02	8,83E-05	9,69E-05	5,58E-04	3,18E-06	-5,41E-04
ODP	kg CFC-11 -eq.	4,68E-07	4,72E-08	2,41E-09	0,00E+00	1,03E-06	5,84E-11	0,00E+00	0,00E+00	7,14E-07	1,52E-06	6,75E-10	4,61E-09	3,05E-09	9,21E-11	-1,84E-08
AP	mol H <sup>+</sup> -eq.	1,12E+00	6,64E-03	5,36E-04	0,00E+00	1,42E-01	1,22E-04	0,00E+00	0,00E+00	2,15E-01	2,94E-01	2,03E-04	6,59E-04	1,59E-03	3,00E-05	-1,78E-03
EP-freshwater	kg P-eq.	8,68E-02	1,84E-04	1,27E-05	0,00E+00	5,92E-03	1,65E-06	0,00E+00	0,00E+00	3,55E-02	3,57E-02	3,35E-05	1,46E-05	1,25E-04	1,06E-06	-1,45E-04
EP- marine	kg N-eq.	7,13E-02	2,14E-03	4,25E-04	0,00E+00	1,13E-01	4,64E-05	0,00E+00	0,00E+00	3,47E-02	5,74E-02	3,28E-05	2,26E-04	3,96E-04	8,45E-05	-4,75E-04
EP-terrestrial	mol N-eq.	8,96E-01	2,25E-02	2,05E-03	0,00E+00	4,62E-01	2,44E-04	0,00E+00	0,00E+00	3,14E-01	5,51E-01	2,97E-04	2,38E-03	3,84E-03	1,12E-04	-4,66E-03
POCP	kg NMVOC-eq.	2,59E-01	9,60E-03	8,30E-04	0,00E+00	9,33E-02	7,70E-05	0,00E+00	0,00E+00	1,01E-01	2,02E-01	9,54E-05	9,89E-04	1,17E-03	4,84E-05	-1,82E-03
ADPE	kg Sb-eq.	1,47E-02	9,46E-06	4,52E-07	0,00E+00	1,76E-04	1,97E-08	0,00E+00	0,00E+00	4,54E-04	2,83E-04	4,29E-07	6,75E-07	1,22E-06	8,80E-09	-1,83E-06
ADPF	MJ	3,90E+02	3,05E+01	1,60E+00	0,00E+00	2,69E+02	4,38E-01	0,00E+00	0,00E+00	8,52E+02	9,67E+02	8,05E-01	2,98E+00	4,07E+00	8,45E-02	-9,31E+00
WDP	m <sup>3</sup>	1,55E+01	1,26E-01	1,50E-02	0,00E+00	6,47E+01	3,14E-02	0,00E+00	0,00E+00	9,60E+00	7,38E+03	9,07E-03	1,13E-02	6,58E-02	3,49E-03	-5,89E-02
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimer	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															

**Table 53: Additional environmental impacts**

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	3,33E-06	1,26E-07	1,05E-08	0,00E+00	2,02E-06	1,27E-09	0,00E+00	0,00E+00	7,88E-07	3,05E-06	7,44E-10	1,45E-08	1,61E-08	5,88E-10	-1,83E-08
IRP	kBq U235 eq	2,54E+01	6,08E-02	4,02E-03	0,00E+00	1,26E+00	7,63E-05	0,00E+00	0,00E+00	2,40E+01	2,05E+01	2,27E-02	4,81E-03	3,76E-02	1,39E-04	-6,56E-02
ETP-fw	CTUe	1,60E+03	1,61E+01	1,63E+00	0,00E+00	5,34E+02	5,07E-02	0,00E+00	0,00E+00	1,43E+02	2,47E+02	1,35E-01	1,51E+00	2,10E+00	1,54E-01	-1,48E+00
HTP-c	CTUh	2,08E-07	1,11E-09	8,56E-11	0,00E+00	2,96E-08	3,97E-12	0,00E+00	0,00E+00	1,76E-08	2,38E-07	1,66E-11	8,87E-11	1,78E-10	3,55E-12	-2,10E-10
HTP-nc	CTUh	1,43E-05	2,13E-08	2,00E-09	0,00E+00	6,85E-07	5,55E-11	0,00E+00	0,00E+00	7,01E-07	3,11E-06	6,63E-10	1,98E-09	4,84E-09	9,35E-11	-4,09E-09
SQP	-	4,34E+02	1,27E+01	7,74E-01	0,00E+00	8,50E+02	1,64E-02	0,00E+00	0,00E+00	1,66E+02	2,11E+02	1,57E-01	1,53E+00	1,18E+00	1,81E-01	-1,36E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless) The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimers	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 2 This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.															

**Table 54: Parameters describing resource use**

RESOURCE USE PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1,89E+02	6,63E-01	-1,70E+01	0,00E+00	4,59E+02	5,10E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	5,19E-02	2,35E+00	1,80E-03	-1,76E+00
PERM	MJ	2,02E-01	0,00E+00	1,70E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,89E+02	6,63E-01	4,21E-02	0,00E+00	4,59E+02	5,10E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	5,19E-02	2,35E+00	1,80E-03	-1,76E+00
PENRE	MJ	3,99E+02	3,24E+01	7,46E-01	0,00E+00	3,04E+02	4,71E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,17E+00	4,33E+00	8,99E-02	-1,01E+01
PENRM	MJ	1,79E+01	0,00E+00	9,51E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,17E+02	3,24E+01	1,70E+00	0,00E+00	3,04E+02	4,71E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,17E+00	4,33E+00	8,99E-02	-1,01E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	1,62E+01	1,25E-01	1,50E-02	0,00E+00	6,27E+01	2,99E-02	0,00E+00	0,00E+00	9,55E+00	7,04E+03	5,81E-06	1,18E-06	9,21E-06	3,35E-08	-1,65E-05
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 55: End-of-life (waste categories and output flows)**

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	8,31E-03	1,93E-04	9,82E-06	0,00E+00	1,15E-03	2,11E-07	0,00E+00	0,00E+00	1,50E-03	2,81E-03	1,41E-06	1,89E-05	9,31E-06	4,42E-07	-3,32E-05
NHWD	kg	1,26E+01	9,72E-01	1,88E-01	0,00E+00	3,64E+00	2,49E-03	0,00E+00	0,00E+00	3,42E+00	1,12E+01	3,24E-03	1,23E-01	8,03E-02	3,49E-01	-7,88E-02
RWD	kg	6,89E-04	1,50E-05	1,01E-06	0,00E+00	3,15E-04	1,89E-08	0,00E+00	0,00E+00	6,15E-03	5,24E-03	5,81E-06	1,18E-06	9,21E-06	3,35E-08	-1,65E-05
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	2,12E+00	0,00E+00	8,05E-01	0,00E+00	0,00E+00	3,62E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,88E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	2,99E-03	0,00E+00	1,70E-01	0,00E+00	0,00E+00	1,37E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,44E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,63E+00	0,00E+00	0,00E+00	1,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,26E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 56: Biogenic carbon content**

BIOGENIC CARBON CONTENT PER FIXTURE		
Parameter	Unit	At the factory gate
Biogenic carbon content in a product	kg C	0
Biogenic carbon content in accompanying packaging	kg C	0,53
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

**Group 11: Exclusive color (PVD on Brass) is represented by 4822-60 - Black**

**Table 57: Environmental impact indicators**

ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP- total	kg CO <sub>2</sub> -eq.	2,96E+01	2,15E+00	6,37E-01	0,00E+00	8,93E+00	3,19E-02	0,00E+00	0,00E+00	3,88E+01	5,50E+01	3,67E-02	2,09E-01	8,16E-01	4,38E-02	-6,71E-01
GWP-fossil	kg CO <sub>2</sub> -eq.	2,97E+01	2,15E+00	1,49E-01	0,00E+00	1,59E+01	3,17E-02	0,00E+00	0,00E+00	3,74E+01	5,38E+01	3,54E-02	2,09E-01	8,03E-01	1,18E-02	-6,50E-01
GWP-biogenic	kg CO <sub>2</sub> -eq.	-3,71E-01	0,00E+00	4,68E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	1,31E+00	1,13E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-2,20E-03
GWP- luluc	kg CO <sub>2</sub> -eq.	6,42E-02	1,26E-03	5,50E-05	0,00E+00	1,11E+01	1,52E-06	0,00E+00	0,00E+00	9,34E-02	9,39E-02	8,83E-05	9,57E-05	5,58E-04	3,18E-06	-5,41E-04
ODP	kg CFC 11 -eq.	4,45E-07	4,66E-08	2,41E-09	0,00E+00	1,03E-06	5,84E-11	0,00E+00	0,00E+00	7,14E-07	1,52E-06	6,75E-10	4,55E-09	3,05E-09	9,21E-11	-1,84E-08
AP	mol H <sup>+</sup> eq.	1,17E+00	6,57E-03	5,36E-04	0,00E+00	1,42E-01	1,22E-04	0,00E+00	0,00E+00	2,15E-01	2,94E-01	2,03E-04	6,51E-04	1,59E-03	3,00E-05	-1,78E-03
EP-freshwater	kg P-eq.	9,08E-02	1,82E-04	1,27E-05	0,00E+00	5,92E-03	1,65E-06	0,00E+00	0,00E+00	3,55E-02	3,57E-02	3,35E-05	1,44E-05	1,25E-04	1,06E-06	-1,45E-04
EP-marine	kg N-eq.	7,35E-02	2,12E-03	4,25E-04	0,00E+00	1,13E-01	4,64E-05	0,00E+00	0,00E+00	3,47E-02	5,74E-02	3,28E-05	2,23E-04	3,96E-04	8,44E-05	-4,75E-04
EP-terrestrial	mol N-eq.	9,28E-01	2,23E-02	2,05E-03	0,00E+00	4,62E-01	2,44E-04	0,00E+00	0,00E+00	3,14E-01	5,51E-01	2,97E-04	2,35E-03	3,83E-03	1,12E-04	-4,65E-03
POCP	kg NMVOC-eq.	2,67E-01	9,49E-03	8,30E-04	0,00E+00	9,33E-02	7,70E-05	0,00E+00	0,00E+00	1,01E-01	2,02E-01	9,54E-05	9,76E-04	1,17E-03	4,84E-05	-1,82E-03
ADPE	kg Sb-eq.	1,55E-02	9,36E-06	4,52E-07	0,00E+00	1,76E-04	1,97E-08	0,00E+00	0,00E+00	4,54E-04	2,83E-04	4,29E-07	6,67E-07	1,22E-06	8,78E-09	-1,83E-06
ADPF	MJ	3,89E+02	3,01E+01	1,60E+00	0,00E+00	2,69E+02	4,38E-01	0,00E+00	0,00E+00	8,52E+02	9,67E+02	8,05E-01	2,94E+00	4,07E+00	8,44E-02	-9,31E+00
WDP	m <sup>3</sup>	1,60E+01	1,25E-01	1,50E-02	0,00E+00	6,47E+01	3,14E-02	0,00E+00	0,00E+00	9,60E+00	7,38E+03	9,07E-03	1,11E-02	6,58E-02	3,49E-03	-5,89E-02
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimer	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															

**Table 58: Additional environmental impacts**

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	3,40E-06	1,25E-07	1,05E-08	0,00E+00	2,02E-06	1,27E-09	0,00E+00	0,00E+00	7,88E-07	3,05E-06	7,44E-10	1,43E-08	1,61E-08	5,88E-10	-1,82E-08
IRP	kBq U235 eq	2,54E+01	6,02E-02	4,02E-03	0,00E+00	1,26E+00	7,63E-05	0,00E+00	0,00E+00	2,40E+01	2,05E+01	2,27E-02	4,75E-03	3,75E-02	1,38E-04	-6,56E-02
ETP-fw	CTUe	1,67E+03	1,60E+01	1,63E+00	0,00E+00	5,34E+02	5,07E-02	0,00E+00	0,00E+00	1,43E+02	2,47E+02	1,35E-01	1,49E+00	2,10E+00	1,54E-01	-1,47E+00
HTP-c	CTUh	2,16E-07	1,10E-09	8,56E-11	0,00E+00	2,96E-08	3,97E-12	0,00E+00	0,00E+00	1,76E-08	2,38E-07	1,66E-11	8,75E-11	1,78E-10	3,54E-12	-2,10E-10
HTP-nc	CTUh	1,50E-05	2,11E-08	2,00E-09	0,00E+00	6,85E-07	5,55E-11	0,00E+00	0,00E+00	7,01E-07	3,11E-06	6,63E-10	1,95E-09	4,83E-09	9,32E-11	-4,09E-09
SQP	-	4,48E+02	1,25E+01	7,74E-01	0,00E+00	8,50E+02	1,64E-02	0,00E+00	0,00E+00	1,66E+02	2,11E+02	1,57E-01	1,51E+00	1,17E+00	1,81E-01	-1,36E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless) The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimers	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 2 This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.															

**Table 59: Parameters describing resource use**

RESOURCE USE PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1,97E+02	6,56E-01	-1,70E+01	0,00E+00	4,59E+02	5,10E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	5,13E-02	2,35E+00	1,79E-03	-1,76E+00
PERM	MJ	2,02E-01	0,00E+00	1,70E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,97E+02	6,56E-01	4,21E-02	0,00E+00	4,59E+02	5,10E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	5,13E-02	2,35E+00	1,79E-03	-1,76E+00
PENRE	MJ	3,98E+02	3,20E+01	7,46E-01	0,00E+00	3,04E+02	4,71E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,12E+00	4,33E+00	8,98E-02	-1,01E+01
PENRM	MJ	1,79E+01	0,00E+00	9,51E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,16E+02	3,20E+01	1,70E+00	0,00E+00	3,04E+02	4,71E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,12E+00	4,33E+00	8,98E-02	-1,01E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	1,67E+01	1,24E-01	1,50E-02	0,00E+00	6,27E+01	2,99E-02	0,00E+00	0,00E+00	9,55E+00	7,04E+03	5,81E-06	1,16E-06	9,20E-06	3,34E-08	-1,65E-05
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 60: End-of-life (waste categories and output flows)**

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	8,69E-03	1,91E-04	9,82E-06	0,00E+00	1,15E-03	2,11E-07	0,00E+00	0,00E+00	1,50E-03	2,81E-03	1,41E-06	1,87E-05	9,30E-06	4,42E-07	-3,32E-05
NHWD	kg	1,24E+01	9,61E-01	1,88E-01	0,00E+00	3,64E+00	2,49E-03	0,00E+00	0,00E+00	3,42E+00	1,12E+01	3,24E-03	1,21E-01	8,02E-02	3,50E-01	-7,87E-02
RWD	kg	6,85E-04	1,48E-05	1,01E-06	0,00E+00	3,15E-04	1,89E-08	0,00E+00	0,00E+00	6,15E-03	5,24E-03	5,81E-06	1,16E-06	9,20E-06	3,34E-08	-1,65E-05
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	2,21E+00	0,00E+00	8,05E-01	0,00E+00	0,00E+00	3,62E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,85E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	2,99E-03	0,00E+00	1,70E-01	0,00E+00	0,00E+00	1,37E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,44E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,63E+00	0,00E+00	0,00E+00	1,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,26E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 61: Biogenic carbon content**

BIOGENIC CARBON CONTENT PER FIXTURE		
Parameter	Unit	At the factory gate
Biogenic carbon content in a product	kg C	0
Biogenic carbon content in accompanying packaging	kg C	0,53
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

**Group 12: Exclusive color (PVD on Stainless steel) is represented by 4822-64 - Brushed copper**

**Table 62: Environmental impact indicators**

ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP- total	kg CO <sub>2</sub> -eq.	2,87E+01	2,17E+00	6,37E-01	0,00E+00	8,93E+00	3,19E-02	0,00E+00	0,00E+00	3,88E+01	5,50E+01	3,67E-02	2,12E-01	8,16E-01	4,38E-02	-6,71E-01
GWP-fossil	kg CO <sub>2</sub> -eq.	2,88E+01	2,17E+00	1,49E-01	0,00E+00	1,59E+01	3,17E-02	0,00E+00	0,00E+00	3,74E+01	5,38E+01	3,54E-02	2,12E-01	8,03E-01	1,17E-02	-6,51E-01
GWP-biogenic	kg CO <sub>2</sub> -eq.	-3,71E-01	0,00E+00	4,68E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	1,31E+00	1,13E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-2,20E-03
GWP-luluc	kg CO <sub>2</sub> -eq.	5,88E-02	1,27E-03	5,50E-05	0,00E+00	1,11E+01	1,52E-06	0,00E+00	0,00E+00	9,34E-02	9,39E-02	8,83E-05	9,69E-05	5,58E-04	3,17E-06	-5,41E-04
ODP	kg CFC 11 -eq.	4,22E-07	4,71E-08	2,41E-09	0,00E+00	1,03E-06	5,84E-11	0,00E+00	0,00E+00	7,14E-07	1,52E-06	6,75E-10	4,61E-09	3,05E-09	9,18E-11	-1,85E-08
AP	mol H <sup>+</sup> -eq.	9,22E-01	6,63E-03	5,36E-04	0,00E+00	1,42E-01	1,22E-04	0,00E+00	0,00E+00	2,15E-01	2,94E-01	2,03E-04	6,59E-04	1,59E-03	2,99E-05	-1,79E-03
EP-freshwater	kg P-eq.	7,08E-02	1,84E-04	1,27E-05	0,00E+00	5,92E-03	1,65E-06	0,00E+00	0,00E+00	3,55E-02	3,57E-02	3,35E-05	1,46E-05	1,25E-04	1,06E-06	-1,45E-04
EP-marine	kg N-eq.	6,24E-02	2,14E-03	4,25E-04	0,00E+00	1,13E-01	4,64E-05	0,00E+00	0,00E+00	3,47E-02	5,74E-02	3,28E-05	2,26E-04	3,97E-04	8,44E-05	-4,76E-04
EP-terrestrial	mol N-eq.	7,68E-01	2,25E-02	2,05E-03	0,00E+00	4,62E-01	2,44E-04	0,00E+00	0,00E+00	3,14E-01	5,51E-01	2,97E-04	2,38E-03	3,84E-03	1,11E-04	-4,66E-03
POCP	kg NMVOC-eq.	2,24E-01	9,59E-03	8,30E-04	0,00E+00	9,33E-02	7,70E-05	0,00E+00	0,00E+00	1,01E-01	2,02E-01	9,54E-05	9,88E-04	1,17E-03	4,82E-05	-1,82E-03
ADPE	kg Sb-eq.	1,18E-02	9,45E-06	4,52E-07	0,00E+00	1,76E-04	1,97E-08	0,00E+00	0,00E+00	4,54E-04	2,83E-04	4,29E-07	6,75E-07	1,23E-06	8,76E-09	-1,83E-06
ADPF	MJ	3,74E+02	3,04E+01	1,60E+00	0,00E+00	2,69E+02	4,38E-01	0,00E+00	0,00E+00	8,52E+02	9,67E+02	8,05E-01	2,98E+00	4,08E+00	8,42E-02	-9,31E+00
WDP	m <sup>3</sup>	1,24E+01	1,26E-01	1,50E-02	0,00E+00	6,47E+01	3,14E-02	0,00E+00	0,00E+00	9,60E+00	7,38E+03	9,07E-03	1,13E-02	6,58E-02	3,47E-03	-5,89E-02
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimer	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															

**Table 63: Additional environmental impacts**

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	3,02E-06	1,26E-07	1,05E-08	0,00E+00	2,02E-06	1,27E-09	0,00E+00	0,00E+00	7,88E-07	3,05E-06	7,44E-10	1,45E-08	1,62E-08	5,86E-10	-1,83E-08
IRP	kBq U235 eq	2,52E+01	6,08E-02	4,02E-03	0,00E+00	1,26E+00	7,63E-05	0,00E+00	0,00E+00	2,40E+01	2,05E+01	2,27E-02	4,81E-03	3,76E-02	1,38E-04	-6,56E-02
ETP-fw	CTUe	1,28E+03	1,61E+01	1,63E+00	0,00E+00	5,34E+02	5,07E-02	0,00E+00	0,00E+00	1,43E+02	2,47E+02	1,35E-01	1,51E+00	2,10E+00	1,54E-01	-1,48E+00
HTP-c	CTUh	1,93E-07	1,11E-09	8,56E-11	0,00E+00	2,96E-08	3,97E-12	0,00E+00	0,00E+00	1,76E-08	2,38E-07	1,66E-11	8,86E-11	1,78E-10	3,53E-12	-2,11E-10
HTP-nc	CTUh	1,15E-05	2,13E-08	2,00E-09	0,00E+00	6,85E-07	5,55E-11	0,00E+00	0,00E+00	7,01E-07	3,11E-06	6,63E-10	1,98E-09	4,84E-09	9,31E-11	-4,10E-09
SQP	-	3,77E+02	1,27E+01	7,74E-01	0,00E+00	8,50E+02	1,64E-02	0,00E+00	0,00E+00	1,66E+02	2,11E+02	1,57E-01	1,53E+00	1,18E+00	1,81E-01	-1,36E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless) The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															
Disclaimers	1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 2 This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.															

**Table 64: Parameters describing resource use**

RESOURCE USE PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1,94E+02	6,63E-01	-1,70E+01	0,00E+00	4,59E+02	5,10E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	5,19E-02	2,35E+00	1,79E-03	-1,76E+00
PERM	MJ	2,02E-01	0,00E+00	1,70E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,95E+02	6,63E-01	4,21E-02	0,00E+00	4,59E+02	5,10E-03	0,00E+00	0,00E+00	1,91E+02	1,43E+02	1,80E-01	5,19E-02	2,35E+00	1,79E-03	-1,76E+00
PENRE	MJ	3,82E+02	3,24E+01	7,46E-01	0,00E+00	3,04E+02	4,71E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,16E+00	4,34E+00	8,95E-02	-1,01E+01
PENRM	MJ	1,79E+01	0,00E+00	9,51E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,00E+02	3,24E+01	1,70E+00	0,00E+00	3,04E+02	4,71E-01	0,00E+00	0,00E+00	8,93E+02	1,02E+03	8,44E-01	3,16E+00	4,34E+00	8,95E-02	-1,01E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	1,32E+01	1,25E-01	1,50E-02	0,00E+00	6,27E+01	2,99E-02	0,00E+00	0,00E+00	9,55E+00	7,04E+03	5,81E-06	1,18E-06	9,21E-06	3,33E-08	-1,65E-05
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 65: End-of-life (waste categories and output flows)**

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	6,81E-03	1,93E-04	9,82E-06	0,00E+00	1,15E-03	2,11E-07	0,00E+00	0,00E+00	1,50E-03	2,81E-03	1,41E-06	1,89E-05	9,33E-06	4,40E-07	-3,32E-05
NHWD	kg	1,43E+01	9,71E-01	1,88E-01	0,00E+00	3,64E+00	2,49E-03	0,00E+00	0,00E+00	3,42E+00	1,12E+01	3,24E-03	1,23E-01	8,06E-02	3,48E-01	-7,91E-02
RWD	kg	6,32E-04	1,50E-05	1,01E-06	0,00E+00	3,15E-04	1,89E-08	0,00E+00	0,00E+00	6,15E-03	5,24E-03	5,81E-06	1,18E-06	9,21E-06	3,33E-08	-1,65E-05
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	2,18E+00	0,00E+00	8,05E-01	0,00E+00	0,00E+00	3,62E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,88E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	2,99E-03	0,00E+00	1,70E-01	0,00E+00	0,00E+00	1,37E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,44E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,63E+00	0,00E+00	0,00E+00	1,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,26E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.															

**Table 66: Biogenic carbon content**

BIOGENIC CARBON CONTENT PER FIXTURE		
Parameter	Unit	At the factory gate
Biogenic carbon content in a product	kg C	0
Biogenic carbon content in accompanying packaging	kg C	0,53
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

# Additional information

## LCA interpretation

The hotspot analysis identified the areas where improvements can be made to reduce the environmental impact on VOLA’s products. The hotspot analysis has identified that brass and steel have the highest material contribution to the overall environmental impact. These two materials are the main part of the product, and the contribution analysis of the potential environmental impacts showed also that they cause the highest impact among the other materials of the product.

Module B6 and B7, Operational energy and water use are associated with the highest environmental impact because the scenario is based on a Reference Service Life of 30 years. A water consumption of 175 m<sup>3</sup> and a 106 kWh energy consumption are used as a default scenario of 1,9 l/min and 100 use cycles per day in B6-B7.

## Technical information on scenarios

**Table 67: Average transport to the building site (A4)**

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Euro 5	-
Average transport distance	Group 1: 4821-16: 1.074 km Group 2: 4821-19: 1.074 km Group 3: 4821-40: 1.074 km Group 4: 4821-27: 1.074 km Group 5: 4821-60: 1.074 km Group 6: 4821-64: 1.074 km Group 7: 4822 -16: 1.137 km Group 8: 4822 -19: 1.137 km Group 9: 4822 -40: 1.137 km Group 10: 4822 -27: 1.137 km Group 11: 4822 -60: 1.137 km Group 12: 4822 -64: 1.137 km	km
Capacity utilization (including empty runs)	85 % for trucks	%
Gross density of products transported	930 kg/m <sup>3</sup> (with lorry) 697 kg/m <sup>3</sup> (with flight) 442 kg/m <sup>3</sup> (with steel cage)	kg/m <sup>3</sup>
Capacity utilization volume factor	1	-

**Table 68: Installation of the product in the building (A5)**

Scenario information	Value							Unit
Ancillary materials	Installation is simple and does not entail any relevant energy consumption or use of materials. Mounting instructions are included with the product or can be downloaded on <a href="http://www.VOLA.com">www.VOLA.com</a> . Packaging materials are cardboard, paper, LDPE, wooden pallet, and PU foam.							kg
Water use	Not relevant							m <sup>3</sup>
Other resource use	Not relevant							kg
Energy type and consumption	Not relevant							kWh
Waste materials	Materials	Group 1 4821-16	Group 2 4821-19	Group 3 4821-40	Group 4 4821-27	Group 5 4821-60	Group 6 4821-64	kg



	PU	0,0004	0,0004	0,0004	0,000	0,0004	0,0004	
	LDPE	0,029	0,029	0,029	0,028	0,029	0,029	
	Cardboard	0,988	0,988	0,988	0,988	0,988	0,988	
	Paper	0,043	0,043	0,043	0,042	0,043	0,042	
	Wooden pal.	0,0001	0,0001	0,0001	0,0001	0,0001	0,0001	
	<b>SUMMARY</b>	<b>1,059</b>	<b>1,059</b>	<b>1,059</b>	<b>1,057</b>	<b>1,059</b>	<b>1,058</b>	
	<b>Materials</b>	<b>Group 7</b>	<b>Group 8</b>	<b>Group 9</b>	<b>Group 10</b>	<b>Group 11</b>	<b>Group 12</b>	
		<b>4822-16</b>	<b>4822-19</b>	<b>4822-40</b>	<b>4822-27</b>	<b>4822-60</b>	<b>4822-64</b>	
	PU	0,000	0,000	0,000	0,000	0,000	0,000	
	LDPE	0,023	0,023	0,023	0,023	0,023	0,023	
	Cardboard	1,023	1,023	1,023	1,023	1,023	1,023	
	Paper	0,042	0,042	0,042	0,042	0,042	0,042	
	Wooden pal.	0,0001	0,0001	0,0001	0,0001	0,0001	0,0001	
	<b>SUMMARY</b>	<b>1,088</b>	<b>1,088</b>	<b>1,088</b>	<b>1,088</b>	<b>1,088</b>	<b>1,088</b>	
	Output materials for recycling	<b>Materials</b>	<b>Group 1</b>	<b>Group 2</b>	<b>Group 3</b>	<b>Group 4</b>	<b>Group 5</b>	
		<b>4821-16</b>	<b>4821-19</b>	<b>4821-40</b>	<b>4821-27</b>	<b>4821-60</b>	<b>4821-64</b>	
PU		0,000	0,000	0,000	0,000	0,000	0,000	
LDPE		0,008	0,008	0,008	0,008	0,008	0,008	
Cardboard		0,741	0,741	0,741	0,741	0,741	0,741	
Paper		0,032	0,032	0,032	0,032	0,032	0,032	
<b>SUMMARY</b>		<b>0,781</b>	<b>0,781</b>	<b>0,781</b>	<b>0,780</b>	<b>0,781</b>	<b>0,781</b>	
<b>Materials</b>		<b>Group 7</b>	<b>Group 8</b>	<b>Group 9</b>	<b>Group 10</b>	<b>Group 11</b>	<b>Group 12</b>	
		<b>4822-16</b>	<b>4822-19</b>	<b>4822-40</b>	<b>4822-27</b>	<b>4822-60</b>	<b>4822-64</b>	
PU		0,000	0,000	0,000	0,000	0,000	0,000	
LDPE		0,007	0,007	0,007	0,007	0,007	0,007	
Cardboard		0,767	0,767	0,767	0,767	0,767	0,767	
Paper		0,032	0,032	0,032	0,032	0,032	0,032	
<b>SUMMARY</b>		<b>0,805</b>	<b>0,805</b>	<b>0,805</b>	<b>0,805</b>	<b>0,805</b>	<b>0,805</b>	
Output materials for incineration		<b>Materials</b>	<b>Group 1</b>	<b>Group 2</b>	<b>Group 3</b>	<b>Group 4</b>	<b>Group 5</b>	<b>Group 6</b>
		<b>4821-16</b>	<b>4821-19</b>	<b>4821-40</b>	<b>4821-27</b>	<b>4821-60</b>	<b>4821-64</b>	
	PU	0,0002	0,0002	0,0002	0,000	0,0002	0,0002	
	LDPE	0,011	0,011	0,011	0,011	0,011	0,011	
	Cardboard	0,136	0,136	0,136	0,136	0,136	0,136	
	Paper	0,006	0,006	0,006	0,006	0,006	0,006	
	Wooden pal.	0,0001	0,0001	0,0001	0,0001	0,0001	0,0001	
	<b>SUMMARY</b>	<b>0,153</b>	<b>0,153</b>	<b>0,153</b>	<b>0,152</b>	<b>0,153</b>	<b>0,153</b>	
	<b>Materials</b>	<b>Group 7</b>	<b>Group 8</b>	<b>Group 9</b>	<b>Group 10</b>	<b>Group 11</b>	<b>Group 12</b>	
		<b>4822-16</b>	<b>4822-19</b>	<b>4822-40</b>	<b>4822-27</b>	<b>4822-60</b>	<b>4822-64</b>	
	PU	0,000	0,000	0,000	0,000	0,000	0,000	
	LDPE	0,009	0,009	0,009	0,009	0,009	0,009	
	Cardboard	0,141	0,141	0,141	0,141	0,141	0,141	
	Paper	0,006	0,006	0,006	0,006	0,006	0,006	
	Wooden pal.	0,0001	0,0001	0,0001	0,0001	0,0001	0,0001	
<b>SUMMARY</b>	<b>0,156</b>	<b>0,156</b>	<b>0,156</b>	<b>0,156</b>	<b>0,156</b>	<b>0,156</b>		
Output materials for landfill	<b>Materials</b>	<b>Group 1</b>	<b>Group 2</b>	<b>Group 3</b>	<b>Group 4</b>	<b>Group 5</b>	<b>Group 6</b>	kg
		<b>4821-16</b>	<b>4821-19</b>	<b>4821-40</b>	<b>4821-27</b>	<b>4821-60</b>	<b>4821-64</b>	
	PU	0,0002	0,0002	0,0002	0,000	0,0002	0,0002	
	LDPE	0,009	0,009	0,009	0,009	0,009	0,009	
	Cardboard	0,111	0,111	0,111	0,111	0,111	0,111	
	Paper	0,005	0,005	0,005	0,005	0,005	0,005	
	<b>SUMMARY</b>	<b>0,125</b>	<b>0,125</b>	<b>0,125</b>	<b>0,125</b>	<b>0,125</b>	<b>0,125</b>	

	Materials	Group 7 4822-16	Group 8 4822-19	Group 9 4822-40	Group 10 4822-27	Group 11 4822-60	Group 12 4822-64	
	PU	0,000	0,000	0,000	0,000	0,000	0,000	
	LDPE	0,007	0,007	0,007	0,007	0,007	0,007	
	Cardboard	0,115	0,115	0,115	0,115	0,115	0,115	
	Paper	0,005	0,005	0,005	0,005	0,005	0,005	
	<b>SUMMARY</b>	<b>0,127</b>	<b>0,127</b>	<b>0,127</b>	<b>0,127</b>	<b>0,127</b>	<b>0,127</b>	
Direct emissions to air, soil, or water	0							kg

**Table 69: Reference service life**

RSL information	Unit
Reference service Life	30 Years
Declared product properties	As appropriate
Design application parameters	As appropriate
Assumed quality of work	As appropriate
Outdoor environment	As appropriate
Indoor environment	As appropriate
Usage conditions	As appropriate
Maintenance	As appropriate

**Table 70: Use (B1-B7)**

Scenario information	Value	Unit
<b>B1 – Use</b>		
	Build-in basin tap with on-off sensor for “hands free” operation. For vertical mounting. Sensor aligned with wall. The technical operating scenario is available in the “Consumption data” (B6-B7).	
<b>B2 - Maintenance</b>		
Maintenance process	Maintenance instructions are included with the VOLA product and can also be downloaded on <a href="http://www.vola.com">www.vola.com</a>	-
Maintenance cycle	Once per week = 1.560 times per RSL	/RSL
Ancillary materials for maintenance (specify which)	Cloth, little soap for cleaning, cotton bud, and detergents that are meant for the cleaning surface of the product (according to the maintenance instructions included in the VOLA product).  Soap (7,8 kg/RSL) Water (816 l/RSL) Acetic acid (3,6 l/RSL)	kg/RSL
Waste materials resulting from the maintenance (specify which)	0	kg
Net freshwater consumption during maintenance	0,816	m <sup>3</sup>
Energy input during maintenance	0	kWh
<b>B3 – Repair</b>		

Repair process	The product is made of parts that can be changed and replaced by new parts. Inspection is performed and a description of needed repair is noted on a sales order in agreement with the customer and Technical Support. The repair is carried out and the product is returned to the customer. If repair is impossible, the customer will be contacted by technical support and a new product can be offered.							-
Inspection process	As part of the repair process.							-
Repair cycle	0,1							/year
Ancillary materials (specify which)	NA							kg/RSL
Waste materials	<b>Materials</b>	<b>Group 1</b> 4821-16	<b>Group 2</b> 4821-19	<b>Group 3</b> 4821-40	<b>Group 4</b> 4821-27	<b>Group 5</b> 4821-60	<b>Group 6</b> 4821-64	kg/RSL
	<b>Hoses (Steel)</b>	0,000	0,000	0,000	0,000	0,000	0,000	
	<b>Cartridges</b> (Ceramic, Brass, Plast)	0,000	0,000	0,000	0,000	0,000	0,000	
	<b>Pilator</b> (Plastic)	0,002	0,002	0,002	0,002	0,002	0,002	
	<b>SUMMARY</b>	<b>0,002</b>	<b>0,002</b>	<b>0,002</b>	<b>0,002</b>	<b>0,002</b>	<b>0,002</b>	
	<b>Materials</b>	<b>Group 7</b> 4822-16	<b>Group 8</b> 4822-19	<b>Group 9</b> 4822-40	<b>Group 10</b> 4822-27	<b>Group 11</b> 4822-60	<b>Group 12</b> 4822-64	
	<b>Hoses (Steel)</b>	0,000	0,000	0,000	0,000	0,000	0,000	
	<b>Cartridges</b> (Ceramic, Brass, Plast)	0,000	0,000	0,000	0,000	0,000	0,000	
	<b>Pilator</b> (Plastic)	0,002	0,002	0,002	0,002	0,002	0,002	
	<b>SUMMARY</b>	<b>0,002</b>	<b>0,002</b>	<b>0,002</b>	<b>0,002</b>	<b>0,002</b>	<b>0,002</b>	
Net freshwater consumption during repair	0							m <sup>3</sup>
Energy input during repair	0							kg/RSL
<b>B6 + B7 – Use of energy and water</b>								
Ancillary materials specified by material	Not specified							kg
Net freshwater consumption	175 m <sup>3</sup> (100 cycles per day, 5 sec. lengths of use cycle, lifespan of 30 years) with 1,9 l/min flow rate							m <sup>3</sup>
Type of energy carrier (European electricity market mix)	106							kWh/RSL
The power output of equipment	≤ 0,0003							kW
Characteristic performance	Not specified							As appropriate
Further assumptions for scenario development	Not specified							As appropriate

**Table 71: End of life (C1-C4)**

Scenario information	Value							Unit
Collected separately	Material	Group 1 4821-16	Group 2 4821-19	Group 3 4821-40	Group 4 4821-27	Group 5 4821-60	Group 6 4821-64	kg
	SUMMARY	3,26E+00	3,25E+00	3,27E+00	3,26E+00	3,33E+00	3,34E+00	
	Material	Group 7 4822-16	Group 8 4822-19	Group 9 4822-40	Group 10 4822-27	Group 11 4822-60	Group 12 4822-64	
	SUMMARY	3,34E+00	3,37E+00	3,38E+00	3,43E+00	3,40E+00	3,43E+00	
Collected with mixed waste	-							kg
For reuse	0							kg
For recycling	Material	Group 1 4821-16	Group 2 4821-19	Group 3 4821-40	Group 4 4821-27	Group 5 4821-60	Group 6 4821-64	kg
	SUMMARY	2,72E+00	2,71E+00	2,73E+00	2,72E+00	2,78E+00	2,79E+00	
	Material	Group 7 4822-16	Group 8 4822-19	Group 9 4822-40	Group 10 4822-27	Group 11 4822-60	Group 12 4822-64	
	SUMMARY	2,80E+00	2,82E+00	2,84E+00	2,88E+00	2,85E+00	2,88E+00	
For energy recovery	Material	Group 1 4821-16	Group 2 4821-19	Group 3 4821-40	Group 4 4821-27	Group 5 4821-60	Group 6 4821-64	kg
	SUMMARY	2,02E-01	2,02E-01	2,02E-01	2,02E-01	2,02E-01	2,02E-01	
	Material	Group 7 4822-16	Group 8 4822-19	Group 9 4822-40	Group 10 4822-27	Group 11 4822-60	Group 12 4822-64	
	SUMMARY	2,02E-01	2,02E-01	2,02E-01	2,02E-01	2,02E-01	2,02E-01	
For landfill	Material	Group 1 4821-16	Group 2 4821-19	Group 3 4821-40	Group 4 4821-27	Group 5 4821-60	Group 6 4821-64	kg
	SUMMARY	3,43E-01	3,40E-01	3,39E-01	3,40E-01	3,47E-01	3,43E-01	
	Material	Group 7 4822-16	Group 8 4822-19	Group 9 4822-40	Group 10 4822-27	Group 11 4822-60	Group 12 4822-64	
	SUMMARY	3,46E-01	3,45E-01	3,45E-01	3,49E-01	3,49E-01	3,47E-01	
Assumptions for scenario development	-							As appropriate

**Table 72: Re-use, recovery, and recycling potential (D)**

Scenario information/Material	Value						Unit
	Group 1 4821-16	Group 2 4821-19	Group 3 4821-40	Group 4 4821-27	Group 5 4821-60	Group 6 4821-64	
Electrical energy recovered	0,62	0,62	0,62	0,61	0,62	0,62	MJ
Thermal energy recovered	5,92	5,92	5,91	5,90	5,92	5,92	MJ
Materials recovery	3,22	3,21	3,23	3,22	3,28	3,29	kg
	Group 7 4822-16	Group 8 4822-19	Group 9 4822-40	Group 10 4822-27	Group 11 4822-60	Group 12 4822-64	
Electrical energy recovered	0,62	0,62	0,62	0,62	0,62	0,62	MJ
Thermal energy recovered	5,91	5,91	5,91	5,91	5,91	5,91	MJ
Materials recovery	3,31	3,34	3,35	3,40	3,36	3,39	kg

**Indoor air**

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

**Soil and water**

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

# References

<p><b>Publisher</b></p>	 <p>www.epddanmark.dk  <small>Template version 2022.2</small></p>
<p><b>Program operator</b></p>	<p>Danish Technological Institute          Buildings &amp; Environment          Gregersensvej          DK-2630 Taastrup          www.teknologisk.dk</p>
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<p><b>LCA software /background data</b></p>	<p>SimaPro 9.3/ Ecoinvent 3.9.1 (2023)</p> <p>Generic data are primarily based on life cycle inventory data from SimaPro 9.3 Professional Database 2023 and Ecoinvent version 3.9.1</p>
<p><b>3<sup>rd</sup> party verifier</b></p>	<p>Charlotte Merlin</p>  <p>FORCE Technology          Park Allé 345          2605 Brøndby          Denmark          www.forcetechnology.com</p>

**General program instructions**

General Programme Instructions, version 2.0, spring 2020  
www.epddanmark.dk

**EN 15804**

DS/EN 15804 + A2:2019 –“Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products”

**Product specific PCR**

Part B: Requirements on the EPD for Bathroom and showers. 25/07/2023 v5.

From the range of Environmental Product Declarations of Institute Construction and Environment e.V. (IBU), Institut Bauen und Umwelt e.V., Hegelplatz 1, 10117 Berlin.

**EN 15942**

DS/EN 15942:2011 –“Sustainability of Construction Works – Environmental product declarations – Communication format business-to-business”

**ISO 14025**

DS/EN ISO 14025:2010 –“Environmental Labels and Declarations – Type III environmental declarations – Principles and procedures”

**ISO 14040**

DS/EN ISO 14040:2008 –“Environmental Management – Life cycle assessment – Principles and framework”

**ISO 14044**

DS/EN ISO 14044:2008 –“Environmental Management – Life cycle assessment – Requirements and guidelines”

**PEF 2018**

Product Environmental Footprint Category Rules Guidance 2018

**BUILD REPORT 2021**

BUILD REPORT 2021: 32” Version 2021 - lifetime tables: group 53 (3)  
<https://build.dk/Pages/BUILD-levetidstabel.aspx>