

Owner: DEKO p|s  
No.: MD-24067-EN  
Issued: 16-04-2024  
Valid to: 16-04-2029

3<sup>rd</sup> PARTY VERIFIED

**EPD**

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



**Owner of declaration**  
 DEKO p|s  
 Mårkærvej 11, DK-2630 Taastrup  
 66674517



**Issued:**  
 16-04-2024

**Valid to:**  
 16-04-2029

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



- Industry EPD
- Product EPD

**Declared product(s)**  
 DEKO FG 12.76 mm  
 DEKO FG 17.52 mm  
 DEKO FG 21.52 mm  
 DEKO FG 42.76 mm

Number of declared datasets/product variations: 4

**Production site**  
 Mårkærvej 11, DK-2630 Taastrup

The products are not manufactured using green certificates (GO) for the energy consumption in A3.

**Product(s) use**  
 The function of the product is division of indoor spaces and ensure soundproofing.

**Declared unit**  
 1 m<sup>2</sup> of glazed wall partition system

**Functional unit**  
 1 m<sup>2</sup> of soundproofing glazed wall partition system, including associated fixing components with a reference service life of 30 years

**Year of production site data (A3)**  
 2022

**EPD version**  
 [Vers. 3], [April 2024]

**Basis of calculation**

This EPD is developed in accordance with the European standard EN 15804+A2 and the cPCR EN 17074:2019.

**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
<input type="checkbox"/> internal <input checked="" type="checkbox"/> external
Third party verifier:  Linda Høiby

  
 Martha Katrine Sørensen  
 EPD Danmark

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

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

# Product information

## Product description

The main product components are shown in the table below.

Material	Weight-% of declared products
Glass incl. PVB lamination	97 – 98
Argon gas	<1% (only for FG 42.76mm)
Alu spacer	<1% (only for FG 42.76mm)
Silicone spacer	<1% (only for FG 42.76mm)
Aluminium profiles incl. powder coating	1 – 2
Acrylic tape	<1%
Plastic	<1%
Steel	<1%

## Product packaging:

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

Material	Weight-% of packaging
Plastic (LDPE foil, PE tape & PP straps)	26
Wood (EUR pallet, single-use pallet, masonite & cork)	58
Cardboard	13
Steel straps	3

## Representativity

This declaration, including data collection and the modelled foreground system including results, represents the production of 1 m<sup>2</sup> glazed partition wall system at the production site located in Taastrup, DK. Product specific data are based on average values collected in the period 2022. Background data are based on 'LCA for Experts' and EcoInvent database and are less than 10 years old. Generally, the used background datasets are of high quality, and the majority of the datasets are only a couple of years old.

## Hazardous substances

DEKO FG glazed partition system does not contain substances listed on the "Candidate List of Substances of Very High Concern for authorisation"

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

## Essential characteristics

The FG partition systems compose of glass panes, aluminium profiles, and small plastic and metal components. The systems offer sound insulation up to:

FG	Sound insulation (dB)
12.76 mm	33
17.52 mm	40
21.52 mm	41
42.76 mm	51

Test reports, as well as other technical information can be obtained by contacting DEKO.

DEKO FG partition system are covered by harmonised technical specification according to European Technical Assessment ETA-10/0224 of 07/09/2015 in the Construction Products Regulation for the DEKO FG partition system, declaration of performance ref. no. DoP-002-ETA10/0224-EN.

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

<https://www.deko.com/>

## Reference Service Life (RSL)

The reference service life is 30 years which is determined according to the guarantee DEKO p|s provides on their systems. According to information from DEKO, there is no need for the replacement or repair of product components during the RSL. Maintenance is included in terms of simple cleaning with water and mild detergent three times a year.

**Geographical scope**

The geographical scope of this study is Europe.

**Picture of product(s)**



**Figure 1 FG 12.76 mm, 17.52mm, and 21.52mm**



**Figure 2 FG 42.76 mm**

## LCA background

**Declared unit**

The LCI and LCIA results in this EPD relates to 1 m<sup>2</sup> glazed partition wall system.

FG system	12.76 mm	17.52 mm	21.52 mm	42.76 mm	Unit
Declared unit	1 m <sup>2</sup> glazed partition wall system				-
Density	30.7	41.3	50.9	60.2	kg/m <sup>2</sup>
Conversion factor to 1 kg.	0.033	0.024	0.020	0.017	m <sup>2</sup> /kg

**Functional unit**

1 m<sup>2</sup> of soundproofing glazed wall partition system, including associated fixing components with a reference service life of 30 years.

**Allocation**

Allocation is made in accordance with EN 15804 + A2. Energy and waste in module A3 are allocated among the different FG systems based on the total amount of bought glass panes (m<sup>2</sup>).

Impacts from pre-consumer scrap is allocated to the main product system in which the material is used (FG systems). Impacts from post-consumer scrap is allocated to the former product system. Additionally, transport and recycling process are included to account for the processing of scrap needed to utilise scrap in a new product.

The remaining materials are modelled as primary materials.

**PCR**

This EPD is developed according to the core rules for the product category of construction products in EN 15804:2012+A2:2019. In addition to this it also follows the cPCR for glass in buildings EN 17074:2019.

**Guarantee of Origin – certificates**

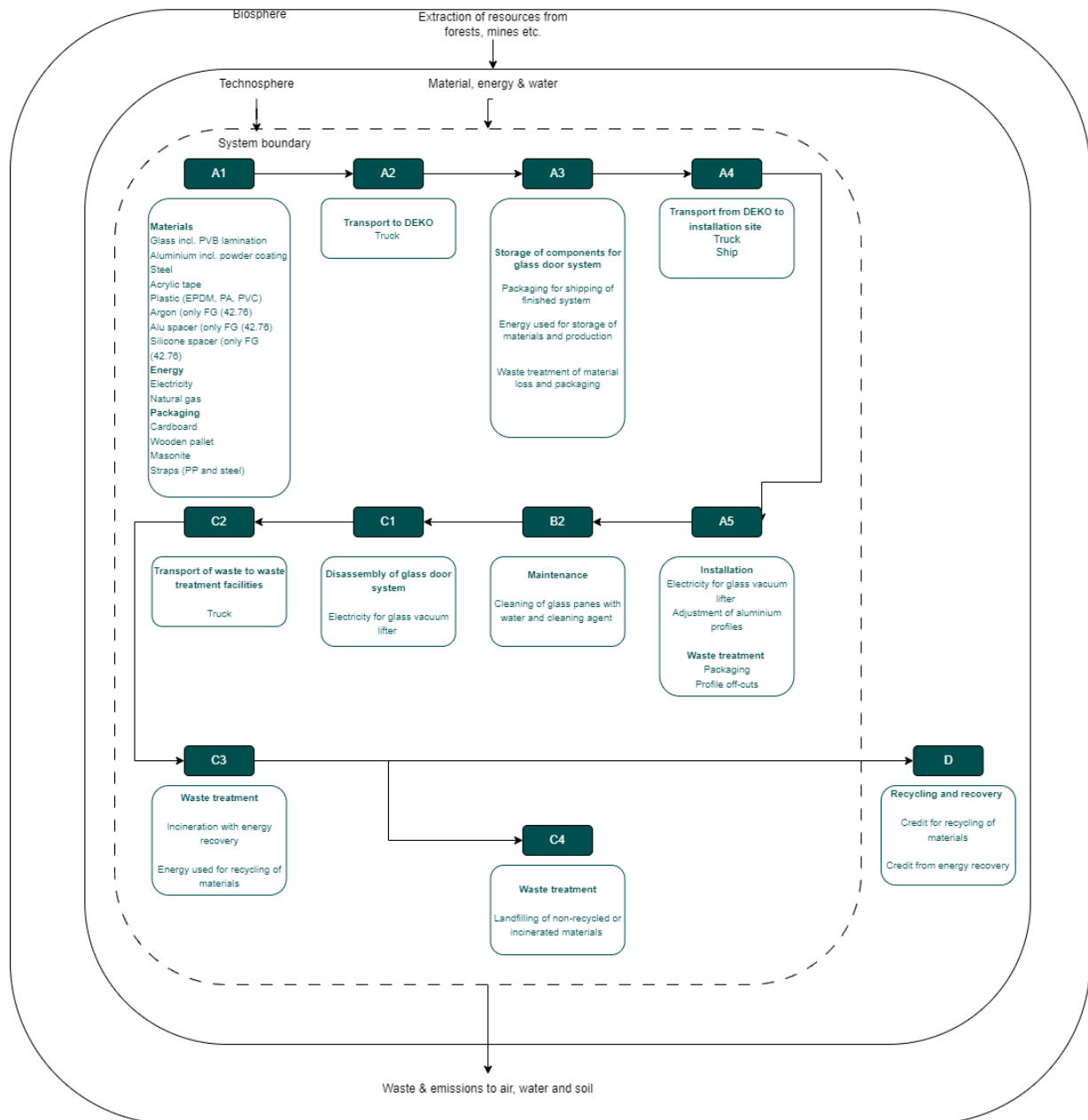
Foreground system:

The products are produced without using any green certificates (GO). Therefore, the energy consumption in module A3 is modelled using Residual mix (DK). Remaining energy processes are modelled using grid mix.

Background system:

Upstream and downstream processes are modelled using datasets representing average supply mixes for the specific country or region.

Flow diagram



## System boundary

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

The general rules apply for the exclusion of inputs and outputs in the LCA, which is in compliance with the rules in EN 15804:2012+A2:2019, 6.3.6, in case of insufficient input data gaps for unit process, the cut-off criteria shall be 1% of renewable and non-renewable primary energy usage and 1% of the total mass input of that unit process. The total of neglected input flows per module, e.g. per module A1-A3, A4-A5, B1-B5, B6-B7, C1-C4 and module D shall be a maximum of 5% of energy usage and mass.

Excluded processes in the system include energy use of electric screwdriver during installation and disassembly in module A5 and C1, respectively. The energy use for adjustment of aluminium profiles in module A5 is excluded as this is deemed negligible. As the system is only being stored at DEKO, thus no energy from the production in module A3 has been allocated to the system. No water is needed to produce the system, as the water use is exclusively for sanitary purposes. It is estimated that the amount of water allocated to 1 m<sup>2</sup> FG are insignificant. Therefore, the water usage and sewage originating in module A3 are excluded from the study.

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

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site, losses from production, 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.

FG systems compose of glass, aluminium, plastic, steel, acrylic tape and silicone (only FG (42.76)).

The glass panes are customised in specific measurement before arriving at DEKO, hence no adjustment is needed. The glass panes compose of glass and PVB lamination. The glass in FG 42.76 mm also contains argon gas and a spacer composed by aluminium and silicone.

The aluminium profiles are extruded into profiles prior to the aluminium profiles arrive at DEKO. The scrap content in the aluminium is 6% post-consumer and 85% pre-consumer. The pre-consumer scrap is attributed the same environmental impacts as primary aluminium. The profiles are delivered in standard length and are fitted during installation.

The materials are stored and packed in Taastrup DK.

### Construction process stage (A4-A5) includes:

The installation of the FG system is done using electric screw drivers and a glass vacuum lifter. The energy use of the glass vacuum lifter is included. The aluminium profiles are adjusted during installation, thus the transport and treatment of aluminium cut-offs are handled in module A5 and the aluminium is credited in module D. The steel straps are also assumed recycled in A5 and credited in module D.

The plastic packaging is assumed incinerated with energy recovery and credited in module D. The wooden pallet is assumed reused 25 times. Therefore, 1/25 of the pallet is assumed incinerated and credited in module D. Cardboard and other wooden packaging components are assumed incinerated together with the pallet.

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

The environmental impacts occurring in the use stage can exclusively be attributed to the cleaning of the glass panes. No replacements are expected during the RSL. It is assumed that the glass panes (incl. profiles) are cleaned three times per year with the use of 0.2 l water and 0.001kg cleaning agent per m<sup>2</sup> throughout the 30 years (RSL). Subsequently, the used cleaning water and cleaning agent is treated as wastewater.

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

It is assumed that 100% of the wall partition system is collected at the demolition site and sent for waste treatment. The waste treatment for the specific material fractions follows the guidelines in cPCR EN17074:2019 and supported by literature sources.

The waste is transported to waste treatment facilities. For recycling the distance is set to 230-550 km depending on the material whereas the waste going to incineration is transported 50 km and waste to landfill is transported 70 km.

The following waste treatment rates are applied: between 9-15% loss is assumed for materials losses from sorting metals and 70% is assumed for sorting glass. For plastic components 100% is assumed incinerated.

Materials	Recycling (%)	Incineration (%)	Loss (%)
Glass incl. PVB laminate	30	0	70
Aluminium	91	0	9
Steel	85	0	15
Acrylic tape	0	100	0
Plastic	0	100	0

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

In module D the potential benefits from recovery and recycling of materials from the product and packaging is modelled.

For aluminium, the secondary material is subtracted to avoid double counting. This entails that only the primary materials are credited in module D.



# LCA results

ENVIRONMENTAL IMPACTS PER 1 m <sup>2</sup> FG 12.76 mm												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
GWP-total	[kg CO <sub>2</sub> eq.]	4.51E+01	9.65E-01	1.17E+00	0.00E+00	2.51E-01	0.00E+00	3.63E-01	6.00E-01	1.23E+00	3.80E-01	-1.48E+01
GWP-fossil	[kg CO <sub>2</sub> eq.]	4.54E+01	9.55E-01	6.21E-01	0.00E+00	2.92E-01	0.00E+00	3.59E-01	5.93E-01	1.23E+00	3.92E-01	-1.48E+01
GWP-biogenic	[kg CO <sub>2</sub> eq.]	-3.45E-01	2.16E-03	5.44E-01	0.00E+00	-6.26E-02	0.00E+00	3.13E-03	1.36E-03	1.59E-03	-1.26E-02	-3.03E-02
GWP-luluc	[kg CO <sub>2</sub> eq.]	2.44E-02	8.77E-03	5.83E-04	0.00E+00	2.12E-02	0.00E+00	3.92E-05	5.56E-03	3.43E-05	1.14E-03	-3.00E-03
ODP	[kg CFC 11 eq.]	3.81E-08	1.25E-13	4.48E-12	0.00E+00	2.42E-08	0.00E+00	6.64E-12	7.81E-14	3.46E-12	9.74E-13	-2.51E-11
AP	[mol H <sup>+</sup> eq.]	3.72E-01	4.53E-03	1.01E-03	0.00E+00	2.06E-03	0.00E+00	7.66E-04	3.67E-03	5.10E-04	2.65E-03	-9.22E-02
EP-freshwater	[kg P eq.]	8.19E-04	3.47E-06	1.13E-06	0.00E+00	1.14E-04	0.00E+00	1.35E-06	2.19E-06	7.18E-07	8.05E-06	-9.61E-06
EP-marine	[kg N eq.]	8.34E-02	1.96E-03	3.43E-04	0.00E+00	6.92E-04	0.00E+00	1.84E-04	1.78E-03	1.28E-04	6.81E-04	-2.15E-02
EP-terrestrial	[mol N eq.]	9.53E-01	2.19E-02	3.88E-03	0.00E+00	4.38E-03	0.00E+00	1.92E-03	1.98E-02	1.56E-03	7.49E-03	-2.44E-01
POCP	[kg NMVOC eq.]	1.75E-01	3.94E-03	7.84E-04	0.00E+00	1.23E-03	0.00E+00	4.89E-04	3.48E-03	3.48E-04	2.06E-03	-4.71E-02
ADPm <sup>1</sup>	[kg Sb eq.]	8.06E-06	6.30E-08	4.15E-08	0.00E+00	3.22E-06	0.00E+00	5.56E-08	3.98E-08	2.91E-08	1.75E-08	-6.34E-07
ADPf <sup>1</sup>	[MJ]	6.58E+02	1.32E+01	6.05E+00	0.00E+00	5.35E+00	0.00E+00	7.55E+00	8.17E+00	4.13E+00	5.35E+00	-2.09E+02
WDP <sup>1</sup>	[m <sup>3</sup> world eq. deprived]	6.62E+00	1.15E-02	1.43E-01	0.00E+00	4.16E-01	0.00E+00	7.91E-02	7.25E-03	1.35E-01	3.85E-02	-1.41E+00
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential											
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.											
Disclaimer	<sup>1</sup> 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.											

ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 m <sup>2</sup> FG 12.76 mm												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
PM	[Disease incidence]	2.02E-06	3.40E-08	6.73E-09	0.00E+00	2.04E-08	0.00E+00	6.45E-09	1.46E-08	4.68E-09	3.23E-08	-6.75E-07
IRP <sup>2</sup>	[kBq U235 eq.]	1.91E+00	3.66E-03	1.33E-01	0.00E+00	2.15E-02	0.00E+00	1.99E-01	2.29E-03	1.01E-01	7.30E-03	-1.50E+00
ETP-fw <sup>1</sup>	[CTUe]	7.01E+02	9.42E+00	2.11E+00	0.00E+00	5.43E+00	0.00E+00	2.10E+00	5.86E+00	1.29E+00	3.06E+00	-1.58E+02
HTP-c <sup>1</sup>	[CTUh]	8.03E-07	1.91E-10	9.56E-11	0.00E+00	3.73E-10	0.00E+00	1.11E-10	1.19E-10	6.84E-11	4.24E-10	-4.33E-09
HTP-nc <sup>1</sup>	[CTUh]	2.43E-07	8.45E-09	2.43E-09	0.00E+00	1.04E-08	0.00E+00	1.77E-09	5.29E-09	1.82E-09	4.42E-08	-1.21E-07
SQP <sup>1</sup>	-	1.07E+02	5.39E+00	2.37E+00	0.00E+00	3.98E+00	0.00E+00	2.97E+00	3.42E+00	1.57E+00	1.20E+00	-1.82E+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*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.											
Disclaimers	<sup>1</sup> 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.											
	<sup>2</sup> 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.											

RESOURCE USE PER 1 m <sup>2</sup> FG 12.76 mm												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
PERE	[MJ]	7.38E+01	9.40E-01	3.09E+00	0.00E+00	1.78E+00	0.00E+00	4.52E+00	5.95E-01	2.33E+00	8.27E-01	-4.97E+01
PERM	[MJ]	1.02E+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
PERT	[MJ]	8.47E+01	9.40E-01	3.09E+00	0.00E+00	1.78E+00	0.00E+00	4.52E+00	5.95E-01	2.33E+00	8.27E-01	-4.97E+01
PENRE	[MJ]	6.23E+02	1.32E+01	6.05E+00	0.00E+00	5.36E+00	0.00E+00	7.55E+00	8.20E+00	4.13E+00	5.35E+00	-2.10E+02
PENRM	[MJ]	3.59E+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
PENRT	[MJ]	6.58E+02	1.32E+01	6.05E+00	0.00E+00	5.36E+00	0.00E+00	7.55E+00	8.20E+00	4.13E+00	5.35E+00	-2.10E+02
SM	[kg]	7.75E-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
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
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
FW	[m <sup>3</sup> ]	2.42E-01	1.03E-03	4.59E-03	0.00E+00	9.71E-03	0.00E+00	3.63E-03	6.52E-04	4.08E-03	1.20E-03	-6.82E-02
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water											
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.											

WASTE CATEGORIES AND OUTPUT FLOWS PER 1 m <sup>2</sup> FG 12.76 mm												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
HWD	[kg]	9.17E-07	4.09E-11	-3.80E-10	0.00E+00	8.95E-13	0.00E+00	-5.90E-10	2.54E-11	-2.89E-10	1.55E-10	-1.99E-08
NHWD	[kg]	4.65E+00	2.00E-03	5.23E-02	0.00E+00	1.75E-02	0.00E+00	5.54E-03	1.25E-03	8.50E-02	2.43E+01	-2.79E+00
RWD	[kg]	2.31E-02	2.45E-05	8.00E-04	0.00E+00	1.13E-05	0.00E+00	1.20E-03	1.54E-05	6.09E-04	6.12E-05	-7.96E-03

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
MFR	[kg]	6.99E-01	0.00E+00	1.09E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.08E+01	0.00E+00	0.00E+00
MER	[kg]	5.38E-03	0.00E+00	4.67E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-01	0.00E+00	0.00E+00
EEE	[MJ]	7.12E-02	0.00E+00	1.34E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.78E+00	0.00E+00	0.00E+00
EET	[MJ]	1.29E-01	0.00E+00	2.42E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.19E+00	0.00E+00	0.00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy											
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.											

BIOGENIC CARBON CONTENT PER 1 m <sup>2</sup> FG 12.76 mm		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0
Biogenic carbon content in accompanying packaging	[kg C]	0.15
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

ENVIRONMENTAL IMPACTS PER 1 m <sup>2</sup> FG 17.52 mm												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
GWP-total	[kg CO <sub>2</sub> eq.]	5.95E+01	1.26E+00	1.16E+00	0.00E+00	2.51E-01	0.00E+00	3.62E-01	8.02E-01	2.28E+00	5.31E-01	-1.82E+01
GWP-fossil	[kg CO <sub>2</sub> eq.]	5.99E+01	1.24E+00	6.21E-01	0.00E+00	2.92E-01	0.00E+00	3.59E-01	7.93E-01	2.28E+00	5.46E-01	-1.81E+01
GWP-biogenic	[kg CO <sub>2</sub> eq.]	-3.25E-01	2.81E-03	5.43E-01	0.00E+00	-6.25E-02	0.00E+00	3.13E-03	1.81E-03	2.13E-03	-1.71E-02	-3.69E-02
GWP-luluc	[kg CO <sub>2</sub> eq.]	2.83E-02	1.14E-02	5.84E-04	0.00E+00	2.12E-02	0.00E+00	3.91E-05	7.43E-03	5.28E-05	1.54E-03	-3.58E-03
ODP	[kg CFC 11 eq.]	3.82E-08	1.62E-13	4.48E-12	0.00E+00	2.42E-08	0.00E+00	6.63E-12	1.04E-13	4.68E-12	1.34E-12	-3.22E-11
AP	[mol H <sup>+</sup> eq.]	4.95E-01	5.90E-03	1.01E-03	0.00E+00	2.06E-03	0.00E+00	7.65E-04	4.90E-03	7.47E-04	3.60E-03	-1.15E-01
EP-freshwater	[kg P eq.]	8.53E-04	4.52E-06	1.13E-06	0.00E+00	1.14E-04	0.00E+00	1.35E-06	2.93E-06	9.79E-07	1.57E-05	-1.20E-05
EP-marine	[kg N eq.]	1.10E-01	2.55E-03	3.43E-04	0.00E+00	6.91E-04	0.00E+00	1.83E-04	2.38E-03	1.88E-04	9.23E-04	-2.76E-02
EP-terrestrial	[mol N eq.]	1.26E+00	2.85E-02	3.88E-03	0.00E+00	4.38E-03	0.00E+00	1.92E-03	2.65E-02	2.39E-03	1.02E-02	-3.13E-01
POCP	[kg NMVOC eq.]	2.31E-01	5.13E-03	7.84E-04	0.00E+00	1.23E-03	0.00E+00	4.89E-04	4.64E-03	5.14E-04	2.80E-03	-5.95E-02
ADPm <sup>1</sup>	[kg Sb eq.]	8.74E-06	8.20E-08	4.14E-08	0.00E+00	3.21E-06	0.00E+00	5.55E-08	5.32E-08	3.94E-08	2.40E-08	-7.34E-07
ADPf <sup>1</sup>	[MJ]	8.71E+02	1.71E+01	6.04E+00	0.00E+00	5.35E+00	0.00E+00	7.54E+00	1.09E+01	5.69E+00	7.50E+00	-2.58E+02
WDP <sup>1</sup>	[m <sup>3</sup> world eq. deprived]	9.46E+00	1.49E-02	1.43E-01	0.00E+00	4.16E-01	0.00E+00	7.90E-02	9.69E-03	2.39E-01	5.09E-02	-1.65E+00
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential											
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.											
Disclaimer	<sup>1</sup> 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.											

ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 m <sup>2</sup> FG 17.52 mm												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
PM	[Disease incidence]	2.75E-06	4.43E-08	6.73E-09	0.00E+00	2.04E-08	0.00E+00	6.44E-09	1.95E-08	7.01E-09	4.37E-08	-8.16E-07
IRP <sup>2</sup>	[kBq U235 eq.]	2.39E+00	4.76E-03	1.33E-01	0.00E+00	2.15E-02	0.00E+00	1.99E-01	3.06E-03	1.35E-01	1.04E-02	-1.75E+00
ETP-fw <sup>1</sup>	[CTUe]	9.40E+02	1.23E+01	2.11E+00	0.00E+00	5.42E+00	0.00E+00	2.10E+00	7.83E+00	1.84E+00	4.40E+00	-2.04E+02
HTP-c <sup>1</sup>	[CTUh]	1.61E-06	2.48E-10	9.56E-11	0.00E+00	3.72E-10	0.00E+00	1.11E-10	1.59E-10	9.82E-11	5.82E-10	-4.86E-09
HTP-nc <sup>1</sup>	[CTUh]	3.40E-07	1.10E-08	2.44E-09	0.00E+00	1.04E-08	0.00E+00	1.77E-09	7.07E-09	2.92E-09	6.01E-08	-1.44E-07
SQP <sup>1</sup>	-	1.18E+02	7.02E+00	2.36E+00	0.00E+00	3.97E+00	0.00E+00	2.97E+00	4.57E+00	2.14E+00	1.64E+00	-2.33E+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*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.											
Disclaimers	<sup>1</sup> 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.											
	<sup>2</sup> 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.											

RESOURCE USE PER 1 m <sup>2</sup> FG 17.52 mm												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
PERE	[MJ]	9.05E+01	1.22E+00	3.09E+00	0.00E+00	1.78E+00	0.00E+00	4.51E+00	7.95E-01	3.15E+00	1.14E+00	-5.69E+01
PERM	[MJ]	1.02E+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
PERT	[MJ]	1.01E+02	1.22E+00	3.09E+00	0.00E+00	1.78E+00	0.00E+00	4.51E+00	7.95E-01	3.15E+00	1.14E+00	-5.69E+01
PENRE	[MJ]	8.05E+02	1.72E+01	6.05E+00	0.00E+00	5.35E+00	0.00E+00	7.54E+00	1.10E+01	5.69E+00	7.50E+00	-2.59E+02
PENRM	[MJ]	6.62E+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
PENRT	[MJ]	8.71E+02	1.72E+01	6.05E+00	0.00E+00	5.35E+00	0.00E+00	7.54E+00	1.10E+01	5.69E+00	7.50E+00	-2.59E+02
SM	[kg]	8.39E-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
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
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
FW	[m <sup>3</sup> ]	3.20E-01	1.34E-03	4.59E-03	0.00E+00	9.70E-03	0.00E+00	3.63E-03	8.71E-04	6.81E-03	1.61E-03	-7.95E-02
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water											
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.											

WASTE CATEGORIES AND OUTPUT FLOWS PER 1 m <sup>2</sup> FG 17.52 mm												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
HWD	[kg]	1.01E-06	5.33E-11	-3.79E-10	0.00E+00	8.94E-13	0.00E+00	-5.89E-10	3.40E-11	-3.81E-10	2.38E-10	-2.49E-08
NHWD	[kg]	5.78E+00	2.60E-03	5.31E-02	0.00E+00	1.75E-02	0.00E+00	5.54E-03	1.67E-03	1.53E-01	3.27E+01	-3.25E+00
RWD	[kg]	2.73E-02	3.19E-05	8.00E-04	0.00E+00	1.13E-05	0.00E+00	1.20E-03	2.05E-05	8.17E-04	8.59E-05	-9.40E-03
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
MFR	[kg]	7.75E-01	0.00E+00	1.18E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.42E+01	0.00E+00	0.00E+00
MER	[kg]	5.85E-03	0.00E+00	4.66E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.32E-01	0.00E+00	0.00E+00
EEE	[MJ]	7.56E-02	0.00E+00	1.34E+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
EET	[MJ]	1.37E-01	0.00E+00	2.41E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.22E+00	0.00E+00	0.00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy											
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.											

BIOGENIC CARBON CONTENT PER 1 m <sup>2</sup> FG 17.52 mm		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0
Biogenic carbon content in accompanying packaging	[kg C]	0.15
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

ENVIRONMENTAL IMPACTS PER 1 m <sup>2</sup> FG 21.52 mm												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
GWP-total	[kg CO <sub>2</sub> eq.]	7.09E+01	1.52E+00	1.16E+00	0.00E+00	2.51E-01	0.00E+00	3.62E-01	9.96E-01	2.05E+00	6.44E-01	-2.10E+01
GWP-fossil	[kg CO <sub>2</sub> eq.]	7.11E+01	1.50E+00	6.21E-01	0.00E+00	2.92E-01	0.00E+00	3.59E-01	9.84E-01	2.05E+00	6.64E-01	-2.09E+01
GWP-biogenic	[kg CO <sub>2</sub> eq.]	-3.10E-01	3.40E-03	5.44E-01	0.00E+00	-6.25E-02	0.00E+00	3.13E-03	2.25E-03	2.63E-03	-2.11E-02	-4.14E-02
GWP-luluc	[kg CO <sub>2</sub> eq.]	3.82E-02	1.38E-02	5.84E-04	0.00E+00	2.12E-02	0.00E+00	3.92E-05	9.22E-03	5.77E-05	1.91E-03	-4.04E-03
ODP	[kg CFC 11 eq.]	3.82E-08	1.96E-13	4.48E-12	0.00E+00	2.42E-08	0.00E+00	6.64E-12	1.29E-13	5.75E-12	1.64E-12	-3.74E-11
AP	[mol H <sup>+</sup> eq.]	6.04E-01	7.12E-03	1.01E-03	0.00E+00	2.06E-03	0.00E+00	7.66E-04	6.08E-03	8.45E-04	4.44E-03	-1.36E-01
EP-freshwater	[kg P eq.]	8.62E-04	5.45E-06	1.13E-06	0.00E+00	1.14E-04	0.00E+00	1.35E-06	3.64E-06	1.19E-06	1.59E-05	-1.34E-05
EP-marine	[kg N eq.]	1.36E-01	3.08E-03	3.43E-04	0.00E+00	6.91E-04	0.00E+00	1.84E-04	2.96E-03	2.11E-04	1.14E-03	-3.33E-02
EP-terrestrial	[mol N eq.]	1.55E+00	3.44E-02	3.88E-03	0.00E+00	4.38E-03	0.00E+00	1.92E-03	3.29E-02	2.58E-03	1.26E-02	-3.78E-01
POCP	[kg NMVOC eq.]	2.82E-01	6.19E-03	7.85E-04	0.00E+00	1.23E-03	0.00E+00	4.89E-04	5.76E-03	5.74E-04	3.45E-03	-7.09E-02
ADPm <sup>1</sup>	[kg Sb eq.]	9.02E-06	9.90E-08	4.15E-08	0.00E+00	3.21E-06	0.00E+00	5.55E-08	6.60E-08	4.83E-08	2.95E-08	-8.00E-07
ADPf <sup>1</sup>	[MJ]	1.01E+03	2.07E+01	6.05E+00	0.00E+00	5.35E+00	0.00E+00	7.54E+00	1.36E+01	6.88E+00	9.08E+00	-3.00E+02
WDP <sup>1</sup>	[m <sup>3</sup> world eq. deprived]	1.00E+01	1.80E-02	1.43E-01	0.00E+00	4.16E-01	0.00E+00	7.90E-02	1.20E-02	2.27E-01	6.40E-02	-1.80E+00
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential											
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.											
Disclaimer	<sup>1</sup> 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.											

ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 m <sup>2</sup> FG 21.52 mm												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
PM	[Disease incidence]	3.34E-06	5.34E-08	6.73E-09	0.00E+00	2.04E-08	0.00E+00	6.44E-09	2.42E-08	7.81E-09	5.40E-08	-9.36E-07
IRP <sup>2</sup>	[kBq U235 eq.]	2.84E+00	5.75E-03	1.33E-01	0.00E+00	2.15E-02	0.00E+00	1.99E-01	3.80E-03	1.67E-01	1.25E-02	-1.90E+00
ETP-fw <sup>1</sup>	[CTUe]	1.16E+03	1.48E+01	2.11E+00	0.00E+00	5.43E+00	0.00E+00	2.10E+00	9.71E+00	2.16E+00	5.26E+00	-2.50E+02
HTP-c <sup>1</sup>	[CTUh]	1.61E-06	3.00E-10	9.56E-11	0.00E+00	3.73E-10	0.00E+00	1.11E-10	1.97E-10	1.15E-10	7.15E-10	-5.15E-09
HTP-nc <sup>1</sup>	[CTUh]	3.98E-07	1.33E-08	2.44E-09	0.00E+00	1.04E-08	0.00E+00	1.77E-09	8.77E-09	3.18E-09	7.42E-08	-1.62E-07
SQP <sup>1</sup>	-	1.31E+02	8.48E+00	2.37E+00	0.00E+00	3.97E+00	0.00E+00	2.97E+00	5.67E+00	2.61E+00	2.02E+00	-2.48E+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*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.											
Disclaimers	<sup>1</sup> 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.											
	<sup>2</sup> 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.											

RESOURCE USE PER 1 m <sup>2</sup> FG 21.52 mm												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
PERE	[MJ]	1.03E+02	1.48E+00	3.09E+00	0.00E+00	1.78E+00	0.00E+00	4.52E+00	9.87E-01	3.88E+00	1.39E+00	-6.01E+01
PERM	[MJ]	1.02E+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

PERT	[MJ]	1.12E+02	1.48E+00	3.09E+00	0.00E+00	1.78E+00	0.00E+00	4.52E+00	9.87E-01	3.88E+00	1.39E+00	-6.01E+01
PENRE	[MJ]	9.53E+02	2.08E+01	6.05E+00	0.00E+00	5.35E+00	0.00E+00	7.54E+00	1.36E+01	6.88E+00	9.09E+00	-3.00E+02
PENRM	[MJ]	6.15E+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
PENRT	[MJ]	1.01E+03	2.08E+01	6.05E+00	0.00E+00	5.35E+00	0.00E+00	7.54E+00	1.36E+01	6.88E+00	9.09E+00	-3.00E+02
SM	[kg]	8.65E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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
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
FW	[m <sup>3</sup> ]	3.40E-01	1.62E-03	4.59E-03	0.00E+00	9.71E-03	0.00E+00	3.63E-03	1.08E-03	6.83E-03	2.01E-03	-8.45E-02
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water											
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,000000000112.											

WASTE CATEGORIES AND OUTPUT FLOWS PER 1 m <sup>2</sup> FG 21.52 mm												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
HWD	[kg]	1.05E-06	6.43E-11	-3.80E-10	0.00E+00	8.95E-13	0.00E+00	-5.90E-10	4.21E-11	-4.79E-10	2.72E-10	-2.98E-08
NHWD	[kg]	6.79E+00	3.14E-03	5.31E-02	0.00E+00	1.75E-02	0.00E+00	5.54E-03	2.07E-03	1.45E-01	4.07E+01	-3.60E+00
RWD	[kg]	3.06E-02	3.86E-05	8.00E-04	0.00E+00	1.13E-05	0.00E+00	1.20E-03	2.55E-05	1.01E-03	1.04E-04	-1.03E-02

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
MFR	[kg]	8.24E-01	0.00E+00	1.18E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.76E+01	0.00E+00	0.00E+00
MER	[kg]	6.05E-03	0.00E+00	4.66E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.22E-01	0.00E+00	0.00E+00
EEE	[MJ]	7.74E-02	0.00E+00	1.34E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.03E+00	0.00E+00	0.00E+00
EET	[MJ]	1.41E-01	0.00E+00	2.41E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.43E+00	0.00E+00	0.00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy											
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,000000000112.											

BIOGENIC CARBON CONTENT PER 1 m <sup>2</sup> FG 21.52 mm		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0
Biogenic carbon content in accompanying packaging	[kg C]	0.15
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

ENVIRONMENTAL IMPACTS PER 1 m <sup>2</sup> FG 42.76 mm												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
GWP-total	[kg CO <sub>2</sub> eq.]	8.58E+01	1.93E+00	2.09E+00	0.00E+00	2.51E-01	0.00E+00	3.62E-01	1.02E+00	1.56E+00	6.41E-01	-2.27E+01
GWP-fossil	[kg CO <sub>2</sub> eq.]	8.65E+01	1.91E+00	1.00E+00	0.00E+00	2.92E-01	0.00E+00	3.59E-01	1.01E+00	1.56E+00	6.60E-01	-2.26E+01
GWP-biogenic	[kg CO <sub>2</sub> eq.]	-6.89E-01	4.32E-03	1.08E+00	0.00E+00	-6.25E-02	0.00E+00	3.13E-03	2.32E-03	2.71E-03	-2.14E-02	-4.61E-02
GWP-luluc	[kg CO <sub>2</sub> eq.]	4.92E-02	1.75E-02	1.12E-03	0.00E+00	2.12E-02	0.00E+00	3.91E-05	9.48E-03	4.93E-05	1.94E-03	-4.42E-03
ODP	[kg CFC 11 eq.]	7.63E-08	2.49E-13	4.60E-12	0.00E+00	2.42E-08	0.00E+00	6.63E-12	1.33E-13	5.84E-12	1.65E-12	-4.08E-11
AP	[mol H <sup>+</sup> eq.]	7.20E-01	9.05E-03	1.51E-03	0.00E+00	2.06E-03	0.00E+00	7.65E-04	6.26E-03	8.02E-04	4.50E-03	-1.45E-01
EP-freshwater	[kg P eq.]	1.61E-03	6.93E-06	1.37E-06	0.00E+00	1.14E-04	0.00E+00	1.35E-06	3.74E-06	1.20E-06	1.13E-05	-1.51E-05
EP-marine	[kg N eq.]	1.63E-01	3.91E-03	5.58E-04	0.00E+00	6.91E-04	0.00E+00	1.83E-04	3.04E-03	1.99E-04	1.16E-03	-3.50E-02
EP-terrestrial	[mol N eq.]	1.87E+00	4.37E-02	6.42E-03	0.00E+00	4.38E-03	0.00E+00	1.92E-03	3.38E-02	2.33E-03	1.28E-02	-3.97E-01
POCP	[kg NMVOC eq.]	3.40E-01	7.87E-03	1.23E-03	0.00E+00	1.23E-03	0.00E+00	4.89E-04	5.93E-03	5.37E-04	3.50E-03	-7.51E-02
ADPm <sup>1</sup>	[kg Sb eq.]	5.36E-05	1.26E-07	4.63E-08	0.00E+00	3.21E-06	0.00E+00	5.55E-08	6.79E-08	4.90E-08	2.98E-08	-1.02E-06
ADPf <sup>1</sup>	[MJ]	1.23E+03	2.63E+01	7.10E+00	0.00E+00	5.35E+00	0.00E+00	7.54E+00	1.39E+01	6.85E+00	9.00E+00	-3.23E+02
WDP <sup>1</sup>	[m <sup>3</sup> world eq. deprived]	1.12E+01	2.29E-02	2.34E-01	0.00E+00	4.16E-01	0.00E+00	7.90E-02	1.24E-02	1.81E-01	6.61E-02	-2.01E+00
Caption	GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential											
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.											
Disclaimer	<sup>1</sup> 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.											

ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 m <sup>2</sup> FG 42.76 mm												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
PM	[Disease incidence]	4.00E-06	6.79E-08	9.16E-09	0.00E+00	2.04E-08	0.00E+00	6.44E-09	2.49E-08	7.16E-09	5.50E-08	-1.01E-06
IRP <sup>2</sup>	[kBq U235 eq.]	4.23E+00	7.31E-03	1.35E-01	0.00E+00	2.15E-02	0.00E+00	1.99E-01	3.91E-03	1.72E-01	1.22E-02	-2.15E+00
ETP-fw <sup>1</sup>	[CTUe]	1.39E+03	1.88E+01	2.82E+00	0.00E+00	5.42E+00	0.00E+00	2.10E+00	9.99E+00	2.05E+00	5.09E+00	-2.61E+02
HTP-c <sup>1</sup>	[CTUh]	8.20E-07	3.81E-10	1.18E-10	0.00E+00	3.72E-10	0.00E+00	1.11E-10	2.03E-10	1.09E-10	7.20E-10	-5.88E-09
HTP-nc <sup>1</sup>	[CTUh]	1.71E-06	1.69E-08	3.66E-09	0.00E+00	1.04E-08	0.00E+00	1.77E-09	9.02E-09	2.47E-09	7.51E-08	-1.78E-07
SQP <sup>1</sup>	-	2.83E+02	1.08E+01	2.77E+00	0.00E+00	3.97E+00	0.00E+00	2.97E+00	5.83E+00	2.64E+00	2.05E+00	-2.94E+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*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,0000000000112.											
Disclaimers	<sup>1</sup> 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.											
	<sup>2</sup> 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.											

RESOURCE USE PER 1 m <sup>2</sup> FG 42.76 mm												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
PERE	[MJ]	1.39E+02	1.88E+00	3.21E+00	0.00E+00	1.78E+00	0.00E+00	4.51E+00	1.02E+00	3.95E+00	1.40E+00	-6.92E+01
PERM	[MJ]	2.01E+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
PERT	[MJ]	1.58E+02	1.88E+00	3.21E+00	0.00E+00	1.78E+00	0.00E+00	4.51E+00	1.02E+00	3.95E+00	1.40E+00	-6.92E+01
PENRE	[MJ]	1.18E+03	2.64E+01	7.11E+00	0.00E+00	5.35E+00	0.00E+00	7.54E+00	1.40E+01	6.85E+00	9.01E+00	-3.24E+02
PENRM	[MJ]	4.89E+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
PENRT	[MJ]	1.23E+03	2.64E+01	7.11E+00	0.00E+00	5.35E+00	0.00E+00	7.54E+00	1.40E+01	6.85E+00	9.01E+00	-3.24E+02
SM	[kg]	9.66E-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
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
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
FW	[m <sup>3</sup> ]	4.00E-01	2.06E-03	6.78E-03	0.00E+00	9.70E-03	0.00E+00	3.63E-03	1.11E-03	5.78E-03	2.06E-03	-5.67E-02
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water											
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,000000000112.											

WASTE CATEGORIES AND OUTPUT FLOWS PER 1 m <sup>2</sup> FG 42.76 mm												
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
HWD	[kg]	1.17E-06	8.17E-11	-3.73E-10	0.00E+00	8.94E-13	0.00E+00	-5.89E-10	4.33E-11	-4.98E-10	2.52E-10	-3.33E-08
NHWD	[kg]	8.70E+00	3.99E-03	8.87E-02	0.00E+00	1.75E-02	0.00E+00	5.54E-03	2.13E-03	9.29E-02	4.15E+01	-3.99E+00
RWD	[kg]	3.78E-02	4.90E-05	8.14E-04	0.00E+00	1.13E-05	0.00E+00	1.20E-03	2.62E-05	1.04E-03	1.03E-04	-1.16E-02

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
MFR	[kg]	1.00E+00	0.00E+00	1.04E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.82E+01	0.00E+00	0.00E+00
MER	[kg]	6.72E-03	0.00E+00	9.30E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.71E-01	0.00E+00	0.00E+00
EEE	[MJ]	1.05E-01	0.00E+00	2.68E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.09E+00	0.00E+00	0.00E+00
EET	[MJ]	1.91E-01	0.00E+00	4.81E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.75E+00	0.00E+00	0.00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy											
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 <sup>2</sup> or 195, while 1,12E-11 is the same as 1,12*10 <sup>-11</sup> or 0,000000000112.											

BIOGENIC CARBON CONTENT PER 1 m <sup>2</sup> FG 42.76 mm		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0
Biogenic carbon content in accompanying packaging	[kg C]	0.30
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	



# Additional information

## LCA interpretation

The results of this EPD are calculated based on 1 m<sup>2</sup> FG system with varies thickness; 12.76 mm, 17.52 mm, 21.52 mm, and 42.76 mm. The calculated results reflect that the glass production entails the greatest environmental impacts for the four FG systems. This can be expected as the glass panes account for 97-98% of the weight and glass is energy and material intensive.

## Technical information on scenarios

### Transport to the building site (A4)

Scenario information	Truck	Ship	Unit
Fuel type	Diesel	Heavy fuel oil	-
Vehicle type	Truck, Euro 5, 26 - 28t gross weight / 18.4t payload capacity	Container ship, 5.000 to 200.000 dwt payload capacity, deep sea	-
Transport distance	217	33	km
Capacity utilisation (including empty runs)	<42.5	<42.5	%
Gross density of products transported	30.8 - 60		kg/m <sup>2</sup>

### Installation of the product in the building (A5)

Scenario information	Value	Unit
Waste materials (packaging + aluminium cut-offs)	0.61 - 1.13	kg
Output materials	30.7 - 60.2	kg

### Reference service life

RSL information		Unit
Reference service Life	30	Years
Maintenance	Cleaning 3 times a year during the RSL	-

### Use (B1-B7) – B2 Maintenance

Scenario information	Value	Unit
Maintenance process	The partition systems are assumed cleaned 3 times a year with mild cleaning agent.	
Maintenance cycle	3	/year
Waste materials resulting from maintenance (water and mild cleaning agent)	0.201	kg
Net freshwater consumption during maintenance	0.2	m <sup>3</sup>

### End of life (C1-C4)

Scenario information	12.76 mm	17.52 mm	21.52 mm	42.76 mm	Unit
Collected separately	30.7	41.3	50.9	60.2	kg
Collected with mixed waste	0	0	0	0	kg
For reuse	0	0	0	0	kg
For recycling	9.3	12.2	15.1	18.2	kg
For energy recovery	0.42	0.81	0.70	0.5	kg
For final disposal	20.9	28.2	35.0	41.5	kg
Assumptions for scenario development	Aluminium, steel and glass are assumed recycled with an efficiency of 91%, 85% and 30%, respectively. 100% of the plastic is assumed incinerated.				

### Re-use, recovery and recycling potential (D)

Module	Scenario information	12.76 mm	17.52 mm	21.52 mm	42.76 mm	Unit
A5 (packaging and aluminium cut-off)	Materials sent for recycling	0.157	0.167	0.167	0.208	kg
	Energy recovery from waste incineration (electricity)	1.3	1.3	1.3	2.7	MJ
	Energy recovery from waste incineration (thermal)	2.4	2.4	2.4	4.8	MJ
C3 (declared product)	Materials sent for recycling	9.3	12.2	15.1	18.2	kg
	Energy recovery from waste incineration (electricity)	0.71	1.33	0.88	0.67	MJ
	Energy recovery from waste incineration (thermal)	1.28	2.38	1.59	1.21	MJ

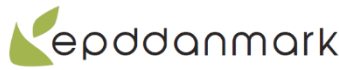
#### **Indoor air**

*This EPD give information on release of dangerous substances to indoor air as DEKO has the FG systems certified according to EuroFins Indoor Air Comfort Gold certification. Read more on release of dangerous substances to indoor air in EN15804+A2 chapter 7.4.1.*

#### **Soil and water**

*The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.2.*

# References

<b>Publisher</b>	 <a href="http://www.epddanmark.dk">www.epddanmark.dk</a> <small>Template version 2022.2</small>
<b>Programme operator</b>	Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup <a href="http://www.teknologisk.dk">www.teknologisk.dk</a>
<b>LCA-practitioner(s)</b>	<i>Mathilde Sørensen Nilsson  Artelia A/S  Mariane Thomsens Gade 1c  8000 Aarhus C  Denmark</i>  <i>Kasper Brodersen Møller  Artelia A/S  Mariane Thomsens Gade 1c  8000 Aarhus C  Denmark</i>
<b>LCA software / background data</b>	<i>Sphera LCA for Experts vers. 10.7, professional database, version 2023.1 and EcoInvent vers. 3.9.1</i>
<b>3<sup>rd</sup> party verifier</b>	<i>Linda Høibye  Life Cycle Assessment Consulting</i>

## General programme instructions

General Programme Instructions, version 2.0, spring 2020  
[www.epddanmark.dk](http://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"

### EN 15942

DS/EN 15942:2011 – "Sustainability of construction works – Environmental product declarations – Communication format business-to-business"

### EN 17074

cPCR: DS/EN 17074:2019 – "Glass in building – Environmental product declaration – Product category rules for flat glass products"

**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”