

Owner: VOLA A/S
No.: MD-23146-EN_rev1
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3rd 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:
18-12-2024

Valid to:
18-12-2029

Programme

EPD Danmark
www.epddanmark.dk



- Industry EPD
- Product EPD

Declared products

6 products:
132M-16
131-19
132L-40
132M-27
132L-60
132L-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

Version 2: Corrections about the grouping

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

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	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 six 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 [%]
Brass	44,04 – 72,16
Ceramics	0,35 – 0,46
Other metals	0,01 – 2,79
Plastic	2,77 – 4,00
Rubber	0,02 – 0,99
Steel	0,27 – 24,31
Hot dip galvanised steel	22,61 – 30,49
Other	0,06 - 0,09

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	1,13	0,013
Cardboard	95,22	1,087
Paper	3,65	0,042
Wooden pallet	0,01	0,0001
Total	100	1,14

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 SimaPro 9.3 and are less than 10 years old. Only in a few cases is SimaPro 9.3 data supplemented with data from Ecoinvent 3.9.1 (2023).

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 14th 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 declared for 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

Six products (131, 131L, 131M, 132, 132L, 132M) are calculated in six different surfaces (16 and 20, 19, 40, 27, 60, 64) and six product groups, see Figure 1. In this EPD the declared products are the worst-case product for each of the different product categories.



Figure 1:131, 131M, 131L, 132, 132M, 132L

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. Tables 3, 4 and 5 show weights and conversion factors to 1 kg for the declared unit for six product groups with 6 different surfaces (16 and 20, 19, 40, 27, 60, 64) and six different variations of products (131, 131L, 131M, 132, 132L, 132M)

The results for:

Group no. 1. Polished and brushed chrome, represented by 132M-16 – Polished chrome

Group no. 2. Natural brass, represented by 131-19 – Natural brass

Group no. 3. Stainless steel, represented by 132L-40 – Stainless steel

Group no. 4. Colors, represented by 132M-27 – Matt black

Group no. 5. Exclusive color (PVD on Brass), represented by 132L-60 – Black

Group no. 6. Exclusive color (PVD on Stainless steel), represented by 132L-64 – Brushed copper

Table 3: Declared unit

Group no.	Surface/Material		Surface no.	Name / Value						Conversion factor to 1 kg
				131	131L	131M	132	132L	132M	
				[kg/piece]						
1	Polished and brushed chrome	Polished chrome	16	3,64	3,69	3,67	3,71	3,76	3,74	0,27
		Brushed chrome	20							
2	Natural brass	Natural brass	19	3,64	4,31	4,29	3,71	4,38	3,74	0,25
3	Stainless steel	Stainless steel	40	3,63	3,73	3,71	3,69	3,79	3,77	0,27
4	Colors	Matt black	27	3,71	4,37	4,35	4,41	4,45	4,43	0,23
5	Exclusive color (PVD on Brass)	Black	60	3,77	3,81	3,80	3,83	3,87	3,86	0,26
6	Exclusive color (PVD on Stainless steel)	Brushed copper	64	3,74	3,84	3,83	3,80	3,90	3,88	0,26
Declared unit				1						0,23-0,27

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.

Flow diagram

The Flow diagram (Figure 2) conforms with the requirements of the modular approach and shows all phases. All phases are described below.

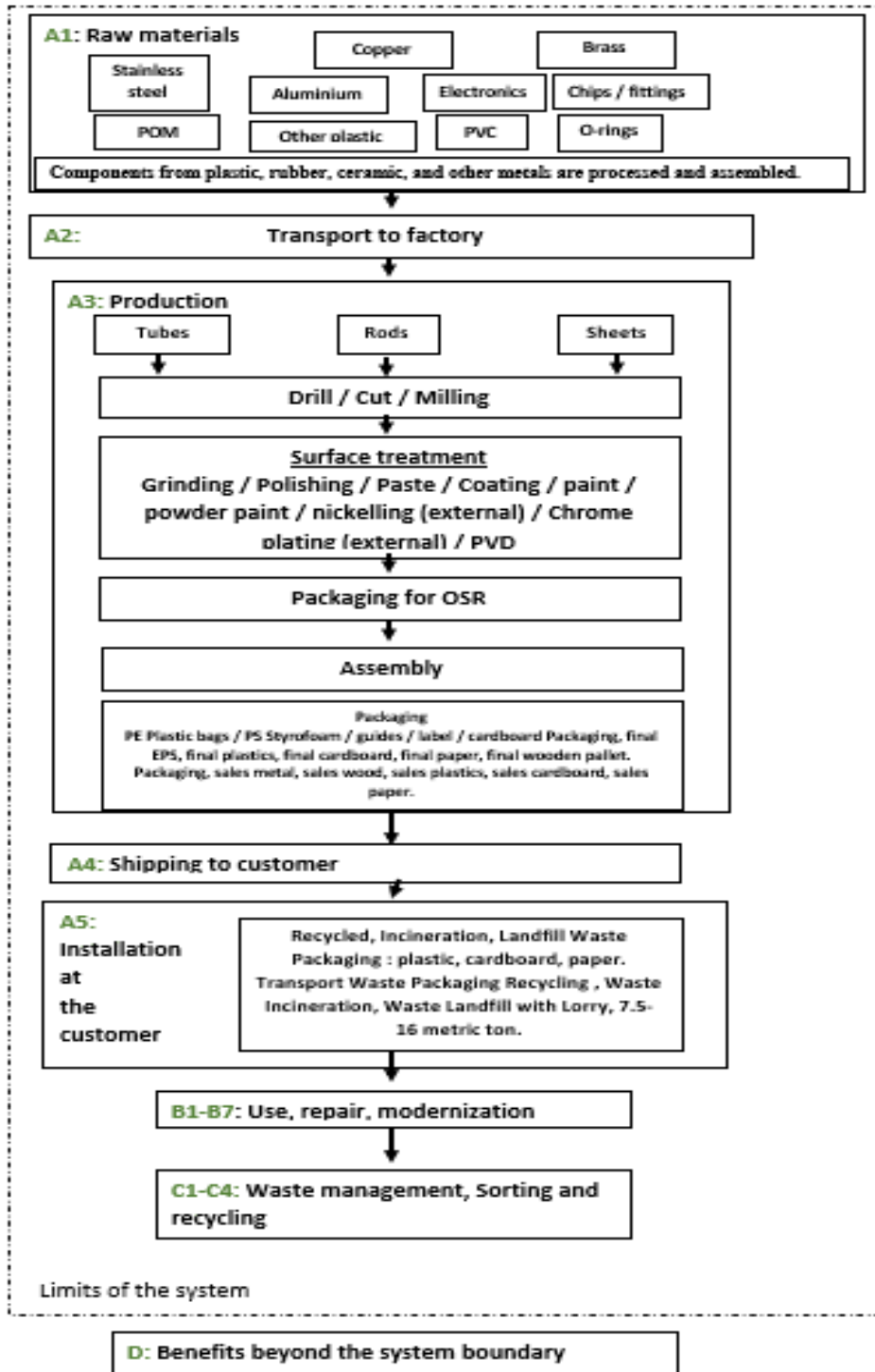


Figure 2: Flow diagram of product system with modules A1-D

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 high quality steel and brass to make sure the products are built to last. Components from plastic, rubber, ceramic, and other metals are reproduced by suppliers.

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 material is stainless steel and brass. These materials constitute 25-73 % of the total product. Stainless steel components have different qualities: 304L and 316L. The brass components are of different qualities: CW508L,

CW511L, CW602N, CW608N, CW614N, and Eco Brass. 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 25 times reuse rate.

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

The steel waste from production is 67-68 % for group no. 3; 77 % for groups no. 4 and 5; and 0 % for groups no. 1, 2, 5.

The brass waste from production is 44-46 % for group no. 3; 53-55 % of brass waste is from group no. 1, 2, 4.

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 36. It is implemented within Europe using diesel-powered trucks. Some products were not sold in the target market in 2022, therefore the average transport distance (879 km) of all products was used as a conservative solution.

A5: Installation of products

Installation is simple and does not require any relevant energy consumption or use of materials, due to manual installation by technicians. Mounting instructions are included with the product or can be downloaded on: 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, 74,3 % of Sales and Transport Packaging for the final VOLA product is recycled, 11,6 % is transported to the landfill, and 14,1 % 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

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

B4: Replacement

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

B5: Refurbishment

No refurbishment is considered within 30 years.

(B6-B7) Consumption data

This use stage consists of energy and water consumption for the users with an assumption to be used in bathrooms and kitchens for 30 years. The water use calculation follows the formula provided in the reference c-PCR. 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. The spouts 010 and 020 have the flow rate of 1,9 l/min of water consumption by using aerators, an average of 20 cycles per day, and a cycle time of 30 seconds, while the spouts 030 have the flow rate 3,5 l/min of water consumption by using flow restrictor at the spout connection an average of 20 cycles per day, and a cycle time of 30 seconds.

Series 100 for basin and kitchen can be mounted with different spouts (010 – 020 - 030). This EPD applies only to spouts 030. This is due to the big variation compared to spouts 010 and 020 in operational water use (module B7) caused by higher water consumption of sprouts 030.

Table 4: Consumption Data for spouts 030 - cycle time (3,5 l/min)

3,5 l/min water-saving aerators and Cycle time Settings of 30 sec.								
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
Average building	1,75 liters per use	20	7.300	219.000	12.775	383.250	0	0

Table 5: 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 ³ /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 demolished products. It is considered that 1,2-2,1 % of product parts are transported 100 km to the incineration station, 91,8- 92,7 % of the product is recycled and transported 300 km, and 6,1-6,8 % 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

The end-of-life stage represents the waste scenario after a use stage where 1,2-2,1 % of the product parts are incinerated in module C3 with energy recovery accounted for in module D. Overall, 91,1 – 92,7% 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 accounted for in module D.

C4: Disposal

Overall, 6,1-6,8 % 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 reused components made from raw materials in the product stage were assumed to replace similar components from 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. 1-6) are presented in the next page. The potential environmental impact variation between the products and colors is below 10 % within the six 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 132M-16 – Polished chrome

Group no. 2. Natural brass, represented by 131-19 – Natural brass

Group no. 3. Stainless steel, represented by 132L-40 – Stainless steel

Group no. 4. Colors, represented by 132M-27 – Matt black

Group no. 5. Exclusive color (PVD on Brass), represented by 132L-60 – Black

Group no. 6. Exclusive color (PVD on Stainless steel), represented by 132L-64 – Brushed copper

Group 1 : Polished and brushed chrome is represented by: 132M-16

Table 6: Environmental impact indicators - Group 1: 132M-16.

ENVIRONMENTAL IMPACTS PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO ₂ -eq.	3,73E+01	1,82E+00	4,04E-01	0,00E+00	8,93E+00	6,23E-01	0,00E+00	0,00E+00	0,00E+00	1,20E+02	3,67E-02	2,46E-01	1,92E-01	1,91E-02	-2,48E-01
GWP-fossil	kg CO ₂ -eq.	3,72E+01	1,81E+00	9,26E-02	0,00E+00	1,59E+01	5,95E-01	0,00E+00	0,00E+00	0,00E+00	1,18E+02	3,54E-02	2,46E-01	1,87E-01	7,52E-03	-2,36E-01
GWP-biogenic	kg CO ₂ -eq.	-2,37E-01	0,00E+00	2,99E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,47E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-9,35E-04
GWP-luluc	kg CO ₂ -eq.	8,68E-02	1,06E-03	3,49E-05	0,00E+00	1,11E+01	4,77E-04	0,00E+00	0,00E+00	0,00E+00	2,05E-01	8,83E-05	1,12E-04	2,71E-05	1,69E-06	-1,12E-04
ODP	kg CFC 11 -eq.	5,10E-07	3,94E-08	1,54E-09	0,00E+00	1,03E-06	4,48E-09	0,00E+00	0,00E+00	0,00E+00	3,33E-06	6,75E-10	5,35E-09	8,50E-10	5,70E-11	-7,91E-09
AP	mol H ⁺ -eq.	2,25E+00	5,55E-03	3,42E-04	0,00E+00	1,42E-01	1,39E-02	0,00E+00	0,00E+00	0,00E+00	6,44E-01	2,03E-04	7,65E-04	2,05E-04	1,72E-05	-5,70E-04
EP-freshwater	kg P-eq.	1,78E-01	1,54E-04	8,09E-06	0,00E+00	5,92E-03	1,02E-03	0,00E+00	0,00E+00	0,00E+00	7,80E-02	3,35E-05	1,69E-05	5,19E-06	4,64E-07	-3,50E-05
EP-marine	kg N-eq.	1,23E-01	1,79E-03	2,71E-04	0,00E+00	1,13E-01	1,26E-03	0,00E+00	0,00E+00	0,00E+00	1,26E-01	3,28E-05	2,62E-04	8,48E-05	3,30E-05	-1,91E-04
EP-terrestrial	mol N-eq.	1,66E+00	1,88E-02	1,30E-03	0,00E+00	4,62E-01	1,22E-02	0,00E+00	0,00E+00	0,00E+00	1,21E+00	2,97E-04	2,76E-03	8,40E-04	6,63E-05	-1,90E-03
POCP	kg NMVOC-eq.	4,69E-01	8,02E-03	5,29E-04	0,00E+00	9,33E-02	3,61E-03	0,00E+00	0,00E+00	0,00E+00	4,41E-01	9,54E-05	1,15E-03	2,76E-04	2,71E-05	-7,78E-04
ADPE	kg Sb-eq.	3,09E-02	7,91E-06	2,88E-07	0,00E+00	1,76E-04	1,71E-04	0,00E+00	0,00E+00	0,00E+00	6,19E-04	4,29E-07	7,83E-07	1,40E-07	4,50E-09	-6,17E-07
ADPF	MJ	4,77E+02	2,55E+01	1,02E+00	0,00E+00	2,69E+02	8,02E+00	0,00E+00	0,00E+00	0,00E+00	2,11E+03	8,05E-01	3,45E+00	5,49E-01	5,12E-02	-3,48E+00
WDP	m ³	3,06E+01	1,05E-01	9,42E-03	0,00E+00	6,47E+01	5,39E-01	0,00E+00	0,00E+00	0,00E+00	1,62E+04	9,07E-03	1,31E-02	9,91E-03	2,16E-03	-1,70E-02
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 7: Additional environmental impact indicators - Group 1: 132M-16.

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	5,51E-06	1,06E-07	6,71E-09	0,00E+00	2,02E-06	1,10E-07	0,00E+00	0,00E+00	0,00E+00	6,68E-06	7,44E-10	1,68E-08	3,51E-09	3,51E-10	-7,51E-09
IRP	kBq U235 eq	2,28E+01	5,08E-02	2,56E-03	0,00E+00	1,26E+00	2,67E-02	0,00E+00	0,00E+00	0,00E+00	4,47E+01	2,27E-02	5,58E-03	1,40E-03	6,69E-05	-1,98E-02
ETP-fw	CTUe	3,26E+03	1,35E+01	1,03E+00	0,00E+00	5,34E+02	1,87E+01	0,00E+00	0,00E+00	0,00E+00	5,40E+02	1,35E-01	1,75E+00	5,34E-01	6,52E-02	-6,09E-01
HTP-c	CTUh	3,66E-07	9,28E-10	5,42E-11	0,00E+00	2,96E-08	2,05E-09	0,00E+00	0,00E+00	0,00E+00	5,20E-07	1,66E-11	1,03E-10	3,99E-11	1,84E-12	-8,20E-11
HTP-nc	CTUh	3,00E-05	1,78E-08	1,27E-09	0,00E+00	6,85E-07	1,67E-07	0,00E+00	0,00E+00	0,00E+00	6,80E-06	6,63E-10	2,29E-09	8,55E-10	4,25E-11	-1,31E-09
SQP	Dimensionless	7,71E+02	1,06E+01	4,92E-01	0,00E+00	8,50E+02	4,62E+00	0,00E+00	0,00E+00	0,00E+00	4,61E+02	1,57E-01	1,77E+00	3,95E-01	1,08E-01	-6,36E-01
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 experience with the indicator. 2 This impact category deals mainly with the eventual impact of low-dose ionizing radiation on the 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 8: Parameters describing resource use - Group 1: 132M-16.

RESOURCE USE PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2,16E+02	5,54E-01	-1,09E+01	0,00E+00	4,59E+02	6,78E-01	0,00E+00	0,00E+00	0,00E+00	3,12E+02	1,80E-01	6,03E-02	1,72E-02	8,67E-04	-1,68E-01
PERM	MJ	2,02E-01	0,00E+00	1,09E+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	2,16E+02	5,54E-01	2,68E-02	0,00E+00	4,59E+02	6,78E-01	0,00E+00	0,00E+00	0,00E+00	3,12E+02	1,80E-01	6,03E-02	1,72E-02	8,67E-04	-1,68E-01
PENRE	MJ	5,03E+02	2,71E+01	5,95E-01	0,00E+00	3,04E+02	8,61E+00	0,00E+00	0,00E+00	0,00E+00	2,23E+03	8,44E-01	3,67E+00	5,85E-01	5,44E-02	-3,78E+00
PENRM	MJ	5,42E+00	0,00E+00	4,86E-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	5,08E+02	2,71E+01	1,08E+00	0,00E+00	3,04E+02	8,61E+00	0,00E+00	0,00E+00	0,00E+00	2,23E+03	8,44E-01	3,67E+00	5,85E-01	5,44E-02	-3,78E+00
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 ³	3,15E+01	1,05E-01	9,41E-03	0,00E+00	6,27E+01	5,29E-01	0,00E+00	0,00E+00	0,00E+00	1,54E+04	5,81E-06	1,37E-06	3,47E-07	1,61E-08	-5,06E-06

Table 9: End-of-life (waste categories and output flows) - Group 1: 132M-16.

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1,65E-02	1,62E-04	6,26E-06	0,00E+00	1,15E-03	1,01E-04	0,00E+00	0,00E+00	0,00E+00	6,14E-03	1,41E-06	2,20E-05	2,99E-06	2,68E-07	-1,49E-05
NHWD	kg	1,35E+01	8,12E-01	1,19E-01	0,00E+00	3,64E+00	1,51E-01	0,00E+00	0,00E+00	0,00E+00	2,45E+01	3,24E-03	1,42E-01	3,17E-02	2,51E-01	-4,32E-02
RWD	kg	1,06E-03	1,25E-05	6,40E-07	0,00E+00	3,15E-04	6,86E-06	0,00E+00	0,00E+00	0,00E+00	1,15E-02	5,81E-06	1,37E-06	3,47E-07	1,61E-08	-5,06E-06
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	2,99E+00	0,00E+00	5,15E-01	0,00E+00	0,00E+00	1,77E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,43E+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	1,06E-01	0,00E+00	0,00E+00	1,44E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,42E-01	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,01E+00	0,00E+00	0,00E+00	1,38E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,36E+00	0,00E+00

Table 10: Biogenic carbon content - Group 1: 132M-16.

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	0,34
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

Group 2 : Natural brass is represented by: 131-19

Table 11: Environmental impact indicators - Group 2: 131-19

ENVIRONMENTAL IMPACTS PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO ₂ -eq.	3,78E+01	1,36E+00	4,04E-01	0,00E+00	8,93E+00	6,12E-01	0,00E+00	0,00E+00	0,00E+00	1,20E+02	3,67E-02	2,39E-01	1,91E-01	1,91E-02	-2,46E-01
GWP-fossil	kg CO ₂ -eq.	3,77E+01	1,36E+00	9,20E-02	0,00E+00	1,59E+01	5,84E-01	0,00E+00	0,00E+00	0,00E+00	1,18E+02	3,54E-02	2,39E-01	1,86E-01	7,48E-03	-2,34E-01
GWP-biogenic	kg CO ₂ -eq.	-2,37E-01	0,00E+00	3,00E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,47E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-9,33E-04
GWP-luluc	kg CO ₂ -eq.	8,61E-02	7,98E-04	3,49E-05	0,00E+00	1,11E+01	4,71E-04	0,00E+00	0,00E+00	0,00E+00	2,05E-01	8,83E-05	1,09E-04	2,66E-05	1,66E-06	-1,12E-04
ODP	kg CFC 11 -eq.	5,72E-07	2,96E-08	1,54E-09	0,00E+00	1,03E-06	4,25E-09	0,00E+00	0,00E+00	0,00E+00	3,33E-06	6,75E-10	5,20E-09	8,29E-10	5,53E-11	-7,88E-09
AP	mol H ⁺ -eq.	2,22E+00	4,17E-03	3,41E-04	0,00E+00	1,42E-01	1,39E-02	0,00E+00	0,00E+00	0,00E+00	6,44E-01	2,03E-04	7,44E-04	2,00E-04	1,68E-05	-5,65E-04
EP-freshwater	kg P-eq.	1,76E-01	1,15E-04	8,08E-06	0,00E+00	5,92E-03	1,01E-03	0,00E+00	0,00E+00	0,00E+00	7,80E-02	3,35E-05	1,65E-05	5,11E-06	4,59E-07	-3,49E-05
EP-marine	kg N-eq.	1,22E-01	1,34E-03	2,71E-04	0,00E+00	1,13E-01	1,25E-03	0,00E+00	0,00E+00	0,00E+00	1,26E-01	3,28E-05	2,55E-04	8,30E-05	3,28E-05	-1,89E-04
EP-terrestrial	mol N-eq.	1,64E+00	1,42E-02	1,30E-03	0,00E+00	4,62E-01	1,21E-02	0,00E+00	0,00E+00	0,00E+00	1,21E+00	2,97E-04	2,69E-03	8,20E-04	6,45E-05	-1,87E-03
POCP	kg NMVOC-eq.	4,65E-01	6,03E-03	5,29E-04	0,00E+00	9,33E-02	3,57E-03	0,00E+00	0,00E+00	0,00E+00	4,41E-01	9,54E-05	1,12E-03	2,69E-04	2,65E-05	-7,71E-04
ADPE	kg Sb-eq.	3,04E-02	5,94E-06	2,88E-07	0,00E+00	1,76E-04	1,71E-04	0,00E+00	0,00E+00	0,00E+00	6,19E-04	4,29E-07	7,62E-07	1,37E-07	4,42E-09	-6,13E-07
ADPF	MJ	4,86E+02	1,91E+01	1,02E+00	0,00E+00	2,69E+02	7,87E+00	0,00E+00	0,00E+00	0,00E+00	2,11E+03	8,05E-01	3,36E+00	5,36E-01	4,97E-02	-3,46E+00
WDP	m ³	3,04E+01	7,93E-02	9,39E-03	0,00E+00	6,47E+01	5,39E-01	0,00E+00	0,00E+00	0,00E+00	1,62E+04	9,07E-03	1,27E-02	9,84E-03	2,10E-03	-1,69E-02
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 12: Additional environmental impact indicators - Group 2: 131-19.

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	5,46E-06	7,94E-08	6,71E-09	0,00E+00	2,02E-06	1,09E-07	0,00E+00	0,00E+00	0,00E+00	6,68E-06	7,44E-10	1,63E-08	3,42E-09	3,41E-10	-7,42E-09
IRP	kBq U235 eq	2,28E+01	3,82E-02	2,56E-03	0,00E+00	1,26E+00	2,64E-02	0,00E+00	0,00E+00	0,00E+00	4,47E+01	2,27E-02	5,43E-03	1,37E-03	6,60E-05	-1,98E-02
ETP-fw	CTUe	3,21E+03	1,01E+01	1,03E+00	0,00E+00	5,34E+02	1,87E+01	0,00E+00	0,00E+00	0,00E+00	5,40E+02	1,35E-01	1,70E+00	5,27E-01	6,45E-02	-6,03E-01
HTP-c	CTUh	3,58E-07	6,98E-10	5,42E-11	0,00E+00	2,96E-08	2,04E-09	0,00E+00	0,00E+00	0,00E+00	5,20E-07	1,66E-11	1,00E-10	3,94E-11	1,82E-12	-8,14E-11
HTP-nc	CTUh	2,95E-05	1,34E-08	1,27E-09	0,00E+00	6,85E-07	1,66E-07	0,00E+00	0,00E+00	0,00E+00	6,80E-06	6,63E-10	2,23E-09	8,45E-10	4,22E-11	-1,30E-09
SQP	Dimensionless	7,62E+02	7,97E+00	4,91E-01	0,00E+00	8,50E+02	4,55E+00	0,00E+00	0,00E+00	0,00E+00	4,61E+02	1,57E-01	1,72E+00	3,85E-01	1,05E-01	-6,26E-01

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 experience with the indicator.
	2 This impact category deals mainly with the eventual impact of low-dose ionizing radiation on the 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 13: Parameters describing resource use - Group 2: 131-19.

RESOURCE USE PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2,74E+02	4,17E-01	-1,09E+01	0,00E+00	4,59E+02	6,75E-01	0,00E+00	0,00E+00	0,00E+00	3,12E+02	1,80E-01	5,86E-02	1,70E-02	8,55E-04	-1,67E-01
PERM	MJ	2,02E-01	0,00E+00	1,09E+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	2,74E+02	4,17E-01	2,67E-02	0,00E+00	4,59E+02	6,75E-01	0,00E+00	0,00E+00	0,00E+00	3,12E+02	1,80E-01	5,86E-02	1,70E-02	8,55E-04	-1,67E-01
PENRE	MJ	5,14E+02	2,03E+01	6,19E-01	0,00E+00	3,04E+02	8,45E+00	0,00E+00	0,00E+00	0,00E+00	2,23E+03	8,44E-01	3,57E+00	5,70E-01	5,29E-02	-3,76E+00
PENRM	MJ	5,42E+00	0,00E+00	4,61E-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	5,19E+02	2,03E+01	1,08E+00	0,00E+00	3,04E+02	8,45E+00	0,00E+00	0,00E+00	0,00E+00	2,23E+03	8,44E-01	3,57E+00	5,70E-01	5,29E-02	-3,76E+00
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	m³	3,13E+01	7,87E-02	9,38E-03	0,00E+00	6,27E+01	5,29E-01	0,00E+00	0,00E+00	0,00E+00	1,54E+04	5,81E-06	1,33E-06	3,41E-07	1,59E-08	-5,04E-06

Table 14: End-of-life (waste categories and output flows) - Group 2: 131-19

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1,63E-02	1,22E-04	6,26E-06	0,00E+00	1,15E-03	1,00E-04	0,00E+00	0,00E+00	0,00E+00	6,14E-03	1,41E-06	2,14E-05	2,90E-06	2,60E-07	-1,48E-05
NHWD	kg	1,34E+01	6,11E-01	1,19E-01	0,00E+00	3,64E+00	1,46E-01	0,00E+00	0,00E+00	0,00E+00	2,45E+01	3,24E-03	1,39E-01	3,09E-02	2,41E-01	-4,24E-02
RWD	kg	1,05E-03	9,43E-06	6,39E-07	0,00E+00	3,15E-04	6,79E-06	0,00E+00	0,00E+00	0,00E+00	1,15E-02	5,81E-06	1,33E-06	3,41E-07	1,59E-08	-5,04E-06
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	3,01E+00	0,00E+00	5,15E-01	0,00E+00	0,00E+00	1,77E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,33E+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	1,05E-01	0,00E+00	0,00E+00	1,44E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,42E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,01E+00	0,00E+00	0,00E+00	1,38E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,36E+00	0,00E+00	0,00E+00

Table 15: Biogenic carbon content - Group 2.

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	0,34
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

Group 3 : Stainless steel is represented by 132L-40

Table 16: Environmental impact indicators - Group 3: 132L-40.

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 ₂ -eq.	3,40E+01	2,48E+00	4,05E-01	0,00E+00	8,93E+00	6,39E-01	0,00E+00	0,00E+00	0,00E+00	1,20E+02	3,67E-02	2,49E-01	1,92E-01	1,91E-02	-2,48E-01
GWP-fossil	kg CO ₂ -eq.	3,39E+01	2,47E+00	9,28E-02	0,00E+00	1,59E+01	6,11E-01	0,00E+00	0,00E+00	0,00E+00	1,18E+02	3,54E-02	2,49E-01	1,87E-01	7,49E-03	-2,36E-01
GWP-biogenic	kg CO ₂ -eq.	-2,37E-01	0,00E+00	2,99E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,47E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-9,36E-04
GWP- luluc	kg CO ₂ -eq.	6,60E-02	1,45E-03	3,49E-05	0,00E+00	1,11E+01	4,86E-04	0,00E+00	0,00E+00	0,00E+00	2,05E-01	8,83E-05	1,14E-04	2,74E-05	1,68E-06	-1,13E-04
ODP	kg CFC 11 -eq.	4,60E-07	5,38E-08	1,54E-09	0,00E+00	1,03E-06	4,83E-09	0,00E+00	0,00E+00	0,00E+00	3,33E-06	6,75E-10	5,42E-09	8,61E-10	5,63E-11	-7,93E-09
AP	mol H ⁺ -eq.	1,31E+00	7,57E-03	3,42E-04	0,00E+00	1,42E-01	1,40E-02	0,00E+00	0,00E+00	0,00E+00	6,44E-01	2,03E-04	7,75E-04	2,07E-04	1,70E-05	-5,72E-04
EP-freshwater	kg P-eq.	1,02E-01	2,10E-04	8,09E-06	0,00E+00	5,92E-03	1,02E-03	0,00E+00	0,00E+00	0,00E+00	7,80E-02	3,35E-05	1,72E-05	5,23E-06	4,62E-07	-3,51E-05
EP- marine	kg N-eq.	8,09E-02	2,44E-03	2,71E-04	0,00E+00	1,13E-01	1,28E-03	0,00E+00	0,00E+00	0,00E+00	1,26E-01	3,28E-05	2,66E-04	8,58E-05	3,29E-05	-1,92E-04
EP-terrestrial	mol N-eq.	1,05E+00	2,57E-02	1,30E-03	0,00E+00	4,62E-01	1,24E-02	0,00E+00	0,00E+00	0,00E+00	1,21E+00	2,97E-04	2,80E-03	8,51E-04	6,56E-05	-1,91E-03
POCP	kg NMVOC-eq.	3,04E-01	1,10E-02	5,29E-04	0,00E+00	9,33E-02	3,69E-03	0,00E+00	0,00E+00	0,00E+00	4,41E-01	9,54E-05	1,16E-03	2,80E-04	2,69E-05	-7,82E-04
ADPE	kg Sb-eq.	1,72E-02	1,08E-05	2,88E-07	0,00E+00	1,76E-04	1,71E-04	0,00E+00	0,00E+00	0,00E+00	6,19E-04	4,29E-07	7,94E-07	1,41E-07	4,47E-09	-6,18E-07
ADPF	MJ	4,23E+02	3,48E+01	1,02E+00	0,00E+00	2,69E+02	8,24E+00	0,00E+00	0,00E+00	0,00E+00	2,11E+03	8,05E-01	3,50E+00	5,57E-01	5,06E-02	-3,49E+00
WDP	m ³	1,72E+01	1,44E-01	9,44E-03	0,00E+00	6,47E+01	5,40E-01	0,00E+00	0,00E+00	0,00E+00	1,62E+04	9,07E-03	1,33E-02	9,94E-03	2,14E-03	-1,70E-02
Caption	GWP-total = Global 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 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ 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 17: Additional environmental impacts - Group 3: 132L-40.

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	4,04E-06	1,44E-07	6,71E-09	0,00E+00	2,02E-06	1,11E-07	0,00E+00	0,00E+00	0,00E+00	6,68E-06	7,44E-10	1,70E-08	3,56E-09	3,47E-10	-7,55E-09
IRP	kBq U235 eq	2,20E+01	6,94E-02	2,56E-03	0,00E+00	1,26E+00	2,71E-02	0,00E+00	0,00E+00	0,00E+00	4,47E+01	2,27E-02	5,66E-03	1,41E-03	6,66E-05	-1,98E-02
ETP-fw	CTUe	1,83E+03	1,84E+01	1,03E+00	0,00E+00	5,34E+02	1,89E+01	0,00E+00	0,00E+00	0,00E+00	5,40E+02	1,35E-01	1,77E+00	5,37E-01	6,49E-02	-6,13E-01
HTP-c	CTUh	2,78E-07	1,27E-09	5,43E-11	0,00E+00	2,96E-08	2,06E-09	0,00E+00	0,00E+00	0,00E+00	5,20E-07	1,66E-11	1,04E-10	4,02E-11	1,83E-12	-8,23E-11
HTP-nc	CTUh	1,67E-05	2,43E-08	1,27E-09	0,00E+00	6,85E-07	1,67E-07	0,00E+00	0,00E+00	0,00E+00	6,80E-06	6,63E-10	2,33E-09	8,61E-10	4,24E-11	-1,31E-09
SQP	-	5,02E+02	1,45E+01	4,92E-01	0,00E+00	8,50E+02	4,71E+00	0,00E+00	0,00E+00	0,00E+00	4,61E+02	1,57E-01	1,80E+00	4,01E-01	1,07E-01	-6,42E-01
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*102 or 195, while 1,12E-11 is the same as 1,12*10-11 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 18: Parameters describing resource use - Group 3: 132L-40.

RESOURCE USE PER FIXTURE																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2,24E+02	7,57E-01	-1,09E+01	0,00E+00	4,59E+02	6,83E-01	0,00E+00	0,00E+00	0,00E+00	3,12E+02	1,80E-01	6,11E-02	1,74E-02	8,62E-04	-1,68E-01
PERM	MJ	2,02E-01	0,00E+00	1,09E+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	2,24E+02	7,57E-01	2,68E-02	0,00E+00	4,59E+02	6,83E-01	0,00E+00	0,00E+00	0,00E+00	3,12E+02	1,80E-01	6,11E-02	1,74E-02	8,62E-04	-1,68E-01
PENRE	MJ	4,46E+02	3,69E+01	5,87E-01	0,00E+00	3,04E+02	8,85E+00	0,00E+00	0,00E+00	0,00E+00	2,23E+03	8,44E-01	3,72E+00	5,93E-01	5,38E-02	-3,79E+00
PENRM	MJ	5,42E+00	0,00E+00	4,94E-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	4,51E+02	3,69E+01	1,08E+00	0,00E+00	3,04E+02	8,85E+00	0,00E+00	0,00E+00	0,00E+00	2,23E+03	8,44E-01	3,72E+00	5,93E-01	5,38E-02	-3,79E+00
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	m³	1,87E+01	1,43E-01	9,42E-03	0,00E+00	6,27E+01	5,30E-01	0,00E+00	0,00E+00	0,00E+00	1,54E+04	5,81E-06	1,39E-06	3,50E-07	1,60E-08	-5,06E-06
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*102 or 195, while 1,12E-11 is the same as 1,12*10-11 or 0,0000000000112.															

Table 19: End-of-life (waste categories and output flows) - Group 3: 132L-40.

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	9,39E-03	2,21E-04	6,26E-06	0,00E+00	1,15E-03	1,03E-04	0,00E+00	0,00E+00	0,00E+00	6,14E-03	1,41E-06	2,23E-05	3,04E-06	2,65E-07	-1,50E-05
NHWD	kg	2,01E+01	1,11E+00	1,19E-01	0,00E+00	3,64E+00	1,58E-01	0,00E+00	0,00E+00	0,00E+00	2,45E+01	3,24E-03	1,44E-01	3,21E-02	2,47E-01	-4,36E-02
RWD	kg	8,54E-04	1,71E-05	6,40E-07	0,00E+00	3,15E-04	6,98E-06	0,00E+00	0,00E+00	0,00E+00	1,15E-02	5,81E-06	1,39E-06	3,50E-07	1,60E-08	-5,06E-06
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	2,86E+00	0,00E+00	5,15E-01	0,00E+00	0,00E+00	1,77E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,48E+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	1,06E-01	0,00E+00	0,00E+00	1,44E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,42E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,02E+00	0,00E+00	0,00E+00	1,38E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,36E+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 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,00000000000112.															

Table 20: Biogenic carbon content - Group 3: 132L-40.

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	0,34
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

Group 4 : Colors is represented by: 132M-27

Table 21: Environmental impact indicators - Group 4 : 132M-27.

ENVIRONMENTAL IMPACTS PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO ₂ -eq.	4,86E+01	2,15E+00	4,32E-01	0,00E+00	8,93E+00	6,23E-01	0,00E+00	0,00E+00	0,00E+00	1,20E+02	3,67E-02	2,90E-01	2,68E-01	1,99E-02	-2,99E-01
GWP-fossil	kg CO ₂ -eq.	4,85E+01	2,14E+00	9,95E-02	0,00E+00	1,59E+01	5,95E-01	0,00E+00	0,00E+00	0,00E+00	1,18E+02	3,54E-02	2,90E-01	2,63E-01	8,32E-03	-2,86E-01
GWP-biogenic	kg CO ₂ -eq.	-2,69E-01	0,00E+00	3,19E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,47E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-1,18E-03
GWP-luluc	kg CO ₂ -eq.	1,09E-01	1,26E-03	3,73E-05	0,00E+00	1,11E+01	4,77E-04	0,00E+00	0,00E+00	0,00E+00	2,05E-01	8,83E-05	1,33E-04	3,08E-05	1,97E-06	-1,36E-04
ODP	kg CFC 11 -eq.	7,31E-07	4,66E-08	1,64E-09	0,00E+00	1,03E-06	4,48E-09	0,00E+00	0,00E+00	0,00E+00	3,33E-06	6,75E-10	6,31E-09	1,05E-09	6,74E-11	-9,83E-09
AP	mol H ⁺ -eq.	2,91E+00	6,56E-03	3,65E-04	0,00E+00	1,42E-01	1,39E-02	0,00E+00	0,00E+00	0,00E+00	6,44E-01	2,03E-04	9,02E-04	2,43E-04	2,02E-05	-6,73E-04
EP-freshwater	kg P-eq.	2,30E-01	1,82E-04	8,64E-06	0,00E+00	5,92E-03	1,02E-03	0,00E+00	0,00E+00	0,00E+00	7,80E-02	3,35E-05	2,00E-05	5,89E-06	5,09E-07	-4,28E-05
EP-marine	kg N-eq.	1,59E-01	2,11E-03	2,89E-04	0,00E+00	1,13E-01	1,26E-03	0,00E+00	0,00E+00	0,00E+00	1,26E-01	3,28E-05	3,09E-04	1,00E-04	3,41E-05	-2,23E-04
EP-terrestrial	mol N-eq.	2,14E+00	2,23E-02	1,39E-03	0,00E+00	4,62E-01	1,22E-02	0,00E+00	0,00E+00	0,00E+00	1,21E+00	2,97E-04	3,26E-03	1,00E-03	7,84E-05	-2,22E-03
POCP	kg NMVOC-eq.	6,08E-01	9,49E-03	5,64E-04	0,00E+00	9,33E-02	3,61E-03	0,00E+00	0,00E+00	0,00E+00	4,41E-01	9,54E-05	1,35E-03	3,28E-04	3,14E-05	-9,18E-04
ADPE	kg Sb-eq.	3,98E-02	9,35E-06	3,07E-07	0,00E+00	1,76E-04	1,71E-04	0,00E+00	0,00E+00	0,00E+00	6,19E-04	4,29E-07	9,24E-07	1,60E-07	5,24E-09	-7,36E-07
ADPF	MJ	6,26E+02	3,01E+01	1,09E+00	0,00E+00	2,69E+02	8,02E+00	0,00E+00	0,00E+00	0,00E+00	2,11E+03	8,05E-01	4,08E+00	6,42E-01	6,05E-02	-4,26E+00
WDP	m ³	4,21E+01	1,25E-01	1,01E-02	0,00E+00	6,47E+01	5,39E-01	0,00E+00	0,00E+00	0,00E+00	1,62E+04	9,07E-03	1,55E-02	1,12E-02	2,57E-03	-2,05E-02
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 22: Additional environmental impact indicators - Group 4 : 132M-27.

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	7,13E-06	1,25E-07	7,16E-09	0,00E+00	2,02E-06	1,10E-07	0,00E+00	0,00E+00	0,00E+00	6,68E-06	7,44E-10	1,98E-08	4,11E-09	4,16E-10	-8,54E-09
IRP	kBq U235 eq	2,41E+01	6,01E-02	2,73E-03	0,00E+00	1,26E+00	2,67E-02	0,00E+00	0,00E+00	0,00E+00	4,47E+01	2,27E-02	6,59E-03	1,59E-03	7,67E-05	-2,45E-02
ETP-fw	CTUe	4,21E+03	1,59E+01	1,10E+00	0,00E+00	5,34E+02	1,87E+01	0,00E+00	0,00E+00	0,00E+00	5,40E+02	1,35E-01	2,06E+00	6,83E-01	7,10E-02	-7,10E-01
HTP-c	CTUh	4,70E-07	1,10E-09	5,80E-11	0,00E+00	2,96E-08	2,05E-09	0,00E+00	0,00E+00	0,00E+00	5,20E-07	1,66E-11	1,21E-10	4,42E-11	2,08E-12	-9,50E-11
HTP-nc	CTUh	3,86E-05	2,10E-08	1,36E-09	0,00E+00	6,85E-07	1,67E-07	0,00E+00	0,00E+00	0,00E+00	6,80E-06	6,63E-10	2,71E-09	9,58E-10	4,57E-11	-1,56E-09
SQP	Dimension less	9,95E+02	1,25E+01	5,25E-01	0,00E+00	8,50E+02	4,62E+00	0,00E+00	0,00E+00	0,00E+00	4,61E+02	1,57E-01	2,09E+00	4,60E-01	1,28E-01	-7,41E-01
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 experience with the indicator. 2 This impact category deals mainly with the eventual impact of low-dose ionizing radiation on the 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 23: Parameters describing resource use- Group 4: 132M-27.

RESOURCE USE PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2,85E+02	6,56E-01	-1,16E+01	0,00E+00	4,59E+02	6,78E-01	0,00E+00	0,00E+00	0,00E+00	3,12E+02	1,80E-01	7,11E-02	1,95E-02	9,96E-04	-2,06E-01
PERM	MJ	2,02E-01	0,00E+00	1,16E+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	2,85E+02	6,56E-01	2,86E-02	0,00E+00	4,59E+02	6,78E-01	0,00E+00	0,00E+00	0,00E+00	3,12E+02	1,80E-01	7,11E-02	1,95E-02	9,96E-04	-2,06E-01
PENRE	MJ	6,61E+01	3,20E+01	6,03E-01	0,00E+00	3,04E+02	8,61E+00	0,00E+00	0,00E+00	0,00E+00	2,23E+03	8,44E-01	4,33E+00	6,83E-01	6,44E-02	-4,64E+00
PENRM	MJ	6,99E+00	0,00E+00	5,51E-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	6,68E+02	3,20E+01	1,15E+00	0,00E+00	3,04E+02	8,61E+00	0,00E+00	0,00E+00	0,00E+00	2,23E+03	8,44E-01	4,33E+00	6,83E-01	6,44E-02	-4,64E+00
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	m³	4,33E+01	1,24E-01	1,01E-02	0,00E+00	6,27E+01	5,29E-01	0,00E+00	0,00E+00	0,00E+00	1,54E+04	5,81E-06	1,62E-06	3,95E-07	1,84E-08	-6,26E-06

Table 24: End-of-life (waste categories and output flows) - Group 4 : 132M-27.

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	2,13E-02	1,91E-04	6,68E-06	0,00E+00	1,15E-03	1,01E-04	0,00E+00	0,00E+00	0,00E+00	6,14E-03	1,41E-06	2,59E-05	3,58E-06	3,15E-07	-1,82E-05
NHWD	kg	1,81E+01	9,61E-01	1,27E-01	0,00E+00	3,64E+00	1,51E-01	0,00E+00	0,00E+00	0,00E+00	2,45E+01	3,24E-03	1,68E-01	3,82E-02	2,98E-01	4,99E-02
RWD	kg	1,41E-03	1,48E-05	6,83E-07	0,00E+00	3,15E-04	6,86E-06	0,00E+00	0,00E+00	0,00E+00	1,15E-02	5,81E-06	1,62E-06	3,95E-07	1,84E-08	-6,26E-06
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	4,12E+00	0,00E+00	5,49E-01	0,00E+00	0,00E+00	1,77E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,04E+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	1,13E-01	0,00E+00	0,00E+00	1,44E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,02E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,09E+00	0,00E+00	0,00E+00	1,38E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,94E+00	0,00E+00	0,00E+00

Table 25: Biogenic carbon content – Group 4: 132M-27.

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	0,36
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

Group 5 : Exclusive colors (PVD on Brass) is represented by: 132L-60

Table 26: Environmental impact indicators - Group 5: 132L-60.

ENVIRONMENTAL IMPACTS PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO ₂ -eq.	3,81E+01	2,53E+00	4,03E-01	0,00E+00	8,93E+00	6,39E-01	0,00E+00	0,00E+00	0,00E+00	1,20E+02	3,67E-02	2,55E-01	1,92E-01	1,97E-02	- 2,48E-01
GWP-fossil	kg CO ₂ -eq.	3,80E+01	2,53E+00	9,24E-02	0,00E+00	1,59E+01	6,11E-01	0,00E+00	0,00E+00	0,00E+00	1,18E+02	3,54E-02	2,54E-01	1,87E-01	8,08E-03	- 2,36E-01
GWP-biogenic	kg CO ₂ -eq.	-2,36E-01	0,00E+00	2,98E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,47E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	- 9,34E-04
GWP-luluc	kg CO ₂ -eq.	8,76E-02	1,48E-03	3,48E-05	0,00E+00	1,11E+01	4,86E-04	0,00E+00	0,00E+00	0,00E+00	2,05E-01	8,83E-05	1,16E-04	2,76E-05	1,74E-06	- 1,13E-04
ODP	kg CFC 11 -eq.	5,56E-07	5,50E-08	1,53E-09	0,00E+00	1,03E-06	4,83E-09	0,00E+00	0,00E+00	0,00E+00	3,33E-06	6,75E-10	5,54E-09	8,58E-10	5,87E-11	- 7,91E-09
AP	mol H ⁺ -eq.	2,27E+00	7,75E-03	3,40E-04	0,00E+00	1,42E-01	1,40E-02	0,00E+00	0,00E+00	0,00E+00	6,44E-01	2,03E-04	7,92E-04	2,07E-04	1,77E-05	- 5,71E-04
EP-freshwater	kg P-eq.	1,79E-01	2,14E-04	8,06E-06	0,00E+00	5,92E-03	1,02E-03	0,00E+00	0,00E+00	0,00E+00	7,80E-02	3,35E-05	1,75E-05	5,29E-06	4,73E-07	- 3,51E-05
EP-marine	kg N-eq.	1,24E-01	2,50E-03	2,70E-04	0,00E+00	1,13E-01	1,28E-03	0,00E+00	0,00E+00	0,00E+00	1,26E-01	3,28E-05	2,71E-04	8,58E-05	3,32E-05	- 1,92E-04
EP-terrestrial	mol N-eq.	1,67E+00	2,63E-02	1,30E-03	0,00E+00	4,62E-01	1,24E-02	0,00E+00	0,00E+00	0,00E+00	1,21E+00	2,97E-04	2,86E-03	8,50E-04	6,84E-05	- 1,90E-03
POCP	kg NMVOC-eq.	4,73E-01	1,12E-02	5,27E-04	0,00E+00	9,33E-02	3,69E-03	0,00E+00	0,00E+00	0,00E+00	4,41E-01	9,54E-05	1,19E-03	2,79E-04	2,80E-05	- 7,80E-04
ADPE	kg Sb-eq.	3,10E-02	1,10E-05	2,86E-07	0,00E+00	1,76E-04	1,71E-04	0,00E+00	0,00E+00	0,00E+00	6,19E-04	4,29E-07	8,11E-07	1,41E-07	4,64E-09	- 6,17E-07
ADPF	MJ	4,90E+02	3,55E+01	1,01E+00	0,00E+00	2,69E+02	8,24E+00	0,00E+00	0,00E+00	0,00E+00	2,11E+03	8,05E-01	3,58E+00	5,56E-01	5,27E-02	- 3,48E+00
WDP	m ³	3,12E+01	1,47E-01	9,40E-03	0,00E+00	6,47E+01	5,40E-01	0,00E+00	0,00E+00	0,00E+00	1,62E+04	9,07E-03	1,36E-02	9,95E-03	2,23E-03	- 1,70E-02
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 27: Additional environmental impact indicators - Group 5: 132L-60.

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	5,57E-06	1,47E-07	6,68E-09	0,00E+00	2,02E-06	1,11E-07	0,00E+00	0,00E+00	0,00E+00	6,68E-06	7,44E-10	1,74E-08	3,56E-09	3,62E-10	-7,54E-09
IRP	kBq U235 eq	2,29E+01	7,10E-02	2,55E-03	0,00E+00	1,26E+00	2,71E-02	0,00E+00	0,00E+00	0,00E+00	4,47E+01	2,27E-02	5,78E-03	1,43E-03	6,90E-05	-1,98E-02
ETP-fw	CTUe	3,28E+03	1,88E+01	1,03E+00	0,00E+00	5,34E+02	1,89E+01	0,00E+00	0,00E+00	0,00E+00	5,40E+02	1,35E-01	1,81E+00	5,36E-01	6,60E-02	-6,11E-01
HTP-c	CTUh	3,68E-07	1,30E-09	5,40E-11	0,00E+00	2,96E-08	2,06E-09	0,00E+00	0,00E+00	0,00E+00	5,20E-07	1,66E-11	1,07E-10	4,02E-11	1,92E-12	-8,21E-11
HTP-nc	CTUh	3,01E-05	2,48E-08	1,26E-09	0,00E+00	6,85E-07	1,67E-07	0,00E+00	0,00E+00	0,00E+00	6,80E-06	6,63E-10	2,38E-09	8,60E-10	4,37E-11	-1,31E-09
SQP	Dimensionless	7,77E+02	1,48E+01	4,90E-01	0,00E+00	8,50E+02	4,71E+00	0,00E+00	0,00E+00	0,00E+00	4,61E+02	1,57E-01	1,84E+00	4,00E-01	1,11E-01	-6,40E-01
Disclaimers	<p>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.</p> <p>2 This impact category deals mainly with the eventual impact of low-dose ionizing radiation on the 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.</p>															

Table 28: Parameters describing resource use - Group 5: 132L-60.

RESOURCE USE PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2,17E+02	7,74E-01	-1,08E+01	0,00E+00	4,59E+02	6,83E-01	0,00E+00	0,00E+00	0,00E+00	3,12E+02	1,80E-01	6,24E-02	1,76E-02	8,93E-04	-1,68E-01
PERM	MJ	2,02E-01	0,00E+00	1,09E+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	2,17E+02	7,74E-01	2,67E-02	0,00E+00	4,59E+02	6,83E-01	0,00E+00	0,00E+00	0,00E+00	3,12E+02	1,80E-01	6,24E-02	1,76E-02	8,93E-04	-1,68E-01
PENRE	MJ	5,17E+02	3,78E+01	5,82E-01	0,00E+00	3,04E+02	8,85E+00	0,00E+00	0,00E+00	0,00E+00	2,23E+03	8,44E-01	3,80E+00	5,92E-01	5,61E-02	-3,78E+00
PENRM	MJ	5,42E+00	0,00E+00	4,94E-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	5,23E+02	3,78E+01	1,08E+00	0,00E+00	3,04E+02	8,85E+00	0,00E+00	0,00E+00	0,00E+00	2,23E+03	8,44E-01	3,80E+00	5,92E-01	5,61E-02	-3,78E+00
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	m³	3,22E+01	1,46E-01	9,38E-03	0,00E+00	6,27E+01	5,30E-01	0,00E+00	0,00E+00	0,00E+00	1,54E+04	5,81E-06	1,42E-06	3,54E-07	1,66E-08	-5,06E-06

Table 29: End-of-life (waste categories and output flows) - Group 5: 132L-60.

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1,66E-02	2,26E-04	6,23E-06	0,00E+00	1,15E-03	1,03E-04	0,00E+00	0,00E+00	0,00E+00	6,14E-03	1,41E-06	2,27E-05	3,02E-06	2,75E-07	-1,50E-05
NHWD	kg	1,38E+01	1,13E+00	1,19E-01	0,00E+00	3,64E+00	1,58E-01	0,00E+00	0,00E+00	0,00E+00	2,45E+01	3,24E-03	1,48E-01	3,19E-02	2,57E-01	-4,34E-02
RWD	kg	1,09E-03	1,75E-05	6,37E-07	0,00E+00	3,15E-04	6,98E-06	0,00E+00	0,00E+00	0,00E+00	1,15E-02	5,81E-06	1,42E-06	3,54E-07	1,66E-08	-5,06E-06
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	2,99E+00	0,00E+00	5,12E-01	0,00E+00	0,00E+00	1,77E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,55E+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	1,05E-01	0,00E+00	0,00E+00	1,44E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,42E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,01E+00	0,00E+00	0,00E+00	1,38E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,36E+00	0,00E+00	0,00E+00

Table 30: Biogenic carbon content - Group 5: 132L-60.

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	0,34
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

Group 6 : Exclusive colors (PVD on Stainless steel) is represented by: 132L-64

Table 31: Environmental impact indicators - Group 6 : 132L-64.

ENVIRONMENTAL IMPACTS PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO ₂ -eq.	3,47E+01	2,55E+00	4,05E-01	0,00E+00	8,93E+00	6,39E-01	0,00E+00	0,00E+00	0,00E+00	1,20E+02	3,67E-02	2,57E-01	1,93E-01	1,96E-02	-2,48E-01
GWP-fossil	kg CO ₂ -eq.	3,45E+01	2,55E+00	9,28E-02	0,00E+00	1,59E+01	6,11E-01	0,00E+00	0,00E+00	0,00E+00	1,18E+02	3,54E-02	2,56E-01	1,87E-01	8,02E-03	-2,36E-01
GWP-biogenic	kg CO ₂ -eq.	-2,37E-01	0,00E+00	2,99E-01	0,00E+00	5,25E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,47E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-9,36E-04
GWP-luluc	kg CO ₂ -eq.	6,66E-02	1,49E-03	3,49E-05	0,00E+00	1,11E+01	4,86E-04	0,00E+00	0,00E+00	0,00E+00	2,05E-01	8,83E-05	1,17E-04	2,77E-05	1,72E-06	-1,13E-04
ODP	kg CFC11-eq.	5,03E-07	5,53E-08	1,54E-09	0,00E+00	1,03E-06	4,83E-09	0,00E+00	0,00E+00	0,00E+00	3,33E-06	6,75E-10	5,58E-09	8,65E-10	5,78E-11	-7,93E-09
AP	mol H ⁺ -eq.	1,31E+00	7,79E-03	3,42E-04	0,00E+00	1,42E-01	1,40E-02	0,00E+00	0,00E+00	0,00E+00	6,44E-01	2,03E-04	7,98E-04	2,09E-04	1,75E-05	-5,74E-04
EP-freshwater	kg P-eq.	1,02E-01	2,16E-04	8,09E-06	0,00E+00	5,92E-03	1,02E-03	0,00E+00	0,00E+00	0,00E+00	7,80E-02	3,35E-05	1,77E-05	5,31E-06	4,70E-07	-3,52E-05
EP-marine	kg N-eq.	8,15E-02	2,51E-03	2,71E-04	0,00E+00	1,13E-01	1,28E-03	0,00E+00	0,00E+00	0,00E+00	1,26E-01	3,28E-05	2,73E-04	8,64E-05	3,31E-05	-1,93E-04
EP-terrestrial	mol N-eq.	1,05E+00	2,64E-02	1,30E-03	0,00E+00	4,62E-01	1,24E-02	0,00E+00	0,00E+00	0,00E+00	1,21E+00	2,97E-04	2,88E-03	8,57E-04	6,74E-05	-1,91E-03
POCP	kg NMVOC-eq.	3,07E-01	1,13E-02	5,29E-04	0,00E+00	9,33E-02	3,69E-03	0,00E+00	0,00E+00	0,00E+00	4,41E-01	9,54E-05	1,20E-03	2,81E-04	2,76E-05	-7,84E-04
ADPE	kg Sb-eq.	1,72E-02	1,11E-05	2,88E-07	0,00E+00	1,76E-04	1,71E-04	0,00E+00	0,00E+00	0,00E+00	6,19E-04	4,29E-07	8,17E-07	1,42E-07	4,60E-09	-6,19E-07
ADPF	MJ	4,34E+02	3,58E+01	1,02E+00	0,00E+00	2,69E+02	8,24E+00	0,00E+00	0,00E+00	0,00E+00	2,11E+03	8,05E-01	3,60E+00	5,60E-01	5,20E-02	-3,49E+00
WDP	m ³	1,77E+01	1,48E-01	9,44E-03	0,00E+00	6,47E+01	5,40E-01	0,00E+00	0,00E+00	0,00E+00	1,62E+04	9,07E-03	1,37E-02	9,97E-03	2,20E-03	-1,71E-02
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 32: Additional environmental impact indicators - Group 6 : 132L-64.

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease Incidence	4,08E-06	1,48E-07	6,71E-09	0,00E+00	2,02E-06	1,11E-07	0,00E+00	0,00E+00	0,00E+00	6,68E-06	7,44E-10	1,75E-08	3,59E-09	3,57E-10	-7,58E-09
IRP	kBq U235 eq	2,21E+01	7,14E-02	2,56E-03	0,00E+00	1,26E+00	2,71E-02	0,00E+00	0,00E+00	0,00E+00	4,47E+01	2,27E-02	5,83E-03	1,43E-03	6,84E-05	-1,99E-02
ETP-fw	CTUe	1,84E+03	1,89E+01	1,03E+00	0,00E+00	5,34E+02	1,89E+01	0,00E+00	0,00E+00	0,00E+00	5,40E+02	1,35E-01	1,82E+00	5,38E-01	6,56E-02	-6,14E-01
HTP-c	CTUh	2,78E-07	1,30E-09	5,43E-11	0,00E+00	2,96E-08	2,06E-09	0,00E+00	0,00E+00	0,00E+00	5,20E-07	1,66E-11	1,07E-10	4,03E-11	1,90E-12	-8,25E-11
HTP-nc	CTUh	1,67E-05	2,50E-08	1,27E-09	0,00E+00	6,85E-07	1,67E-07	0,00E+00	0,00E+00	0,00E+00	6,80E-06	6,63E-10	2,39E-09	8,63E-10	4,35E-11	-1,32E-09
SQP	Dimensionless	5,05E+02	1,49E+01	4,92E-01	0,00E+00	8,50E+02	4,71E+00	0,00E+00	0,00E+00	0,00E+00	4,61E+02	1,57E-01	1,85E+00	4,03E-01	1,10E-01	-6,44E-01
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 experience with the indicator. 2 This impact category deals mainly with the eventual impact of low-dose ionizing radiation on the 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 33: Parameters describing resource use - Group 6 : 132L-64.

RESOURCE USE PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2,25E+02	7,78E-01	-1,09E+01	0,00E+00	4,59E+02	6,83E-01	0,00E+00	0,00E+00	0,00E+00	3,12E+02	1,80E-01	6,29E-02	1,77E-02	8,86E-04	-1,68E-01
PERM	MJ	2,02E-01	0,00E+00	1,09E+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	7,78E-01	2,68E-02	0,00E+00	4,59E+02	6,83E-01	0,00E+00	0,00E+00	0,00E+00	3,12E+02	1,80E-01	6,29E-02	1,77E-02	8,86E-04	-1,68E-01
PENRE	MJ	4,58E+02	3,80E+01	5,87E-01	0,00E+00	3,04E+02	8,85E+00	0,00E+00	0,00E+00	0,00E+00	2,23E+03	8,44E-01	3,83E+00	5,97E-01	5,53E-02	-3,79E+00
PENRM	MJ	5,42E+00	0,00E+00	4,94E-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	4,63E+02	3,80E+01	1,08E+00	0,00E+00	3,04E+02	8,85E+00	0,00E+00	0,00E+00	0,00E+00	2,23E+03	8,44E-01	3,83E+00	5,97E-01	5,53E-02	-3,79E+00
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 ³	1,91E+01	1,47E-01	9,42E-03	0,00E+00	6,27E+01	5,30E-01	0,00E+00	0,00E+00	0,00E+00	1,54E+04	5,81E-06	1,43E-06	3,56E-07	1,65E-08	-5,07E-06

Table 34: End-of-life (waste categories and output flows) - Group 6 : 132L-64.

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	9,41E-03	2,27E-04	6,26E-06	0,00E+00	1,15E-03	1,03E-04	0,00E+00	0,00E+00	0,00E+00	6,14E-03	1,41E-06	2,29E-05	3,05E-06	2,71E-07	-1,50E-05
NHWD	kg	2,04E+01	1,14E+00	1,19E-01	0,00E+00	3,64E+00	1,58E-01	0,00E+00	0,00E+00	0,00E+00	2,45E+01	3,24E-03	1,49E-01	3,22E-02	2,53E-01	-4,37E-02
RWD	kg	8,78E-04	1,76E-05	6,40E-07	0,00E+00	3,15E-04	6,98E-06	0,00E+00	0,00E+00	0,00E+00	1,15E-02	5,81E-06	1,43E-06	3,56E-07	1,65E-08	-5,07E-06
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	2,86E+00	0,00E+00	5,15E-01	0,00E+00	0,00E+00	1,77E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,58E+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	1,06E-01	0,00E+00	0,00E+00	1,44E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,42E-01	0,00E+00
EET	MJ	2,87E-02	0,00E+00	1,02E+00	0,00E+00	0,00E+00	1,38E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,36E+00	0,00E+00

Table 35: Biogenic carbon content - Group 6 : 132L-64.

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	0,34
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

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 B7, Operational water use is associated with the highest environmental impact because the scenario is based on a Reference Service Life of 30 years, with an assumption of results of 208 m³ (spouts 010 and 020) water consumption for a default scenario of 1,9 l/min and 20 use cycles per day, or with an assumption of results of 383 m³ (spouts 030) water consumption for a default scenario of 3,5 l/min and 20 use cycles per day.

Technical information on scenarios

Table 36: Average transport to the building site (A4)

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Euro 5	-
Average transport distance	Group 1: 132M-16: 872 km Group 2: 131-19: 674 km Group 3: 132L - 40: 1.176 km Group 4: 132M - 27: 872 km Group 5: 132L - 60: 1.176 km Group 6: 132L - 64: 1.176 km	km
Capacity utilization (including empty runs)	85 % for trucks	%
Gross density of products transported	930 kg/m ³ (with lorry) 697 kg/m ³ (with flight) 442 kg/m ³ (with steel cage)	kg/m ³
Capacity utilization volume factor	1	-

Table 37: 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 www.VOLA.com Packaging materials are cardboard, paper, and LDPE.					kg	
Water use	Not relevant					m ³	
Other resource use	Not relevant					kg	
Energy type and consumption	Not relevant					kWh	
Waste materials	Materials	Group 1 132M-16	Group 2 131-19	Group 3 132L-40	Group 4 132M-27	Group 5 132L-60	kg
	LDPE	0,012	0,011	0,012	0,014	0,012	
	Cardboard	0,657	0,657	0,657	0,686	0,654	
	Paper	0,025	0,026	0,025	0,041	0,025	
	Wooden pallet	5,92E-05	5,78E-05	5,40E-05	6,89E-05	6,09E-05	
	SUMMARY	0,694	0,694	0,691	0,741	0,691	
	Materials	Group 6 132L-64					
	LDPE	0,012					
	Cardboard	0,657					
	Paper	0,025					
Wooden pallet	6,12E-05						
SUMMARY	0,694						
Output materials for recycling	Materials	Group 1 132M-16	Group 2 131-19	Group 3 132L-40	Group 4 132M-27	Group 5 132L-60	kg
	LDPE	0,004	0,003	0,004	0,004	0,004	
	Cardboard	0,490	0,490	0,492	0,514	0,514	
	Paper	0,019	0,019	0,019	0,031	0,031	
	SUMMARY	0,515	0,515	0,515	0,549	0,549	
	Materials	Group 6 132L-64					
	LDPE	0,004					
	Cardboard	0,492					
	Paper	0,019					
	SUMMARY	0,515					
Output materials for incineration	Materials	Group 1 132M-16	Group 2 131-19	Group 3 132L-40	Group 4 132M-27	Group 5 132L-60	kg
	LDPE	0,005	0,005	0,005	0,005	0,005	
	Cardboard	0,090	0,090	0,090	0,094	0,094	
	Paper	0,003	0,003	0,003	0,005	0,006	
	Wooden pallet	0,000	0,000	0,000	0,000	0,000	
	SUMMARY	1	1	1	1	1	
	SUMMARY	0,098	0,098	0,098	0,105	0,105	

	Materials	Group 6 132L-64					
	LDPE	0,004					
	Cardboard	0,090					
	Paper	0,004					
	Wooden pallet	0,000					
	SUMMARY	1					
		0,098					
Output materials for landfill	Materials	Group 1 132M-16	Group 2 131-19	Group 3 132L-40	Group 4 132M-27	Group 5 132L-60	kg
	LDPE	0,004	0,004	0,004	0,004	0,004	
	Cardboard	0,074	0,074	0,074	0,074	0,077	
	Paper	0,003	0,003	0,003	0,003	0,005	
	SUMMARY	0,080	0,081	0,080	0,080	0,081	
	Materials	Group 6 132L-64					
	LDPE	0,004					
	Cardboard	0,074					
	Paper	0,003					
	SUMMARY	0,081					
Direct emissions to air, soil, or water		0					kg

Table 38: 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 39: Use (B1-B7)

Scenario information	Value	Unit
B1 – Use		
	Series 100 is a build in single-lever mixer for control of both the water temperature and the water flow. The technical operating scenario is available in the “Consumption data” (B6-B7).	
B2 - Maintenance		
Maintenance process	Maintenance instructions are included with the VOLA product and can also be downloaded on www.vola.com	-
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).						kg/RSL
	Soap (7,8 kg/RSL) Water (816 l/RSL) Acetic acid (3,6 l/RSL)						
Waste materials resulting from the maintenance (specify which)	0						kg
Net freshwater consumption during maintenance	0,816						m ³
Energy input during maintenance	0						kWh
B3 – Repair							
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 conducted and the product and 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 (specify which)	Materials	Group 1 132M-16	Group 2 131-19	Group 3 132L-40	Group 4 132M-27	Group 5 132L-60	kg/RSL
	Hoses (Steel)	0,000	0,000	0,000	0,000	0,000	
	Cartridges (Ceramic, Brass, Plastic)	0,0461	0,0461	0,0461	0,0461	0,0461	
	Pilator (Plastic)	0,0016	0,0015	0,0015	0,0016	0,0015	
	SUMMARY	0,0477	0,0476	0,0476	0,0477	0,0476	
	Materials	Group 6 132L-64					
	Hoses (Steel)	0,000					
	Cartridges (Ceramic, Brass, Plastic)	0,0461					
	Pilator (Plastic)	0,0015					
	SUMMARY	0,0476					
Net freshwater consumption during repair	0						m ³

Energy input during repair	0	kg/RSL
B6 + B7 – Use of energy and water		
Ancillary materials specified by material	Not specified	kg
Net freshwater consumption	The spouts 030 (131, 131L, 131M, 132, 132L, 132M): 383 m³ (20 cycles per day, 30 sec. lengths of use cycle, lifespan of 30 years) with 3,5 l/min flow rate.	m ³
Type of energy carrier	0	kWh/RSL
The power output of equipment	0	kW
Characteristic performance	Not specified	As appropriate
Further assumptions for scenario development	Not specified	As appropriate

Table 40: End of life (C1-C4)

Scenario information	Value					Unit	
Collected separately	SUMMARY	Group 1 132M-16	Group 2 131-19	Group 3 132L-40	Group 4 132M-27	Group 5 132L-60	kg
		3,41E+00	3,33E+00	3,79E+00	3,42E+00	4,38E+00	
		Group 6 132L-64					
		3,90E+00					
Collected with mixed waste	-					kg	
For reuse	0					kg	
For recycling	SUMMARY	Group 1 132M-16	Group 2 131-19	Group 3 132L-40	Group 4 132M-27	Group 5 132L-60	kg
		3,12E+00	3,08E+00	3,48E+00	3,13E+00	4,00E+00	
		Group 6 132L-64					
		3,58E+00					
For energy recovery	SUMMARY	Group 1 132M-16	Group 2 131-19	Group 3 132L-40	Group 4 132M-27	Group 5 132L-60	kg
		5,92E-02	5,92E-02	6,44E-02	5,92E-02	5,92E-02	
		Group 6 132L-64					
		6,44E-02					
For landfill	SUMMARY	Group 1 132M-16	Group 2 131-19	Group 3 132L-40	Group 4 132M-27	Group 5 132L-60	kg
		2,29E-01	2,23E-01	2,47E-01	2,26E-01	2,30E-01	
		Group 6 132L-64					
Assumptions for scenario development	-					As appropriate	

Table 41: Re-use, recovery, and recycling potential (D)

Scenario information/Material	Value					Unit
	Group 1 122L-16	Group 2 122-19	Group 3 132L-40	Group 4 122-27	Group 5 122L-60	
Electrical energy recovered	0,25	0,32	0,26	0,25	0,25	MJ
Thermal energy recovered	2,40	3,05	2,51	2,40	2,40	MJ
Materials recovery	3,39	3,99	3,78	3,45	3,51	kg
	Group 6 132L-64	Group 7 132L-19	Group 8 121L-27	Group 9 311L-60	Group 10 132L-64	
	Electrical energy recovered	0,25	0,33	0,25	0,28	
Thermal energy recovered	2,39	3,17	2,39	2,71	2,51	MJ
Materials recovery	3,52	4,31	3,41	4,47	3,87	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 the 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>Publisher</p>	 <p>www.epddanmark.dk Template version 2022.2</p>
<p>Program operator</p>	<p>Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk</p>
<p>LCA-practitioner</p>	<p>Kristyna Davidova, Odyssefs Papagiannidis, Waldemar Hemdrup</p>  <p>Bureau Veritas HSE Danmark Oldenborggade 25-31 7000 Fredericia Denmark https://www.bureauveritas.dk/en</p>
<p>LCA software /background data</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 2022 and Ecoinvent version 3.9.1</p>
<p>3rd party verifier</p>	<p>Charlotte Merlin</p>  <p>FORCE Technology Danmark 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”

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