epddanmark

ECO PLATFORM EPD VERIFIED

Owner: VOLA A/S
No.: MD-23159-EN
Issued: 21-11-2025
Valid to: 21-11-2030

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

Programme

EPD Danmark
www.epddanmark.dk

☐ Industry EPD
☒ Product EPD

☐ Product specific
☐ Average
☒ Worst Case

Declared products

24 products: 4 product types grouped into 6 product groups based on 6 different surfaces.

T39EL/9 - 16, 19, 27, 40, 60, 64
T39ELUS/9 - 16, 19, 27, 40, 60, 64
T39EL/12 - 16, 19, 27, 40, 60, 64
T39ELUS/12 - 16, 19, 27, 40, 60, 64 (worst case products)

Production site

VOLA A/S
Lunavej 2
8700 Horsens
Denmark

Use of Guarantees of Origin

☐ No certificates used
☒ Electricity covered by GoO
☐ Biogas covered by GoO

Declared/ functional unit

1 fixture with RSL of 30 years

Year of data

2022

EPD version

The first issue.

Issued: 21-11-2025

Valid to: 21-11-2030

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 B. 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	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy	Operational water	De-constructi	Transport	Waste processin	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**	**ND**	**ND**	**ND**	**ND**	**ND**	**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 two different surfaces. Specific recipes are used, and the composition of input materials is 100 % in mass -% of declared products.

Table 1: Average material composition of products

Material	Amount [%]
Brass	2,47-48,34
Electronic	2,13-3,16
Other metals (nickel, silver, copper, aluminium, chrome)	41,29-44,25
Plastic	2,56-3,57
Rubber	0,08-0,13
Steel	1,42-45,54
Hot dip galvanised steel	1,83-5,29
Total	**100**

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	5,52-6,23	0,0260- 0,0373
EPS	22,07-22,75	0,1038-0,1362
Cardboard	69,21-70,52	0,3317-0,4143
Paper	1,80-1,88	0,0088-0,0108
Wooden pallet	0,01-0,01	0,0004- 0,0005
Total	**100**	**0,4707-0,5991**

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 and are less than 10 years old. SimaPro 9.3 has been used as the LCA software. The EPD follows Table E.1 from EN 15804+A2, Annex E, to assess the data quality of relevant data.

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

The declared products contain lead at levels above 0,1%. Lead (CAS: 7439-92-1), as part of the brass material, is on the" Candidate List of Substances of Very High Concern for authorization".

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

Product(s) use

VOLA fixtures are used in kitchens and bathrooms.

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: Building part group 6 – Electronic group 68 (1) = lifetime of 30 years (BUILD REPORT 2021).

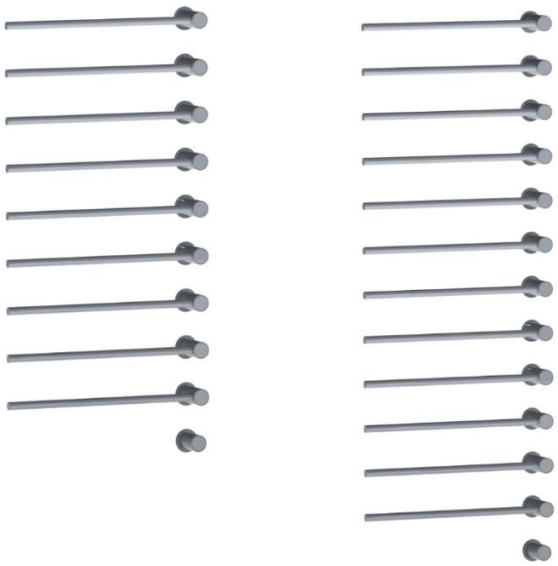

Figure 1: T39EL/9, T39EL/12

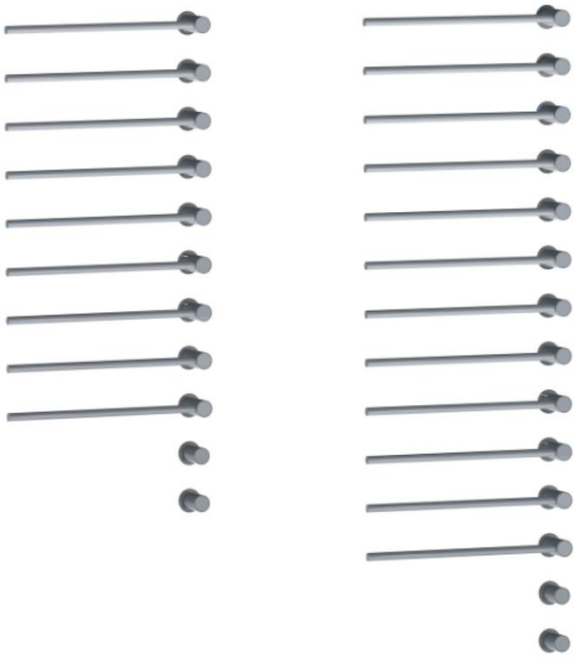

Figure 2: T39ELUS/9, T39ELUS/12

Twenty four products (T39EL/9, T39EL/12, T39ELUS/9, T39ELUS/12) are calculated in six different surfaces (16 and 20, 19, 27, 40, 60 and 64) and six product groups, see Figure 1 and Figure 2. Surface 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). Surface called "Exclusive color with PVD on Brass" have also more surfaces: Black (60), Deep black (62), Copper (63), Gold (65), and Nickel (68). Surface 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: T39EL/9, T39EL/12, T39ELUS/9, and T39ELUS/12.

Table 3 shows weights and conversion factors to 1 kg for the declared unit for 6 product groups with 6 different surfaces (16 and 20, 19, 27, 40, 60, 64) and 4 different variations of products (T39EL/9, T39EL/12, T39ELUS/9, T39ELUS/12).

The results for:

- Group no. 1 refers to Tables 6 to 10**Error! Reference source not found.**
- Group no. 2 refers to Tables 11**Error! Reference source not found.** to 15**Error! Reference source not found.**
- Group no. 3 refers to Tables 16**Error! Reference source not found.** to 20**Error! Reference source not found.**
- Group no. 4 refers to Tables 21**Error! Reference source not found.** to 25**Error! Reference source not found.**
- Group no. 5 refers to Tables 26**Error! Reference source not found.** to 30**Error! Reference source not found.**
- Group no. 6 refers to Tables 31**Error! Reference source not found.** to 35**Error! Reference source not found.**

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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.

Energy modelling principles:

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 with the dataset: Electricity, high voltage {DK}| electricity production, wind, 1-3MW turbine, offshore | Cut-off, U with 0.016 kgCO2-eq./kWh,

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

Surface/Material Surface no.	Surface no. / Group no.							Conversion factor to 1 kg
	1.		2.	3.	4.	5.	6.	
	16, 20		19	40	27	60	64	
	Polished and brushed chrome		Natural brass	Stainless steel	Colors	Exclusive color (PVD on Brass)	Exclusive color (PVD on Stainless steel)	
	Polished chrome	Brushed chrome	Natural brass	Stainless steel	Matt black	Black	Brushed copper	
	[kg/piece]							-
T39EL/9	21,65		21,62	20,84	22,38	22,07	20,9	0,05
T39EL/12	28,27		28,23	27,19	29,23	28,83	27,27	0,03
T39ELUS/9	23,58		23,53	22,74	24,32	24,06	22,83	0,04
T39ELUS/12	30,07		30	28,96	31,03	30,68	29,06	0,03
Declared unit	1							0,03-0,05

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

Flow diagram

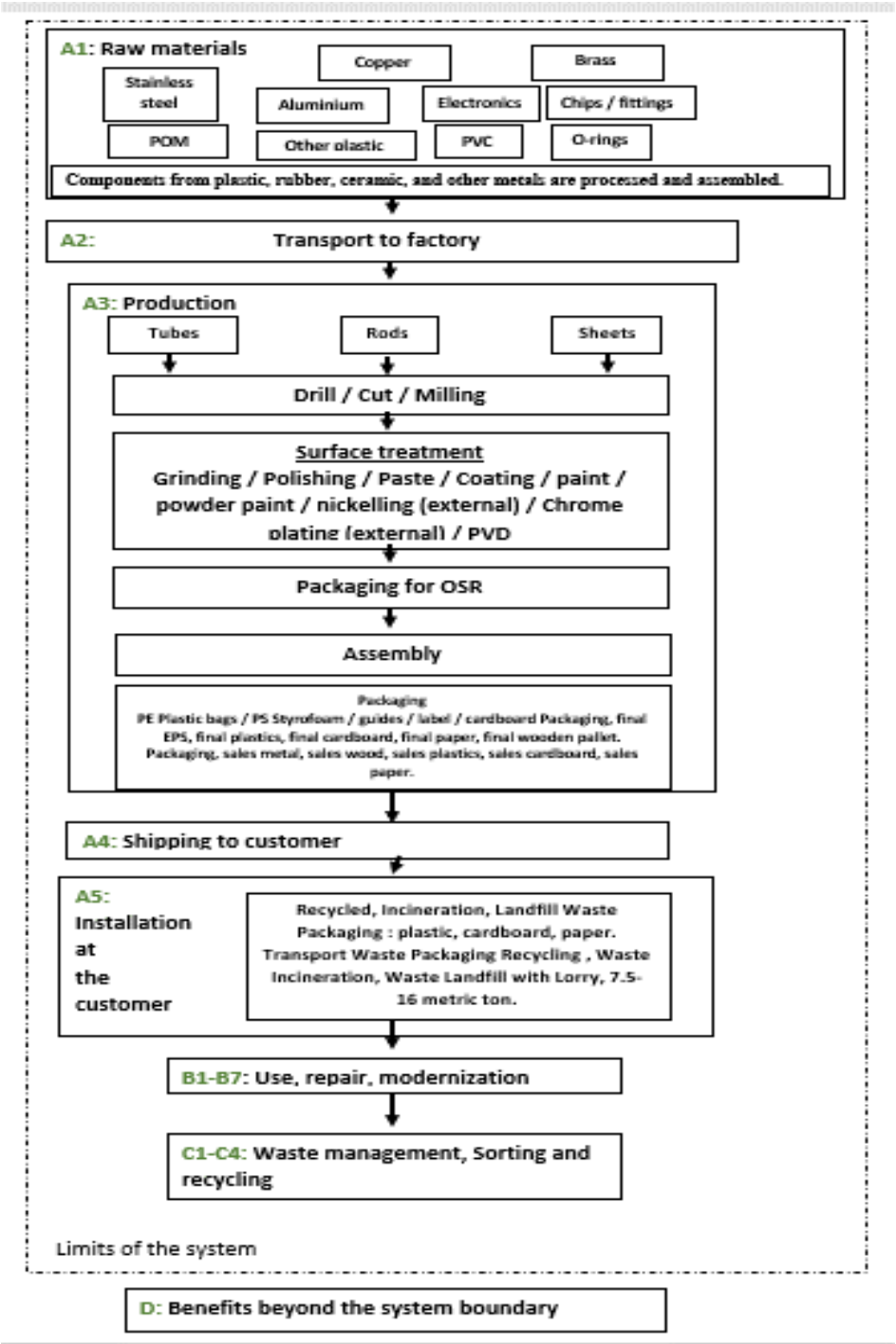

Figure 3: Flow diagram of product system with modules A1-D

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, products, 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 taken 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, other metal components such as nickel, silver, copper, aluminium, chrome and other chemicals are sourced from 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.

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, brass, and other metals components such as nickel, silver, copper, aluminium, chrome. These materials constitute 80-90 % of the total product. Stainless steel components have different qualities: 301, 302, 304L, and 316L. The brass components are of CW614N quality.

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 steel waste from production is 65-67 % for groups.

The brass waste from production is 80-82 % for all groups.

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 (1.042 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 installment 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, 56,9 % of Sales and Transport Packaging for the final VOLA product is recycled, 19,4 % is transported to the landfill, and 23,7 % 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 (B6-B7) includes:

The product has a reference service life of a minimum of 30 years. This determined that the product will last at least 30 years provided that the requirements for operational energy use 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.

(B6-B7) Consumption data

This use stage consists of energy and water consumption for the users with an assumption to be used in bathrooms for 30 years. Energy consumption is based on the European market.

There is no water consumption during the use phase.

The temperature of T39EL and T39ELUS can be adjusted between 20 – 50 °C (Handle setting 1 – 4). When adjustment handle is set on timer (clock position) the T39EL is on for 2 hours with max temperature. After 2 hours it stops. The Consumption scenario is calculated with timer setting 2 times a day (4 hour/day).

The actual amount of energy that is consumed during use partly depends on user behavior. The technical operating scenario is available in Table 4.

Table 5 shows additional construction data. All data in modules B6 is coming from the VOLA's marketing department which is based on an assumption.

Table 4: Consumption data – B6

T39EL & T39ELUS						
Use scenario		Intensity of use			Power consumption	
		[Hours]	[Hours]	[Hours]	[kWh]	[kWh]
		Per day	Per year	Per RSL	Per year	Per RSL
T39EL/9 & T39ELUS/9	0,09 kWh	4	1460	43.800	131,4	3.942
T39EL/12 & T39ELUS/12	0,12 kWh	4	1460	43.800	175,2	5.256

Table 5: Construction additional data

Name	Value	Unit
T39EL Operation power	230	Volt
T39ELUS Operation power	110	Volt
Power consumption per heating bar (Max temperature setting = 50 °C)	10	Watt
Use cycle pr. day	2	Use/day
Length of use cycle	2	Hours
Use cycles per year	365	Days
Length of the use stage	30	Years

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 electric heated towel rails, 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 0,9 – 1,2 % of product parts are transported 100 km to the incineration station, 81,7 -83,5% of the product is recycled and transported 300 km, and 15,5-17,0 % 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 0,9 – 1,2 % of product parts are incinerated in module C3 with energy recovery accounted for in module D. Overall, 81,7 -83,5% of the product is recycled with materials recovery accounted for in module D.

C4: Disposal

Overall, 15,5-17,0 % 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 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 A5 and 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 other metal components such as nickel, silver, copper, aluminium, chrome materials and not in the product manufacturing. Therefore, the potential environmental impacts per surface treatments (no. 1-8). The potential environmental impact variation between the products and surface is below 10 % within the eight groups, thus justifying their grouping in one group and represented by the results of one product.

Group 1: T39ELUS/12-16 represented by surface "Polished chrome"

Group 2: T39ELUS/12-19 represented by surface "Natural Brass"

Group 3: T39ELUS/12-27 represented by surface "Colors – Matt black"

Group 4: T39ELUS/12-40 represented by surface "Stainless steel"

Group 5: T39ELUS/12-60 represented by surface "Exclusive colors (PVD on Brass)"

Group 6: T39ELUS/12-64 represented by surface "Exclusive colors (PVD on Stainless steel)"

Group 1: T39ELUS/12-16 represented by surface "Polished chrome"

Table 6: Environmental impact indicators - Group 1 : T39ELUS/12-16

ENVIRONMENTAL IMPACTS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2-eq.	5,04E+02	1,74E+01	4,56E+00	1,93E+03	0,00E+00	3,67E-02	1,84E+00	1,45E+00	5,18E-01	-2,88E+00
GWP-fossil	kg CO_2-eq.	5,03E+02	1,74E+01	2,61E+00	1,86E+03	0,00E+00	3,54E-02	1,83E+00	1,43E+00	6,18E-02	-2,80E+00
GWP-biogenic	kg CO_2-eq.	-1,39E+00	0,00E+00	1,86E+00	6,49E+01	0,00E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-1,20E-02
GWP-luluc	kg CO_2-eq.	1,16E+00	1,02E-02	3,00E-04	4,64E+00	0,00E+00	8,83E-05	8,39E-04	2,10E-04	2,91E-05	-1,26E-03
ODP	kg CFC 11 -eq.	7,00E-06	3,78E-07	1,33E-08	3,55E-05	0,00E+00	6,75E-10	3,99E-08	7,39E-09	9,40E-10	-9,65E-08
AP	mol H^{+} eq.	2,01E+01	5,33E-02	2,93E-03	1,07E+01	0,00E+00	2,03E-04	5,71E-03	1,70E-03	2,96E-04	-5,72E-03
EP-freshwater	kg P-eq.	1,59E+00	1,47E-03	6,91E-05	1,76E+00	0,00E+00	3,35E-05	1,26E-04	3,86E-05	1,19E-05	-4,05E-04
EP- marine	kg N-eq.	1,27E+00	1,72E-02	2,07E-03	1,72E+00	0,00E+00	3,28E-05	1,96E-03	7,19E-04	1,16E-03	-1,81E-03
EP-terrestrial	mol N-eq.	1,65E+01	1,81E-01	1,15E-02	1,56E+01	0,00E+00	2,97E-04	2,06E-02	7,15E-03	1,08E-03	-1,80E-02
POCP	kg NMVOC-eq.	4,69E+00	7,70E-02	4,31E-03	5,01E+00	0,00E+00	9,54E-05	8,56E-03	2,35E-03	4,97E-04	-7,71E-03
ADPE	kg Sb-eq.	2,85E-01	7,59E-05	2,26E-06	2,25E-02	0,00E+00	4,29E-07	5,85E-06	1,08E-06	7,54E-08	-6,56E-06
ADPF	MJ	6,06E+03	2,45E+02	8,09E+00	4,23E+04	0,00E+00	8,05E-01	2,58E+01	4,60E+00	8,35E-01	-4,05E+01
WDP	m^3	3,44E+02	1,01E+00	1,63E-01	4,77E+02	0,00E+00	9,07E-03	9,78E-02	7,95E-02	3,49E-02	-1,98E-01
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 : T39ELUS/12-16

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease Incidence	6,10E-05	1,01E-06	5,15E-08	3,91E-05	0,00E+00	7,44E-10	1,25E-07	2,92E-08	5,55E-09	-6,31E-08
IRP	kBq U235 eq	5,27E+01	4,88E-01	2,02E-02	1,19E+03	0,00E+00	2,27E-02	4,17E-02	1,05E-02	1,21E-03	-2,40E-01
ETP-fw	CTUe	2,86E+04	1,29E+02	1,09E+01	7,11E+03	0,00E+00	1,35E-01	1,31E+01	7,40E+00	1,86E+00	-6,95E+00
HTP-c	CTUh	3,22E-06	8,91E-09	5,90E-10	8,74E-07	0,00E+00	1,66E-11	7,68E-10	2,96E-10	3,10E-11	-8,08E-10
HTP-nc	CTUh	2,52E-04	1,71E-07	1,49E-08	3,48E-05	0,00E+00	6,63E-10	1,71E-08	1,11E-08	1,03E-09	-1,54E-08
SQP	Dimensionless	6,89E+03	1,02E+02	4,36E+00	8,25E+03	0,00E+00	1,57E-01	1,32E+01	3,33E+00	1,63E+00	-6,02E+00
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 : T39ELUS/12-16

RESOURCE USE PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2,45E+03	5,32E+00	-6,74E+01	9,49E+03	0,00E+00	1,80E-01	4,50E-01	1,24E-01	1,57E-02	-2,00E+00
PERM	MJ	2,02E-01	0,00E+00	6,77E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,45E+03	5,32E+00	2,27E-01	9,49E+03	0,00E+00	1,80E-01	4,50E-01	1,24E-01	1,57E-02	-2,00E+00
PENRE	MJ	6,32E+03	2,60E+02	-5,43E+01	4,44E+04	0,00E+00	8,44E-01	2,74E+01	4,89E+00	8,89E-01	-4,41E+01
PENRM	MJ	2,48E+01	0,00E+00	6,29E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	6,34E+03	2,60E+02	8,61E+00	4,44E+04	0,00E+00	8,44E-01	2,74E+01	4,89E+00	8,89E-01	-4,41E+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
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
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
FW	m^3	3,48E+02	1,01E+00	1,63E-01	4,74E+02	0,00E+00	5,81E-06	1,02E-05	2,59E-06	2,90E-07	-6,13E-05

Table 9: End-of-life (waste categories and output flows) - Group 1 : T39ELUS/12-16

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	kg	2,64E-01	1,55E-03	4,80E-05	7,43E-02	0,00E+00	1,41E-06	1,64E-04	2,64E-05	4,59E-06	-1,68E-04
NHWD	kg	1,45E+02	7,80E+00	1,50E+00	1,70E+02	0,00E+00	3,24E-03	1,06E+00	4,75E-01	4,58E+00	-4,57E-01
RWD	kg	1,09E-02	1,20E-04	5,06E-06	3,05E-01	0,00E+00	5,81E-06	1,02E-05	2,59E-06	2,90E-07	-6,13E-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
MFR	kg	3,00E+01	0,00E+00	3,37E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,52E+01	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
EEE	MJ	2,99E-03	0,00E+00	2,74E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,15E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	2,64E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,91E+00	0,00E+00	0,00E+00

Table 10: Biogenic carbon content - Group 1 : T39ELUS/12-16

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	2,11
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2	

Group 2: T39ELUS/12-19 represented by surface "Natural Brass"

Table 11: Environmental impact indicators - Group 2 : T39ELUS/12-19

ENVIRONMENTAL IMPACTS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2-eq.	5,10E+02	1,74E+01	4,56E+00	1,93E+03	0,00E+00	3,67E-02	1,83E+00	1,45E+00	5,18E-01	-2,88E+00
GWP-fossil	kg CO_2-eq.	5,08E+02	1,74E+01	2,61E+00	1,86E+03	0,00E+00	3,54E-02	1,83E+00	1,43E+00	6,17E-02	-2,80E+00
GWP-biogenic	kg CO_2-eq.	-1,38E+00	0,00E+00	1,86E+00	6,49E+01	0,00E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-1,20E-02
GWP-luluc	kg CO_2-eq.	1,16E+00	1,02E-02	3,00E-04	4,64E+00	0,00E+00	8,83E-05	8,38E-04	2,09E-04	2,90E-05	-1,26E-03
ODP	kg CFC 11 -eq.	7,43E-06	3,78E-07	1,33E-08	3,55E-05	0,00E+00	6,75E-10	3,99E-08	7,39E-09	9,36E-10	-9,65E-08
AP	mol H^{+-} eq.	2,00E+01	5,32E-02	2,93E-03	1,07E+01	0,00E+00	2,03E-04	5,70E-03	1,70E-03	2,95E-04	-5,72E-03
EP-freshwater	kg P-eq.	1,59E+00	1,47E-03	6,91E-05	1,76E+00	0,00E+00	3,35E-05	1,26E-04	3,86E-05	1,19E-05	-4,05E-04
EP- marine	kg N-eq.	1,27E+00	1,71E-02	2,07E-03	1,72E+00	0,00E+00	3,28E-05	1,95E-03	7,18E-04	1,16E-03	-1,81E-03
EP-terrestrial	mol N-eq.	1,65E+01	1,80E-01	1,15E-02	1,56E+01	0,00E+00	2,97E-04	2,06E-02	7,14E-03	1,08E-03	-1,80E-02
POCP	kg NMVOC-eq.	4,69E+00	7,69E-02	4,31E-03	5,01E+00	0,00E+00	9,54E-05	8,55E-03	2,35E-03	4,96E-04	-7,71E-03
ADPE	kg Sb-eq.	2,84E-01	7,58E-05	2,26E-06	2,25E-02	0,00E+00	4,29E-07	5,84E-06	1,08E-06	7,52E-08	-6,56E-06
ADPF	MJ	6,15E+03	2,44E+02	8,09E+00	4,23E+04	0,00E+00	8,05E-01	2,57E+01	4,59E+00	8,32E-01	-4,05E+01
WDP	m^3	3,45E+02	1,01E+00	1,63E-01	4,77E+02	0,00E+00	9,07E-03	9,76E-02	7,95E-02	3,47E-02	-1,98E-01
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 : T39ELUS/12-19

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease Incidence	6,10E-05	1,01E-06	5,15E-08	3,91E-05	0,00E+00	7,44E-10	1,25E-07	2,92E-08	5,52E-09	-6,31E-08
IRP	kBq U235 eq	5,27E+01	4,87E-01	2,02E-02	1,19E+03	0,00E+00	2,27E-02	4,16E-02	1,04E-02	1,21E-03	-2,40E-01
ETP-fw	CTUe	2,86E+04	1,29E+02	1,09E+01	7,11E+03	0,00E+00	1,35E-01	1,30E+01	7,39E+00	1,86E+00	-6,94E+00
HTP-c	CTUh	3,22E-06	8,90E-09	5,90E-10	8,74E-07	0,00E+00	1,66E-11	7,67E-10	2,96E-10	3,10E-11	-8,08E-10
HTP-nc	CTUh	2,51E-04	1,71E-07	1,49E-08	3,48E-05	0,00E+00	6,63E-10	1,71E-08	1,11E-08	1,03E-09	-1,54E-08
SQP	Dimensionless	6,87E+03	1,02E+02	4,36E+00	8,25E+03	0,00E+00	1,57E-01	1,32E+01	3,33E+00	1,62E+00	-6,02E+00
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 : T39ELUS/12-19

RESOURCE USE PER FIXTURE										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2,86E+03	5,31E+00	-6,74E+01	9,49E+03	0,00E+00	1,80E-01	4,49E-01	1,24E-01	1,56E-02	-2,00E+00
PERM	MJ	2,02E-01	0,00E+00	6,77E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,86E+03	5,31E+00	2,27E-01	9,49E+03	0,00E+00	1,80E-01	4,49E-01	1,24E-01	1,56E-02	-2,00E+00
PENRE	MJ	6,41E+03	2,59E+02	-5,43E+01	4,44E+04	0,00E+00	8,44E-01	2,74E+01	4,89E+00	8,85E-01	-4,41E+01
PENRM	MJ	2,48E+01	0,00E+00	6,29E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	6,43E+03	2,59E+02	8,61E+00	4,44E+04	0,00E+00	8,44E-01	2,74E+01	4,89E+00	8,85E-01	-4,41E+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
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
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
FW	m^3	3,49E+02	1,00E+00	1,63E-01	4,74E+02	0,00E+00	5,81E-06	1,02E-05	2,59E-06	2,90E-07	-6,13E-05

Table 14: End-of-life (waste categories and output flows) - Group 2 : T39ELUS/12-19

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	kg	2,62E-01	1,55E-03	4,80E-05	7,43E-02	0,00E+00	1,41E-06	1,64E-04	2,64E-05	4,58E-06	-1,68E-04
NHWD	kg	1,46E+02	7,78E+00	1,50E+00	1,70E+02	0,00E+00	3,24E-03	1,06E+00	4,75E-01	4,56E+00	-4,56E-01
RWD	kg	1,09E-02	1,20E-04	5,06E-06	3,05E-01	0,00E+00	5,81E-06	1,02E-05	2,59E-06	2,90E-07	-6,13E-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
MFR	kg	3,00E+01	0,00E+00	3,37E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,52E+01	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
EEE	MJ	2,99E-03	0,00E+00	2,74E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,15E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	2,64E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,91E+00	0,00E+00	0,00E+00

Table 15: Biogenic carbon content - Group 2 : T39ELUS/12-19

BIOGENIC CARBON CONTENT PER FIXTURE		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in a product	kg C	0,00
Biogenic carbon content in accompanying packaging	kg C	2,11
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2	

Group 3: T39ELUS/12-27 represented by surface "Colors – Matt black"

Table 16: Environmental impact indicators - Group 3 : T39ELUS/12-27

ENVIRONMENTAL IMPACTS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP- total	kg CO_2-eq.	5,15E+02	1,80E+01	4,56E+00	1,93E+03	0,00E+00	3,67E-02	1,90E+00	1,45E+00	5,24E-01	-2,88 E+00
GWP-fossil	kg CO_2-eq.	5,13E+02	1,80E+01	2,61E+00	1,86E+03	0,00E+00	3,54E-02	1,90E+00	1,43E+00	6,73E-02	-2,80 E+00
GWP-biogenic	kg CO_2-eq.	-1,39E +00	0,00E+00	1,86E+00	6,49E+01	0,00E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-1,20E -02
GWP- luluc	kg CO_2-eq.	1,17E+00	1,05E-02	3,00E-04	4,64E+00	0,00E+00	8,83E-05	8,70E-04	2,13E-04	2,94E-05	-1,26E -03
ODP	kg CFC 11 -eq.	7,74E-06	3,91E-07	1,33E-08	3,55E-05	0,00E+00	6,75E-10	4,14E-08	7,40E-09	9,51E-10	-9,66E -08
AP	mol H^+-eq.	2,02E+01	5,50E-02	2,93E-03	1,07E+01	0,00E+00	2,03E-04	5,92E-03	1,71E-03	2,99E-04	-5,73E -03
EP-freshwater	kg P-eq.	1,60E+00	1,52E-03	6,91E-05	1,76E+00	0,00E+00	3,35E-05	1,31E-04	3,94E-05	1,20E-05	-4,06E -04
EP- marine	kg N-eq.	1,28E+00	1,77E-02	2,07E-03	1,72E+00	0,00E+00	3,28E-05	2,03E-03	7,22E-04	1,16E-03	-1,81E -03
EP-terrestrial	mol N-eq.	1,66E+01	1,87E-01	1,15E-02	1,56E+01	0,00E+00	2,97E-04	2,14E-02	7,18E-03	1,09E-03	-1,81E -02
POCP	kg NMVOC-eq.	4,73E+00	7,95E-02	4,31E-03	5,01E+00	0,00E+00	9,54E-05	8,87E-03	2,36E-03	5,03E-04	-7,72E -03
ADPE	kg Sb-eq.	2,85E-01	7,84E-05	2,26E-06	2,25E-02	0,00E+00	4,29E-07	6,06E-06	1,08E-06	7,65E-08	-6,57E -06
ADPF	MJ	6,25E+03	2,52E+02	8,09E+00	4,23E+04	0,00E+00	8,05E-01	2,67E+01	4,62E+00	8,46E-01	-4,05 E+01
WDP	m^3	3,52E+02	1,05E+00	1,63E-01	4,77E+02	0,00E+00	9,07E-03	1,01E-01	7,98E-02	3,53E-02	-1,98E -01
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 17: Additional environmental impact indicators - Group 3 : T39ELUS/12-27

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease Incidence	6,17E-05	1,05E-06	5,15E-08	3,91E-05	0,00E+00	7,44E-10	1,30E-07	2,94E-08	5,62E-09	-6,33 E-08
IRP	kBq U235 eq	5,45E+01	5,04E-01	2,02E-02	1,19E+03	0,00E+00	2,27E-02	4,32E-02	1,07E-02	1,23E-03	-2,40 E-01
ETP-fw	CTUe	2,89E+04	1,34E+02	1,09E+01	7,11E+03	0,00E+00	1,35E-01	1,35E+01	7,40E+00	1,87E+00	-6,95 E+00
HTP-c	CTUh	3,21E-06	9,20E-09	5,90E-10	8,74E-07	0,00E+00	1,66E-11	7,96E-10	2,97E-10	3,17E-11	-8,09 E-10
HTP-nc	CTUh	2,52E-04	1,76E-07	1,49E-08	3,48E-05	0,00E+00	6,63E-10	1,78E-08	1,12E-08	1,05E-09	-1,54 E-08
SQP	Dimensionless	6,94E+03	1,05E+02	4,36E+00	8,25E+03	0,00E+00	1,57E-01	1,37E+01	3,34E+00	1,65E+00	-6,03 E+00
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 18: Parameters describing resource use - Group 3 : T39ELUS/12-27

RESOURCE USE PER FIXTURE										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2,41E+03	5,49E+00	-6,75E+ 01	9,49E+03	0,00E+00	1,80E-01	4,66E-01	1,27E-01	1,59E-02	-2,00E +00
PERM	MJ	2,02E-01	0,00E+00	6,77E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,41E+03	5,49E+00	2,27E-01	9,49E+03	0,00E+00	1,80E-01	4,66E-01	1,27E-01	1,59E-02	-2,00E +00
PENRE	MJ	6,52E+03	2,68E+02	-5,43E+ 01	4,44E+04	0,00E+00	8,44E-01	2,84E+01	4,91E+00	8,99E-01	-4,41E +01
PENRM	MJ	2,48E+01	0,00E+00	6,29E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	6,54E+03	2,68E+02	8,61E+00	4,44E+04	0,00E+00	8,44E-01	2,84E+01	4,91E+00	8,99E-01	-4,41E +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
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
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
FW	m^3	3,56E+02	1,04E+00	1,63E-01	4,74E+02	0,00E+00	5,81E-06	1,06E-05	2,64E-06	2,95E-07	-6,14E-05

Table 19: End-of-life (waste categories and output flows) - Group 3 : T39ELUS/12-27

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	kg	2,64E-01	1,60E-03	4,80E-05	7,43E-02	0,00E+00	1,41E-06	1,70E-04	2,64E-05	4,64E-06	-1,68E -04
NHWD	kg	1,49E+02	8,05E+00	1,50E+00	1,70E+02	0,00E+00	3,24E-03	1,10E+00	4,74E-01	4,61E+00	-4,56E -01
RWD	kg	1,13E-02	1,24E-04	5,06E-06	3,05E-01	0,00E+00	5,81E-06	1,06E-05	2,64E-06	2,95E-07	-6,14E -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
MFR	kg	3,01E+01	0,00E+00	3,37E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,61E+01	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
EEE	MJ	2,99E-03	0,00E+00	2,74E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,15E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	2,64E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,91E+00	0,00E+00	0,00E+00

Table 20: Biogenic carbon content - Group 3 : T39ELUS/12-27

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	2,11
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2	

Group 4: T39ELUS/12-40 represented by surface "Stainless steel"

Table 21: Environmental impact indicators - Group 4 : T39ELUS/12-40

ENVIRONMENTAL IMPACTS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP- total	kg CO_2-eq.	4,31E+02	1,68E+01	4,56E+00	1,93E+03	0,00E+00	3,67E-02	1,76E+00	1,44E+00	5,18E-01	-2,87E+00
GWP-fossil	kg CO_2-eq.	4,29E+02	1,68E+01	2,61E+00	1,86E+03	0,00E+00	3,54E-02	1,76E+00	1,42E+00	6,13E-02	-2,79E+00
GWP-biogenic	kg CO_2-eq.	-1,39E+00	0,00E+00	1,86E+00	6,49E+01	0,00E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-1,20E-02
GWP-luluc	kg CO_2-eq.	8,12E-01	9,82E-03	3,00E-04	4,64E+00	0,00E+00	8,83E-05	8,06E-04	2,04E-04	2,88E-05	-1,26E-03
ODP	kg CFC 11 -eq.	5,44E-06	3,65E-07	1,33E-08	3,55E-05	0,00E+00	6,75E-10	3,83E-08	7,17E-09	9,27E-10	-9,63E-08
AP	mol H^{+-} eq.	4,67E+00	5,13E-02	2,93E-03	1,07E+01	0,00E+00	2,03E-04	5,48E-03	1,65E-03	2,92E-04	-5,67E-03
EP-freshwater	kg P-eq.	3,56E-01	1,42E-03	6,91E-05	1,76E+00	0,00E+00	3,35E-05	1,21E-04	3,78E-05	1,19E-05	-4,04E-04
EP- marine	kg N-eq.	5,73E-01	1,65E-02	2,07E-03	1,72E+00	0,00E+00	3,28E-05	1,88E-03	6,99E-04	1,15E-03	-1,79E-03
EP-terrestrial	mol N-eq.	6,44E+00	1,74E-01	1,15E-02	1,56E+01	0,00E+00	2,97E-04	1,98E-02	6,93E-03	1,07E-03	-1,78E-02
POCP	kg NMVOC-eq.	1,96E+00	7,42E-02	4,31E-03	5,01E+00	0,00E+00	9,54E-05	8,22E-03	2,28E-03	4,92E-04	-7,64E-03
ADPE	kg Sb-eq.	6,54E-02	7,31E-05	2,26E-06	2,25E-02	0,00E+00	4,29E-07	5,61E-06	1,05E-06	7,48E-08	-6,53E-06
ADPF	MJ	4,92E+03	2,36E+02	8,09E+00	4,23E+04	0,00E+00	8,05E-01	2,48E+01	4,45E+00	8,24E-01	-4,04E+01
WDP	m^3	1,14E+02	9,75E-01	1,63E-01	4,77E+02	0,00E+00	9,07E-03	9,39E-02	7,88E-02	3,44E-02	-1,97E-01
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 : T39ELUS/12-40

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease Incidence	3,63E-05	9,76E-07	5,15E-08	3,91E-05	0,00E+00	7,44E-10	1,20E-07	2,82E-08	5,47E-09	-6,22E-08
IRP	kBq U235 eq	3,90E+01	4,70E-01	2,02E-02	1,19E+03	0,00E+00	2,27E-02	4,00E-02	1,02E-02	1,20E-03	-2,40E-01
ETP-fw	CTUe	5,79E+03	1,25E+02	1,09E+01	7,11E+03	0,00E+00	1,35E-01	1,25E+01	7,32E+00	1,86E+00	-6,88E+00
HTP-c	CTUh	1,77E-06	8,59E-09	5,90E-10	8,74E-07	0,00E+00	1,66E-11	7,37E-10	2,91E-10	3,08E-11	-8,03E-10
HTP-nc	CTUh	3,81E-05	1,65E-07	1,49E-08	3,48E-05	0,00E+00	6,63E-10	1,64E-08	1,10E-08	1,03E-09	-1,53E-08
SQP	Dimensionless	2,47E+03	9,80E+01	4,36E+00	8,25E+03	0,00E+00	1,57E-01	1,27E+01	3,22E+00	1,60E+00	-5,91E+00
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 : T39ELUS/12-40

RESOURCE USE PER FIXTURE										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1,82E+03	5,13E+00	-6,74E+01	9,49E+03	0,00E+00	1,80E-01	4,32E-01	1,21E-01	1,56E-02	-1,99E+00
PERM	MJ	2,02E-01	0,00E+00	6,77E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,82E+03	5,13E+00	2,27E-01	9,49E+03	0,00E+00	1,80E-01	4,32E-01	1,21E-01	1,56E-02	-1,99E+00
PENRE	MJ	5,10E+03	2,50E+02	-5,43E+01	4,44E+04	0,00E+00	8,44E-01	2,63E+01	4,74E+00	8,76E-01	-4,40E+01
PENRM	MJ	2,48E+01	0,00E+00	6,29E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	5,12E+03	2,50E+02	8,61E+00	4,44E+04	0,00E+00	8,44E-01	2,63E+01	4,74E+00	8,76E-01	-4,40E+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
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
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
FW	m^3	1,25E+02	9,68E-01	1,63E-01	4,74E+02	0,00E+00	5,81E-06	9,81E-06	2,53E-06	2,89E-07	-6,13E-05

Table 24: End-of-life (waste categories and output flows) - Group 4 : T39ELUS/12-40

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	kg	1,48E-01	1,50E-03	4,80E-05	7,43E-02	0,00E+00	1,41E-06	1,57E-04	2,55E-05	4,53E-06	-1,67E-04
NHWD	kg	2,38E+02	7,51E+00	1,50E+00	1,70E+02	0,00E+00	3,24E-03	1,02E+00	4,66E-01	4,50E+00	-4,48E-01
RWD	kg	7,18E-03	1,16E-04	5,06E-06	3,05E-01	0,00E+00	5,81E-06	9,81E-06	2,53E-06	2,89E-07	-6,13E-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
MFR	kg	2,72E+01	0,00E+00	3,37E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,42E+01	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
EEE	MJ	2,99E-03	0,00E+00	2,74E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,15E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	2,64E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,91E+00	0,00E+00	0,00E+00

Table 25: Biogenic carbon content - Group 4 : T39ELUS/12-40

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	2,11
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2	

Group 5: T39ELUS/12-60 represented by surface "Exclusive colors (PVD on Brass)"

Table 26: Environmental impact indicators - Group 5 : T39ELUS/12-60

ENVIRONMENTAL IMPACTS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2-eq.	5,08E+02	1,78E+01	4,56E+00	1,93E+03	0,00E+00	3,67E-02	1,88E+00	1,45E+00	5,22E-01	-2,88E+00
GWP-fossil	kg CO_2-eq.	5,07E+02	1,78E+01	2,61E+00	1,86E+03	0,00E+00	3,54E-02	1,88E+00	1,43E+00	6,50E-02	-2,80E+00
GWP-biogenic	kg CO_2-eq.	-1,39E+00	0,00E+00	1,86E+00	6,49E+01	0,00E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-1,20E-02
GWP-luluc	kg CO_2-eq.	1,17E+00	1,04E-02	3,00E-04	4,64E+00	0,00E+00	8,83E-05	8,59E-04	2,12E-04	2,93E-05	-1,26E-03
ODP	kg CFC 11 -eq.	7,26E-06	3,86E-07	1,33E-08	3,55E-05	0,00E+00	6,75E-10	4,08E-08	7,41E-09	9,48E-10	-9,66E-08
AP	mol H^{+-} eq.	2,01E+01	5,44E-02	2,93E-03	1,07E+01	0,00E+00	2,03E-04	5,84E-03	1,71E-03	2,98E-04	-5,73E-03
EP-freshwater	kg P-eq.	1,59E+00	1,50E-03	6,91E-05	1,76E+00	0,00E+00	3,35E-05	1,29E-04	3,91E-05	1,20E-05	-4,06E-04
EP- marine	kg N-eq.	1,27E+00	1,75E-02	2,07E-03	1,72E+00	0,00E+00	3,28E-05	2,00E-03	7,21E-04	1,16E-03	-1,81E-03
EP-terrestrial	mol N-eq.	1,65E+01	1,85E-01	1,15E-02	1,56E+01	0,00E+00	2,97E-04	2,11E-02	7,18E-03	1,09E-03	-1,81E-02
POCP	kg NMVOC-eq.	4,70E+00	7,86E-02	4,31E-03	5,01E+00	0,00E+00	9,54E-05	8,76E-03	2,36E-03	5,01E-04	-7,72E-03
ADPE	kg Sb-eq.	2,85E-01	7,75E-05	2,26E-06	2,25E-02	0,00E+00	4,29E-07	5,98E-06	1,08E-06	7,62E-08	-6,57E-06
ADPF	MJ	6,13E+03	2,50E+02	8,09E+00	4,23E+04	0,00E+00	8,05E-01	2,64E+01	4,62E+00	8,43E-01	-4,05E+01
WDP	m^3	3,47E+02	1,03E+00	1,63E-01	4,77E+02	0,00E+00	9,07E-03	1,00E-01	7,97E-02	3,52E-02	-1,98E-01
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 impacts - Group 5 : T39ELUS/12-60

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease Incidence	6,13E-05	1,03E-06	5,15E-08	3,91E-05	0,00E+00	7,44E-10	1,28E-07	2,94E-08	5,60E-09	-6,33E-08
IRP	kBq U235 eq	5,33E+01	4,98E-01	2,02E-02	1,19E+03	0,00E+00	2,27E-02	4,26E-02	1,06E-02	1,22E-03	-2,40E-01
ETP-fw	CTUe	2,87E+04	1,32E+02	1,09E+01	7,11E+03	0,00E+00	1,35E-01	1,34E+01	7,40E+00	1,87E+00	-6,95E+00
HTP-c	CTUh	3,23E-06	9,10E-09	5,90E-10	8,74E-07	0,00E+00	1,66E-11	7,85E-10	2,97E-10	3,14E-11	-8,09E-10
HTP-nc	CTUh	2,52E-04	1,74E-07	1,49E-08	3,48E-05	0,00E+00	6,63E-10	1,75E-08	1,12E-08	1,04E-09	-1,54E-08
SQP	Dimensionless	6,90E+03	1,04E+02	4,36E+00	8,25E+03	0,00E+00	1,57E-01	1,35E+01	3,35E+00	1,65E+00	-6,03E+00
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 28: Parameters describing resource use - Group 5 : T39ELUS/12-60

RESOURCE USE PER FIXTURE										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2,46E+03	5,43E+00	-6,74E+01	9,49E+03	0,00E+00	1,80E-01	4,60E-01	1,26E-01	1,58E-02	-2,00E+00
PERM	MJ	2,02E-01	0,00E+00	6,77E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,46E+03	5,43E+00	2,27E-01	9,49E+03	0,00E+00	1,80E-01	4,60E-01	1,26E-01	1,58E-02	-2,00E+00
PENRE	MJ	6,39E+03	2,65E+02	-5,43E+01	4,44E+04	0,00E+00	8,44E-01	2,80E+01	4,91E+00	8,97E-01	-4,41E+01
PENRM	MJ	2,48E+01	0,00E+00	6,29E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	6,41E+03	2,65E+02	8,61E+00	4,44E+04	0,00E+00	8,44E-01	2,80E+01	4,91E+00	8,97E-01	-4,41E+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
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
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
FW	m^3	3,51E+02	1,03E+00	1,63E-01	4,74E+02	0,00E+00	5,81E-06	1,05E-05	2,62E-06	2,93E-07	-6,14E-05

Table 29: End-of-life (waste categories and output flows) - Group 5 : T39ELUS/12-60

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	kg	2,64E-01	1,58E-03	4,80E-05	7,43E-02	0,00E+00	1,41E-06	1,68E-04	2,65E-05	4,63E-06	-1,68E-04
NHWD	kg	1,46E+02	7,96E+00	1,50E+00	1,70E+02	0,00E+00	3,24E-03	1,09E+00	4,75E-01	4,61E+00	-4,57E-01
RWD	kg	1,10E-02	1,23E-04	5,06E-06	3,05E-01	0,00E+00	5,81E-06	1,05E-05	2,62E-06	2,93E-07	-6,14E-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
MFR	kg	3,00E+01	0,00E+00	3,37E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,58E+01	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
EEE	MJ	2,99E-03	0,00E+00	2,74E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,15E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	2,64E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,91E+00	0,00E+00	0,00E+00

Table 30: Biogenic carbon content - Group 5 : T39ELUS/12-60

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	2,11
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2	

Group 6: T39ELUS/12-64 represented by surface "Exclusive colors (PVD on Stainless steel)"

Table 31: Environmental impact indicators - Group 6 : T39ELUS/12-64

ENVIRONMENTAL IMPACTS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP- total	kg CO_2-eq.	4,32E+02	1,68E+01	4,56E+00	1,93E+03	0,00E+00	3,67E-02	1,77E+00	1,44E+00	5,18E-01	-2,87 E+00
GWP-fossil	kg CO_2-eq.	4,30E+02	1,68E+01	2,61E+00	1,86E+03	0,00E+00	3,54E-02	1,77E+00	1,42E+00	6,19E-02	-2,79 E+00
GWP-biogenic	kg CO_2-eq.	-1,39E+00	0,00E+00	1,86E+00	6,49E+01	0,00E+00	1,23E-03	0,00E+00	0,00E+00	0,00E+00	-1,20E -02
GWP- luluc	kg CO_2-eq.	8,13E-01	9,85E-03	3,00E-04	4,64E+00	0,00E+00	8,83E-05	8,09E-04	2,04E-04	2,88E-05	-1,26E -03
ODP	kg CFC 11 -eq.	5,49E-06	3,66E-07	1,33E-08	3,55E-05	0,00E+00	6,75E-10	3,85E-08	7,17E-09	9,28E-10	-9,63E -08
AP	mol H^+-eq.	4,68E+00	5,15E-02	2,93E-03	1,07E+01	0,00E+00	2,03E-04	5,50E-03	1,65E-03	2,92E-04	-5,67E -03
EP-freshwater	kg P-eq.	3,57E-01	1,43E-03	6,91E-05	1,76E+00	0,00E+00	3,35E-05	1,22E-04	3,78E-05	1,19E-05	-4,04E -04
EP- marine	kg N-eq.	5,74E-01	1,66E-02	2,07E-03	1,72E+00	0,00E+00	3,28E-05	1,88E-03	6,99E-04	1,15E-03	-1,79E -03
EP-terrestrial	mol N-eq.	6,45E+00	1,75E-01	1,15E-02	1,56E+01	0,00E+00	2,97E-04	1,99E-02	6,94E-03	1,07E-03	-1,78E -02
POCP	kg NMVOC-eq.	1,96E+00	7,45E-02	4,31E-03	5,01E+00	0,00E+00	9,54E-05	8,25E-03	2,28E-03	4,93E-04	-7,64E -03
ADPE	kg Sb-eq.	6,54E-02	7,34E-05	2,26E-06	2,25E-02	0,00E+00	4,29E-07	5,64E-06	1,05E-06	7,49E-08	-6,53E -06
ADPF	MJ	4,93E+03	2,36E+02	8,09E+00	4,23E+04	0,00E+00	8,05E-01	2,49E+01	4,45E+00	8,25E-01	-4,04 E+01
WDP	m^3	1,14E+02	9,79E-01	1,63E-01	4,77E+02	0,00E+00	9,07E-03	9,42E-02	7,89E-02	3,44E-02	-1,97E -01
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 : T39ELUS/12-64

ADDITIONAL ENVIRONMENTAL IMPACTS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease Incidence	3,63E-05	9,80E-07	5,15E-08	3,91E-05	0,00E+00	7,44E-10	1,21E-07	2,82E-08	5,48E-09	-6,22 E-08
IRP	kBq U235 eq	3,91E+01	4,72E-01	2,02E-02	1,19E+03	0,00E+00	2,27E-02	4,02E-02	1,02E-02	1,20E-03	-2,40 E-01
ETP-fw	CTUe	5,80E+03	1,25E+02	1,09E+01	7,11E+03	0,00E+00	1,35E-01	1,26E+01	7,32E+00	1,86E+00	-6,88 E+00
HTP-c	CTUh	1,77E-06	8,62E-09	5,90E-10	8,74E-07	0,00E+00	1,66E-11	7,40E-10	2,91E-10	3,09E-11	-8,03 E-10
HTP-nc	CTUh	3,81E-05	1,65E-07	1,49E-08	3,48E-05	0,00E+00	6,63E-10	1,65E-08	1,10E-08	1,03E-09	-1,53 E-08
SQP	Dimensionless	2,47E+03	9,84E+01	4,36E+00	8,25E+03	0,00E+00	1,57E-01	1,28E+01	3,22E+00	1,61E+00	-5,92 E+00
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 : T39ELUS/12-64

RESOURCE USE PER FIXTURE										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1,82E+03	5,14E+00	-6,74E+ 01	9,49E+03	0,00E+00	1,80E-01	4,34E-01	1,21E-01	1,56E-02	-2,00E +00
PERM	MJ	2,02E-01	0,00E+00	6,77E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,82E+03	5,14E+00	2,27E-01	9,49E+03	0,00E+00	1,80E-01	4,34E-01	1,21E-01	1,56E-02	-2,00E +00
PENRE	MJ	5,11E+03	2,51E+02	-5,43E+ 01	4,44E+04	0,00E+00	8,44E-01	2,64E+01	4,74E+00	8,78E-01	-4,40E +01
PENRM	MJ	2,48E+01	0,00E+00	6,29E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	5,13E+03	2,51E+02	8,61E+ 00	4,44E+04	0,00E+00	8,44E-01	2,64E+01	4,74E+00	8,78E-01	-4,40E +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
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
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
FW	m^3	1,26E+02	9,72E-01	1,63E-01	4,74E+02	0,00E+00	5,81E-06	9,85E-06	2,53E-06	2,89E-07	-6,13E-05

Table 34: End-of-life (waste categories and output flows) - Group 6 : T39ELUS/12-64

WASTE CATEGORIES AND OUTPUT FLOWS PER FIXTURE											
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	kg	1,48E-01	1,50E-03	4,80E-05	7,43E-02	0,00E+00	1,41E-06	1,58E-04	2,55E-05	4,54E-06	-1,67E -04
NHWD	kg	2,39E+02	7,54E+00	1,50E+00	1,70E+02	0,00E+00	3,24E-03	1,02E+00	4,66E-01	4,51E+00	-4,48E -01
RWD	kg	7,20E-03	1,16E-04	5,06E-06	3,05E-01	0,00E+00	5,81E-06	9,85E-06	2,53E-06	2,89E-07	-6,13E -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
MFR	kg	2,72E+01	0,00E+00	3,37E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,43E+01	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
EEE	MJ	2,99E-03	0,00E+00	2,74E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,15E-01	0,00E+00	0,00E+00
EET	MJ	2,87E-02	0,00E+00	2,64E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,91E+00	0,00E+00	0,00E+00

Table 35: Biogenic carbon content - Group 6 : T39ELUS/12-64

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	2,11
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 B6, Operational energy 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 3.942 – 5.256 kWh (depending on type of product) energy consumption for a default scenario of timer setting 2 times a day (4 hours/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 1,2,3,4,5,6: 1.042 km	km
Capacity utilization (including empty runs)	85 % for trucks	%
Gross density of products transported	930 kg/m³ (with lorry) 697 kg/m³ (with flight) 442 kg/m³ (with steel cage)	kg/m³
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					m³
Other resource use	Not relevant					kg
Energy type and consumption	Not relevant					kWh
Waste materials	Materials	Group 1 T39ELUS/12-16	Group 2 T39ELUS/12-19	Group 3 T39ELUS/12-27	Group 4 T39ELUS/12-40	kg
	EPS	0,462	0,750	1,038	1,326	
	LDPE	0,111	0,185	0,260	0,334	
	Cardboard	1,332	2,456	3,317	4,143	
	Paper	0,051	0,070	0,088	0,107	

	Wooden pallet	0,0001	0,0002	0,0003	0,0004	
	SUMMARY	**1,956**	**3,461**	**4,703**	**5,910**	
	Materials	Group 5 T39ELUS/12-60	Group 6 T39ELUS/12-64			
	EPS	0,498	0,786			
	LDPE	0,150	0,224			
	Cardboard	1,450	2,434			
	Paper	0,052	0,071			
	Wooden pallet	0,0002	0,0003			
	SUMMARY	**2,150**	**3,515**			
Output materials for recycling	Materials	Group 1 T39ELUS/12-16	Group 2 T39ELUS/12-19	Group 3 T39ELUS/12-27	Group 4 T39ELUS/12-40	kg
	EPS	0,031	0,050	0,070	0,089	
	LDPE	0,032	0,054	0,075	0,097	
	Cardboard	0,999	1,842	2,487	3,107	
	Paper	0,038	0,052	0,066	0,080	
	Wooden pallet	0,000	0,000	0,000	0,000	
	SUMMARY	**1,100**	**1,998**	**2,699**	**3,373**	
	Materials	Group 5 T39ELUS/12-60	Group 6 T39ELUS/12-64			
	EPS	0,033	0,053			
	LDPE	0,044	0,065			
	Cardboard	1,088	1,826			
	Paper	0,039	0,053			
	Wooden pallet	0,000	0,000			
	SUMMARY	**1,204**	**1,996**			
Output materials for incineration	Materials	Group 1 T39ELUS/12-16	Group 2 T39ELUS/12-19	Group 3 T39ELUS/12-27	Group 4 T39ELUS/12-40	kg
	EPS	0,237	0,385	0,533	0,680	
	LDPE	0,043	0,072	0,101	0,130	
	Cardboard	0,183	0,338	0,456	0,570	
	Paper	0,007	0,010	0,012	0,015	
	Wooden pallet	0,0001	0,0003	0,0004	0,0005	
	SUMMARY	**0,471**	**0,805**	**1,103**	**1,396**	
	Materials	Group 5 T39ELUS/12-60	Group 6 T39ELUS/12-64			
	EPS	0,256	0,403			
	LDPE	0,059	0,088			
	Cardboard	0,199	0,335			
	Paper	0,007	0,010			
	Wooden pallet	0,0002	0,0003			
	SUMMARY	**0,521**	**0,836**			
Output materials for landfill	Materials	Group 1 T39ELUS/12-16	Group 2 T39ELUS/12-19	Group 3 T39ELUS/12-27	Group 4 T39ELUS/12-40	kg
	EPS	0,194	0,315	0,436	0,557	

	LDPE Cardboard Paper Wooden pallet **SUMMARY**	0,035 0,150 0,006 0,000 **0,385**	0,059 0,646 0,008 0,000 **0,658**	0,083 0,373 0,010 0,000 **0,902**	0,107 0,466 0,012 0,000 **1,141**	
	Materials	Group 5 T39ELUS/12-60	Group 6 T39ELUS/12-64			
	EPS LDPE Cardboard Paper Wooden pallet **SUMMARY**	0,209 0,048 0,163 0,006 0,000 **0,426**	0,330 0,072 0,644 0,008 0,000 **0,683**			
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
Use phase		
	Electric Towel warmer with step-less temperature regulation between 20 – 50 °C. Self-closing timer setting after two hours at full power (50 °C). Power consumption: 10W per bar. T39EL (230V) has on/off and adjustment of temperature on one handle T39ELUS (110V) has two handles – handle for on/off and a handle for temp. adjustment. The actual amount of energy that is consumed during use partly depends on user behaviour. Technical operating scenario is available in the "Consumption data" (B6-B7)	-
B6 + B7 – Use of energy and water		
Ancillary materials specified by material	Not specified	kg
Net freshwater consumption	-	m^3
Type of energy carrier	T39EL/9 & T39ELUS/9: 3.942 kWh/RSL T39EL/12 & T39ELUS/12: 5.256 kWh/RSL	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 T39ELUS/12-16	Group 2 T39ELUS/12-19	Group 3 T39ELUS/12-27	Group 4 T39ELUS/12-40	kg
		3,01E+01	3,00E+01	3,10E+01	2,90E+01	
		Group 5 T39ELUS/12-60	Group 6 T39ELUS/12-64			
		3,07E+01	2,91E+01			
Collected with mixed waste	-					kg
For reuse	0					kg
For recycling	Material	Group 1 T39ELUS/12-16	Group 2 T39ELUS/12-19	Group 3 T39ELUS/12-27	Group 4 T39ELUS/12-40	kg
	Brass	1,38E+01	1,38E+01	1,37E+01	6,82E-01	
	Electronic	4,39E-01	4,39E-01	4,39E-01	4,39E-01	
	Other metals (nickel, silver, copper, aluminium, chrome)	9,91E+00	9,87E+00	9,87E+00	9,87E+00	
	Plastic	1,95E-01	1,95E-01	1,95E-01	1,95E-01	
	Steel	3,70E-01	3,63E-01	3,63E-01	1,25E+01	
	Hot dip galvanisation steel treatment	5,24E-01	5,26E-01	1,56E+00	5,24E-01	
	SUMMARY	**2,52E+01**	**2,52E+01**	**2,61E+01**	**2,42E+01**	
	Material	Group 5 T39ELUS/12-60	Group 6 T39ELUS/12-64			
	Brass	1,38E+01	6,82E-01			
	Electronic	4,39E-01	4,39E-01			
	Other metals (nickel, silver, copper, aluminium, chrome)	9,91E+00	9,87E+00			
	Plastic	1,95E-01	1,95E-01			
	Steel	3,63E-01	1,25E+01			
	Hot dip galvanisation steel treatment	1,12E+00	6,27E-01			
	SUMMARY	**2,58E+01**	**2,43E+01**			
For energy recovery	Material	Group 1 T39ELUS/12-16	Group 2 T39ELUS/12-19	Group 3 T39ELUS/12-27	Group 4 T39ELUS/12-40	kg

	Plastic	2,63E-01	2,63E-01	2,63E-01	2,63E-01	
	Rubber	1,51E-02	1,51E-02	1,51E-02	1,51E-02	
	SUMMARY	**2,78E-01**	**2,78E-01**	**2,78E-01**	**2,78E-01**	
	Material	Group 5 T39ELUS/12-60	Group 6 T39ELUS/12-64			
	Plastic	2,63E-01	2,63E-01			
	Rubber	1,51E-02	1,51E-02			
	SUMMARY	**2,78E-01**	**2,78E-01**			
For landfill	Material	Group 1 T39ELUS/12-16	Group 2 T39ELUS/12-19	Group 3 T39ELUS/12-27	Group 4 T39ELUS/12-40	kg
	Brass	7,25E-01	7,25E-01	7,22E-01	3,59E-02	
	Electronic	6,06E-01	6,06E-01	6,06E-01	6,06E-01	
	Other metals (nickel, silver, copper, aluminium, chrome)	2,97E+00	2,95E+00	2,95E+00	2,95E+00	
	Plastic	2,16E-01	2,16E-01	2,16E-01	2,16E-01	
	Rubber	1,23E-02	1,23E-02	1,23E-02	1,23E-02	
	Steel	1,95E-02	1,91E-02	1,91E-02	6,56E-01	
	Hot dip galvanisation steel treatment	2,76E-02	2,77E-02	8,21E-02	2,76E-02	
	SUMMARY	**4,58E+00**	**4,55E+00**	**4,61E+00**	**4,50E+00**	
	Material	Group 5 T39ELUS/12-60	Group 6 T39ELUS/12-64			
	Brass	7,25E-01	3,59E-02			
	Electronic	6,06E-01	6,06E-01			
	Other metals (nickel, silver, copper, aluminium, chrome)	2,97E+00	2,95E+00			
	Plastic					
	Rubber	2,16E-01	2,16E-01			
	Steel	1,23E-02	1,23E-02			
	Hot dip galvanisation steel treatment	1,91E-02	6,56E-01			
		5,88E-02	3,30E-02			
	SUMMARY	**4,61E+00**	**4,51E+00**			
Assumptions for scenario development			-			As appropriate

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

Scenario information/Material	Value				Unit
	Group 1 T39ELUS/12-16	Group 2 T39ELUS/12-19	Group 3 T39ELUS/12-27	Group 4 T39ELUS/12-40	
Electrical energy recovered	3,36	3,36	3,36	3,36	MJ
Thermal energy recovered	32,26	32,26	32,26	32,26	MJ
Materials recovery	26,64	26,60	27,53	25,66	kg
	Group 5 T39ELUS/12-60	Group 6 T39ELUS/12-64			
Electrical energy recovered	3,36	3,36			MJ
Thermal energy recovered	32,26	32,26			MJ
Materials recovery	27,20	25,75			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

Publisher	epddanmark www.epddanmark.dk Template version 2022.2
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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: Building part group 6 – Electronic group 68 (1)
https://build.dk/Pages/BUILD-levetidstabel.aspx