

Owner: Fischer International A/S
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Valid to: 18-12-2028

3rd PARTY VERIFIED

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



Owner of declaration
 Fischer International A/S
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 8220 Brabrand
 VAT: 20033290



Issued:
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Programme
 EPD Danmark
www.epddanmark.dk



- Industry EPD
- Product EPD

Basis of calculation

This EPD is developed in accordance with the European standard EN 15804+A2.

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

Declared product(s)

The EPD covers all Blackout Systems below sold under the brand names Fischer, Blendex, Kvint Blendex and Fönsterdesign Blendex. The declared products are listed below as specific model types to represent the Blackout System product group.

- Blackout System 65 mm headbox, motor controlled
- Blackout System 85 mm headbox, motor controlled
- Blackout System 85 mm headbox , manually controlled with a crank
- Blackout System 95 mm headbox, motor controlled
- Blackout System 105 mm headbox, motor controlled
- Blackout System 125 mm headbox, motor controlled
- Blackout System Build-In without a headbox, motor controlled

Number of declared datasets: 7

Production site

Fischer International's production site in Lithuania
 Address: Siūlų g. 1, Kaunas 45202, Lithuania

Products use

Blackout Systems are dynamic and adaptable interior solar shading solutions, specifically crafted for buildings. Their primary function is to completely obstruct light penetration, thereby significantly enhancing the indoor ambiance and environment as needed. Their ability to create a near-total dark environment makes them an essential feature for both residential and commercial spaces seeking to manage light exposure effectively.

Declared/ functional unit

1 m² of Blackout System

Year of data

2022

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: Kim Christiansen

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	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

Product information

Product description

The main product materials are shown in the table below.

Material	65 mm headbox, motor	85 mm headbox, motor	85 mm headbox, crank	95 mm headbox, motor	105 mm headbox, motor	125 mm headbox, motor	Build-In, no headbox, motor
Aluminium	59,1%	48,7%	56,9%	53,8%	61,0%	52,7%	37,0%
Electric motor	12,6%	8,5%	0,0%	8,7%	7,0%	5,5%	9,4%
Polyamide	0,2%	0,6%	1,2%	0,5%	0,5%	3,5%	0,3%
Polypropylene	0,7%	0,1%	0,2%	0,2%	0,1%	0,1%	0,1%
Rubber	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Nylon	0,6%	0,4%	0,5%	0,4%	0,4%	0,4%	0,6%
Glass fibre and PVC fabric	13,9%	5,7%	7,4%	5,8%	4,7%	3,7%	6,3%
Stainless steel	0,1%	0,0%	0,3%	0,0%	0,0%	0,0%	0,0%
Steel	12,9%	36,0%	33,6%	30,5%	26,4%	34,1%	46,3%

The packaging composition is listed in the table below.

Name	65 mm headbox, motor	85 mm headbox, motor	85 mm headbox, crank	95 mm headbox, motor	105 mm headbox, motor	125 mm headbox, motor	Build-In, no headbox, motor
Corrug. Box	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%
Tape	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
End cardb.	25.9%	25.9%	25.9%	25.9%	25.9%	25.9%	25.9%
Foam	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Pallet	38.1%	38.1%	38.1%	38.1%	38.1%	38.1%	38.1%

Representativity

This declaration, including data collection and the modelled foreground system including results, represents the production of Blackout Systems on the production site located in Kaunas, Lithuania. Product specific data are based on average values collected in the year 2020. Background data are based on the GaBi LCA software 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.

The product composition and dimensions are based on the established standard dimensions in the c-pcr for the windows set to 1,23 m in width and 1,48 m in length. The sizes are then scaled to the declared unit of 1 m². It should be noted that the larger headboxes often are used for windows with a larger window area, and therefore the window proportions are essential when choosing the various product group specification in your building.

Hazardous substances

The Blackout Systems do not contain substances listed in the "Candidate List of Substances of Very High Concern for authorisation"

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

Essential characteristics

Blackout Systems are covered by harmonised technical specification in PCR-SS-2.3:2020 for "Sunscreens, blinds and shutters". The Blackout Systems additionally live up to the following directives for CE marking:

- 2006/42/EF Machinery directive
- 2014/35/EU Low Voltage Directive
- 2014/30/EU EMC Directive

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

<https://fischer-international.dk/products/blackout/>

Reference Service Life (RSL)

The lifetime of the rail and system installation is 25 years. The lifetime of the electric motor and the fabric is 15 years.

Pictures of products

The pictures below show how products are available with a rounded and straight shaped headbox. The headboxes can be in various sizes, as well as the aluminium tube where the fabric is

rolled up on. Furthermore, the Blackout System can be available with a motor or a crank control system. This specification is found in the product name. The photos below show the build-in Blackout System and the general Blackout System with a headbox.



Picture of Blackout System with a straight headbox



Picture of Blackout System with a rounded headbox



Picture of Blackout System Build-In model



Picture of side rails with mohair sealing

LCA background

Declared unit

The LCI and LCIA results in this EPD relates to 1 m² of Blackout System

Name	65 mm headbox, motor	85 mm headbox, motor	85 mm headbox, crank	95 mm headbox, motor	105 mm headbox, motor	125 mm headbox, motor	Build-In, no headbox, motor
Declared unit, m2	1	1	1	1	1	1	1
Mass per declared unit, kg/m ²	4.680	11.410	8.807	11.126	13.874	17.696	10.328
Conversion to kg	0.2148	0.088	0.114	0.090	0.072	0.057	0.097

Functional unit

The functional unit is not defined as the use stages B1-B7 are not declared

Reference service life (RSL)

The reference service life (RSL) is approx. 25 years.

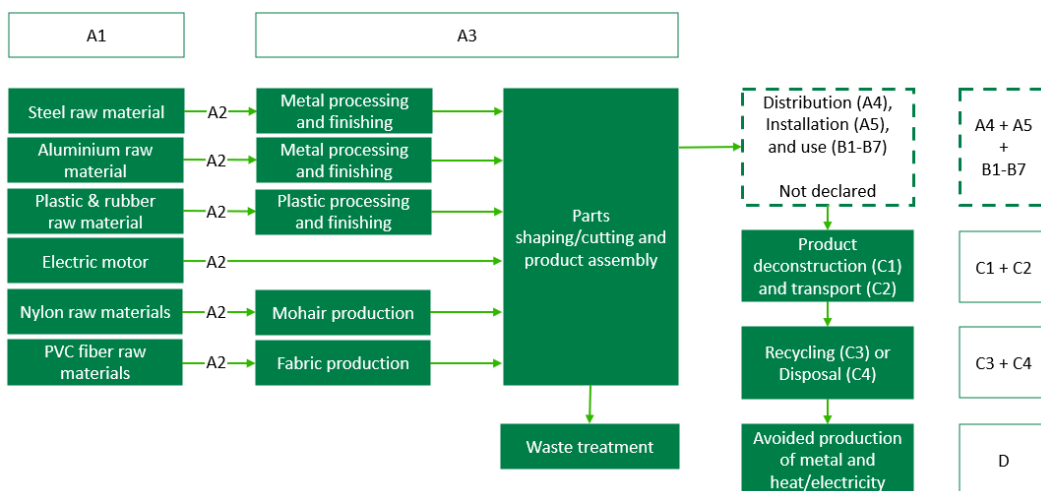
PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804+A2 version 2019. Additionally the dimensions are based on PCR prEN N062:2017; "Windows and doors – Environmental Product Declarations – Product category rules for windows and pedestrian doorsets".

Guarantee of Origin – certificates

Flow diagram

The process diagram below represents the life cycle of a Blackout System product from Fischer.



Foreground system:

No guarantees of origin or certificated for green electricity or energy production are used in manufacturing. Consumption of electricity is modelled with the country specific residual electricity grid mix. Consumption of heat is modelled with average data, representative for the geographical area, which in this case is Lithuania.

Background system:

Other processes upstream and downstream from the production are modelled with processes from the GaBi Database 2023.2 that is based on average data.

System boundary

This EPD is based on a cradle-to-grave LCA with modules C1-C4 and D, in which 100 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows 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:

- A1 – Extraction and processing of raw materials
- A2 – Transport to the production site
- A3 – Manufacturing processes

The steel parts, as well as plastic/rubber parts, are manufactured by suppliers. Aluminium extruded side-rails are received in long shapes and cut into final length. Other aluminium parts are manufactured entirely at suppliers.

Electric motor is received from suppliers as a complete unit.

The fabric in woven PVC/glass fibre is received on large reels from suppliers. The fabric is cut into a pre-shape slightly larger than final cut. The pre-shape is allowed to rest for 24 hours before cutting into final shape to prevent material shrinking/deformation on the final product.

Construction process stage (A4-A5) includes:

Transport to and installation on the construction site in not included.

Use stage (B1-B7) includes:

Use phase in not included.

End of Life (C1-C4) includes:

The Blackout Systems are assumed disposed of in Northern Europe. The Blackout System are assumed dismantled using hand tools (C1) and transported to local recycling (C2).

The remaining product is dismantled in an industrial shredder assuming average recovery of materials (C3).

The fabric of PVC and glass fiber is landfill with no gaseous emissions related to it (C4).

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

The recycled metals are credited an avoided production of primary steel and aluminium.

LCA results

Blackout System with 65 mm headbox, motor controlled

65 mm headbox, motor controlled

ENVIRONMENTAL EFFECTS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	4,26E+01	0,00E+00	1,62E-02	1,85E-01	2,37E-02	-2,44E+01
GWP-fossil	[kg CO ₂ eq.]	4,26E+01	0,00E+00	1,60E-02	1,83E-01	2,42E-02	-2,44E+01
GWP-bio	[kg CO ₂ eq.]	-1,96E-02	0,00E+00	3,66E-05	1,55E-03	-5,22E-04	7,66E-03
GWP-luluc	[kg CO ₂ eq.]	2,54E-02	0,00E+00	1,50E-04	1,96E-05	4,35E-05	-4,41E-03
ODP	[kg CFC 11 eq.]	9,06E-10	0,00E+00	2,11E-15	3,25E-12	4,98E-14	-2,65E-11
AP	[mol H ⁺ eq.]	1,86E-01	0,00E+00	2,39E-05	3,79E-04	1,15E-04	-8,78E-02
EP-fw	[kg P eq.]	2,31E-04	0,00E+00	5,92E-08	7,68E-07	2,73E-06	-1,43E-05
EP-mar	[kg N eq.]	3,09E-02	0,00E+00	8,66E-06	9,12E-05	2,85E-05	-1,61E-02
EP-ter	[mol N eq.]	3,17E-01	0,00E+00	1,03E-04	9,54E-04	3,14E-04	-1,75E-01
POCP	[kg NMVOC eq.]	9,04E-02	0,00E+00	2,09E-05	2,43E-04	8,76E-05	-4,80E-02
ADP-mm ¹	[kg Sb eq.]	3,00E-04	0,00E+00	1,07E-09	2,72E-08	8,47E-10	-1,63E-04
ADP-fos ¹	[MJ]	6,28E+02	0,00E+00	2,21E-01	3,73E+00	3,47E-01	-3,26E+02
WDP ¹	[m ³]	1,22E+01	0,00E+00	1,96E-04	3,98E-02	9,30E-04	-1,54E+00
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-bio = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use						
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						

65 mm headbox, motor controlled

ADDITIONAL ENVIRONMENTAL EFFECTS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PM	[Disease incidence]	4,00E-06	0,00E+00	2,06E-10	3,19E-09	1,31E-09	-9,25E-07
IRP ²	[kBq U235 eq.]	8,06E+00	0,00E+00	6,18E-05	9,79E-02	5,48E-04	-5,10E+00
ETP-fw ¹	[CTUe]	2,20E+02	0,00E+00	1,58E-01	1,04E+00	2,57E-01	-8,37E+01
HTP-c ¹	[CTUh]	2,75E-08	0,00E+00	3,21E-12	5,51E-11	2,07E-11	-1,16E-08
HTP-nc ¹	[CTUh]	1,11E-06	0,00E+00	1,43E-10	9,20E-10	1,95E-09	-1,91E-07
SQP ¹	-	5,68E+02	0,00E+00	9,22E-02	1,45E+00	5,14E-02	-2,22E+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)						
Disclaimers	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						
	² This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.						

65 mm headbox, motor controlled

RESSOURCE CONSUMPTION PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	2,31E+02	0,00E+00	1,61E-02	2,21E+00	4,13E-02	-1,02E+02
PERM	[MJ]	2,98E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	2,61E+02	0,00E+00	1,61E-02	2,21E+00	4,13E-02	-1,02E+02
PENRE	[MJ]	6,11E+02	0,00E+00	2,21E-01	3,73E+00	3,47E-01	-3,27E+02
PENRM	[MJ]	1,65E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	6,28E+02	0,00E+00	2,21E-01	3,73E+00	3,47E-01	-3,27E+02
SM	[kg]	1,69E+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
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	4,27E-01	0,00E+00	1,76E-05	1,80E-03	3,67E-05	-2,08E-01
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						

65 mm headbox, motor controlled

WASTE CATEGORIES AND OUTPUT FLOWS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1,99E-05	0,00E+00	6,86E-13	-2,85E-10	2,07E-11	-1,16E-08
NHWD	[kg]	7,42E+00	0,00E+00	3,38E-05	9,36E-03	8,89E-01	-4,98E+00
RWD	[kg]	4,28E-02	0,00E+00	4,14E-07	5,89E-04	4,05E-06	-2,33E-02
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	4,95E-01	0,00E+00	0,00E+00	3,78E+00	0,00E+00	0,00E+00
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+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						

65 mm headbox, motor controlled

BIOGENIC CARBON CONTENT PER PRODUKT PER M ²		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	0,00
Biogenic carbon content in accompanying packaging	kg C	0,96

Blackout System with 85 mm headbox, motor controlled

85 mm headbox, motor controlled

ENVIRONMENTAL EFFECTS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	8,22E+01	0,00E+00	3,01E-02	4,94E-01	3,04E-02	-5,27E+01
GWP-fossil	[kg CO ₂ eq.]	8,20E+01	0,00E+00	2,97E-02	4,90E-01	3,10E-02	-5,27E+01
GWP-bio	[kg CO ₂ eq.]	1,40E-01	0,00E+00	6,81E-05	4,18E-03	-7,16E-04	2,13E-02
GWP-luluc	[kg CO ₂ eq.]	3,98E-02	0,00E+00	2,79E-04	5,27E-05	6,07E-05	-1,03E-02
ODP	[kg CFC 11 eq.]	1,25E-09	0,00E+00	3,92E-15	8,79E-12	6,58E-14	-4,05E-11
AP	[mol H ⁺ eq.]	3,19E-01	0,00E+00	4,44E-05	1,02E-03	1,57E-04	-1,83E-01
EP-fw	[kg PO ₄ eq.]	3,77E-04	0,00E+00	1,10E-07	1,98E-06	3,11E-06	-2,83E-05
EP-mar	[kg N eq.]	5,44E-02	0,00E+00	1,61E-05	2,46E-04	3,90E-05	-3,42E-02
EP-ter	[mol N eq.]	5,57E-01	0,00E+00	1,91E-04	2,57E-03	4,29E-04	-3,72E-01
POCP	[kg NMVOC eq.]	1,63E-01	0,00E+00	3,89E-05	6,56E-04	1,20E-04	-1,03E-01
ADP-mm ¹	[kg Sb eq.]	5,18E-04	0,00E+00	2,00E-09	7,37E-08	1,13E-09	-2,70E-04
ADP-fos ¹	[MJ]	1,18E+03	0,00E+00	4,10E-01	1,01E+01	4,43E-01	-6,79E+02
WDP ¹	[m ³]	2,07E+01	0,00E+00	3,64E-04	1,07E-01	1,45E-03	-3,06E+00
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-bio = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use						
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						

85 mm headbox, motor controlled

ADDITIONAL ENVIRONMENTAL EFFECTS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PM	[Disease incidence]	6,73E-06	0,00E+00	3,82E-10	8,62E-09	1,80E-09	-1,97E-06
IRP ²	[kBq U235 eq.]	1,56E+01	0,00E+00	1,15E-04	2,65E-01	6,86E-04	-1,01E+01
ETP-fw ¹	[CTUe]	3,75E+02	0,00E+00	2,94E-01	2,80E+00	3,24E-01	-1,71E+02
HTP-c ¹	[CTUh]	4,09E-08	0,00E+00	5,96E-12	1,49E-10	2,76E-11	-2,94E-08
HTP-nc ¹	[CTUh]	1,64E-06	0,00E+00	2,65E-10	2,44E-09	2,64E-09	-3,75E-07
SQP ¹	-	6,28E+02	0,00E+00	1,71E-01	3,93E+00	7,02E-02	-4,06E+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)						
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	² This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.						

85 mm headbox, motor controlled

RESSOURCE CONSUMPTION PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4,10E+02	0,00E+00	2,98E-02	5,99E+00	5,47E-02	-1,99E+02
PERM	[MJ]	2,98E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	4,40E+02	0,00E+00	2,98E-02	5,99E+00	5,47E-02	-1,99E+02
PENRE	[MJ]	1,17E+03	0,00E+00	4,12E-01	1,01E+01	4,43E-01	-6,81E+02
PENRM	[MJ]	1,83E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,18E+03	0,00E+00	4,12E-01	1,01E+01	4,43E-01	-6,81E+02
SM	[kg]	2,46E+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
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	7,13E-01	0,00E+00	3,27E-05	4,86E-03	5,38E-05	-4,17E-01
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						

85 mm headbox, motor controlled

WASTE CATEGORIES AND OUTPUT FLOWS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2,38E-05	0,00E+00	1,27E-12	-7,76E-10	2,46E-11	-2,33E-08
NHWD	[kg]	1,47E+01	0,00E+00	6,27E-05	1,95E-02	1,25E+00	-1,00E+01
RWD	[kg]	8,15E-02	0,00E+00	7,70E-07	1,59E-03	5,15E-06	-4,59E-02
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	1,59E+00	0,00E+00	0,00E+00	1,01E+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
EEE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+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						

85 mm headbox, motor controlled

BIOGENIC CARBON CONTENT PER PRODUKT PER M ²		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	0,00
Biogenic carbon content in accompanying packaging	kg C	0,96

Blackout System with 85 mm headbox, crank controlled

85 mm headbox, crank controlled

ENVIRONMENTAL EFFECTS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	7,04E+01	0,00E+00	1,92E-02	4,13E-01	2,43E-02	-4,41E+01
GWP-fossil	[kg CO ₂ eq.]	7,02E+01	0,00E+00	1,90E-02	4,10E-01	2,49E-02	-4,41E+01
GWP-bio	[kg CO ₂ eq.]	1,13E-01	0,00E+00	4,34E-05	3,46E-03	-5,98E-04	1,45E-02
GWP-luluc	[kg CO ₂ eq.]	3,45E-02	0,00E+00	1,78E-04	4,39E-05	5,12E-05	-7,25E-03
ODP	[kg CFC 11 eq.]	1,24E-09	0,00E+00	2,50E-15	7,24E-12	5,37E-14	-3,99E-11
AP	[mol H ⁺ eq.]	2,77E-01	0,00E+00	2,83E-05	8,46E-04	1,30E-04	-1,51E-01
EP-fw	[kg PO ₄ eq.]	3,53E-04	0,00E+00	7,01E-08	1,73E-06	2,29E-06	-2,64E-05
EP-mar	[kg N eq.]	4,76E-02	0,00E+00	1,03E-05	2,04E-04	3,26E-05	-2,87E-02
EP-ter	[mol N eq.]	4,86E-01	0,00E+00	1,21E-04	2,13E-03	3,58E-04	-3,12E-01
POCP	[kg NMVOC eq.]	1,41E-01	0,00E+00	2,48E-05	5,43E-04	9,96E-05	-8,59E-02
ADP-mm ¹	[kg Sb eq.]	3,71E-05	0,00E+00	1,27E-09	6,07E-08	9,28E-10	-2,14E-06
ADP-fos ¹	[MJ]	1,03E+03	0,00E+00	2,61E-01	8,33E+00	3,53E-01	-5,81E+02
WDP ¹	[m ³]	1,92E+01	0,00E+00	2,32E-04	8,88E-02	1,30E-03	-2,54E+00
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-bio = 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; ADP = Abiotic Depletion Potential – fossil fuels; WDP = water use						
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						

85 mm headbox, crank controlled

ADDITIONAL ENVIRONMENTAL EFFECTS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PM	[Disease incidence]	6,02E-06	0,00E+00	2,44E-10	7,13E-09	1,51E-09	-1,62E-06
IRP ²	[kBq U235 eq.]	1,38E+01	0,00E+00	7,32E-05	2,18E-01	5,41E-04	-8,86E+00
ETP-fw ¹	[CTUe]	3,42E+02	0,00E+00	1,87E-01	2,31E+00	2,53E-01	-1,46E+02
HTP-c ¹	[CTUh]	7,12E-08	0,00E+00	3,80E-12	1,23E-10	2,26E-11	-2,28E-08
HTP-nc ¹	[CTUh]	1,54E-06	0,00E+00	1,69E-10	2,06E-09	2,19E-09	-3,25E-07
SQP ¹	-	5,98E+02	0,00E+00	1,09E-01	3,24E+00	5,84E-02	-3,32E+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)						
Disclaimers	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						
	² This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.						

85 mm headbox, crank controlled

RESSOURCE CONSUMPTION PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3,66E+02	0,00E+00	1,90E-02	4,93E+00	4,48E-02	-1,75E+02
PERM	[MJ]	2,98E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	3,95E+02	0,00E+00	1,90E-02	4,93E+00	4,48E-02	-1,75E+02
PENRE	[MJ]	1,01E+03	0,00E+00	2,62E-01	8,33E+00	3,53E-01	-5,82E+02
PENRM	[MJ]	1,95E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,03E+03	0,00E+00	2,62E-01	8,33E+00	3,53E-01	-5,82E+02
SM	[kg]	2,22E+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
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	6,49E-01	0,00E+00	2,08E-05	4,02E-03	4,67E-05	-3,62E-01
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						

85 mm headbox, crank controlled

WASTE CATEGORIES AND OUTPUT FLOWS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2,45E-05	0,00E+00	8,12E-13	-6,34E-10	1,86E-11	-2,02E-08
NHWD	[kg]	1,28E+01	0,00E+00	4,00E-05	2,20E-02	1,06E+00	-8,91E+00
RWD	[kg]	7,23E-02	0,00E+00	4,91E-07	1,31E-03	4,10E-06	-4,04E-02
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	1,21E+00	0,00E+00	0,00E+00	7,72E+00	0,00E+00	0,00E+00
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+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						

85 mm headbox, crank controlled

BIOGENIC CARBON CONTENT PER PER PRODUKT PER M ²		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	0,00
Biogenic carbon content in accompanying packaging	kg C	0,96

Blackout System with 95 mm headbox, motor controlled

95 mm headbox, motor controlled

ENVIRONMENTAL EFFECTS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	8,28E+01	0,00E+00	2,96E-02	4,82E-01	3,02E-02	-5,50E+01
GWP-fossil	[kg CO ₂ eq.]	8,26E+01	0,00E+00	2,93E-02	4,78E-01	3,08E-02	-5,51E+01
GWP-bio	[kg CO ₂ eq.]	1,58E-01	0,00E+00	6,70E-05	4,07E-03	-7,09E-04	2,03E-02
GWP-luluc	[kg CO ₂ eq.]	3,89E-02	0,00E+00	2,74E-04	5,14E-05	6,00E-05	-1,03E-02
ODP	[kg CFC 11 eq.]	1,24E-09	0,00E+00	3,85E-15	8,56E-12	6,53E-14	-4,80E-11
AP	[mol H ⁺ eq.]	3,22E-01	0,00E+00	4,37E-05	9,98E-04	1,55E-04	-1,93E-01
EP-fw	[kg PO ₄ eq.]	3,90E-04	0,00E+00	1,08E-07	1,94E-06	3,11E-06	-2,99E-05
EP-mar	[kg N eq.]	5,48E-02	0,00E+00	1,58E-05	2,40E-04	3,86E-05	-3,59E-02
EP-ter	[mol N eq.]	5,60E-01	0,00E+00	1,88E-04	2,50E-03	4,25E-04	-3,90E-01
POCP	[kg NMVOC eq.]	1,62E-01	0,00E+00	3,82E-05	6,39E-04	1,18E-04	-1,08E-01
ADP-mm ¹	[kg Sb eq.]	5,02E-04	0,00E+00	1,96E-09	7,18E-08	1,12E-09	-2,70E-04
ADP-fos ¹	[MJ]	1,20E+03	0,00E+00	4,03E-01	9,82E+00	4,40E-01	-7,17E+02
WDP ¹	[m ³]	2,17E+01	0,00E+00	3,58E-04	1,04E-01	1,43E-03	-3,25E+00
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-bio = 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; ADP = Abiotic Depletion Potential – fossil fuels; WDP = water use						
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						

95 mm headbox, motor controlled

ADDITIONAL ENVIRONMENTAL EFFECTS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PM	[Disease incidence]	6,58E-06	0,00E+00	3,76E-10	8,40E-09	1,78E-09	-2,06E-06
IRP ²	[kBq U235 eq.]	1,67E+01	0,00E+00	1,13E-04	2,58E-01	6,83E-04	-1,09E+01
ETP-fw ¹	[CTUe]	3,80E+02	0,00E+00	2,89E-01	2,73E+00	3,22E-01	-1,82E+02
HTP-c ¹	[CTUh]	4,00E-08	0,00E+00	5,86E-12	1,45E-10	2,73E-11	-2,92E-08
HTP-nc ¹	[CTUh]	1,64E-06	0,00E+00	2,61E-10	2,38E-09	2,62E-09	-4,05E-07
SQP ¹	-	6,31E+02	0,00E+00	1,69E-01	3,83E+00	6,95E-02	-4,44E+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)						
Disclaimers	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						
	² This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.						

95 mm headbox, motor controlled

RESSOURCE CONSUMPTION PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	4,34E+02	0,00E+00	2,94E-02	5,84E+00	5,43E-02	-2,16E+02
PERM	[MJ]	2,98E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	4,64E+02	0,00E+00	2,94E-02	5,84E+00	5,43E-02	-2,16E+02
PENRE	[MJ]	1,18E+03	0,00E+00	4,05E-01	9,82E+00	4,40E-01	-7,19E+02
PENRM	[MJ]	1,86E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,20E+03	0,00E+00	4,05E-01	9,82E+00	4,40E-01	-7,19E+02
SM	[kg]	2,29E+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
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	7,49E-01	0,00E+00	3,22E-05	4,74E-03	5,31E-05	-4,47E-01
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						

95 mm headbox, motor controlled

WASTE CATEGORIES AND OUTPUT FLOWS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2,25E-05	0,00E+00	1,25E-12	-7,55E-10	2,45E-11	-2,50E-08
NHWD	[kg]	1,56E+01	0,00E+00	6,17E-05	1,95E-02	1,24E+00	-1,08E+01
RWD	[kg]	8,71E-02	0,00E+00	7,58E-07	1,55E-03	5,12E-06	-4,96E-02
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	1,38E+00	0,00E+00	0,00E+00	9,87E+00	0,00E+00	0,00E+00
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+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						

95 mm headbox, motor controlled

BIOGENIC CARBON CONTENT PER PER PRODUKT PER M ²		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	0,00
Biogenic carbon content in accompanying packaging	kg C	0,96

Blackout System with 105 mm headbox, motor controlled

105 mm headbox, motor controlled

ENVIRONMENTAL EFFECTS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	1,07E+02	0,00E+00	3,42E-02	6,07E-01	3,22E-02	-7,48E+01
GWP-fossil	[kg CO ₂ eq.]	1,07E+02	0,00E+00	3,38E-02	6,02E-01	3,29E-02	-7,49E+01
GWP-bio	[kg CO ₂ eq.]	2,79E-01	0,00E+00	7,74E-05	5,15E-03	-7,79E-04	2,45E-02
GWP-luluc	[kg CO ₂ eq.]	4,54E-02	0,00E+00	3,17E-04	6,49E-05	6,65E-05	-1,31E-02
ODP	[kg CFC 11 eq.]	1,44E-09	0,00E+00	4,46E-15	1,08E-11	7,05E-14	-7,27E-11
AP	[mol H ⁺ eq.]	4,04E-01	0,00E+00	5,05E-05	1,26E-03	1,70E-04	-2,63E-01
EP-fw	[kg PO ₄ eq.]	4,90E-04	0,00E+00	1,25E-07	2,41E-06	3,12E-06	-3,97E-05
EP-mar	[kg N eq.]	6,91E-02	0,00E+00	1,83E-05	3,03E-04	4,24E-05	-4,90E-02
EP-ter	[mol N eq.]	7,05E-01	0,00E+00	2,17E-04	3,17E-03	4,67E-04	-5,33E-01
POCP	[kg NMVOC eq.]	2,04E-01	0,00E+00	4,42E-05	8,08E-04	1,30E-04	-1,46E-01
ADP-mm ¹	[kg Sb eq.]	5,21E-04	0,00E+00	2,27E-09	9,10E-08	1,22E-09	-2,71E-04
ADP-fos ¹	[MJ]	1,56E+03	0,00E+00	4,66E-01	1,24E+01	4,68E-01	-9,86E+02
WDP ¹	[m ³]	2,79E+01	0,00E+00	4,14E-04	1,32E-01	1,66E-03	-4,38E+00
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-bio = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use						
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						

105 mm headbox, motor controlled

ADDITIONAL ENVIRONMENTAL EFFECTS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PM	[Disease incidence]	7,87E-06	0,00E+00	4,35E-10	1,06E-08	1,96E-09	-2,79E-06
IRP ²	[kBq U235 eq.]	2,32E+01	0,00E+00	1,31E-04	3,27E-01	7,20E-04	-1,53E+01
ETP-fw ¹	[CTUe]	4,81E+02	0,00E+00	3,34E-01	3,45E+00	3,39E-01	-2,51E+02
HTP-c ¹	[CTUh]	4,79E-08	0,00E+00	6,78E-12	1,83E-10	2,97E-11	-3,75E-08
HTP-nc ¹	[CTUh]	1,92E-06	0,00E+00	3,02E-10	3,00E-09	2,86E-09	-5,67E-07
SQP ¹	-	6,66E+02	0,00E+00	1,95E-01	4,86E+00	7,62E-02	-6,21E+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)						
Disclaimers	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						
	² This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.						

105 mm headbox, motor controlled

RESSOURCE CONSUMPTION PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	5,83E+02	0,00E+00	3,39E-02	7,40E+00	5,88E-02	-3,05E+02
PERM	[MJ]	2,98E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	6,12E+02	0,00E+00	3,39E-02	7,40E+00	5,88E-02	-3,05E+02
PENRE	[MJ]	1,55E+03	0,00E+00	4,68E-01	1,24E+01	4,68E-01	-9,88E+02
PENRM	[MJ]	1,86E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,56E+03	0,00E+00	4,68E-01	1,24E+01	4,68E-01	-9,88E+02
SM	[kg]	2,37E+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
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	9,77E-01	0,00E+00	3,72E-05	6,00E-03	6,00E-05	-6,22E-01
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						

105 mm headbox, motor controlled

WASTE CATEGORIES AND OUTPUT FLOWS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2,28E-05	0,00E+00	1,45E-12	-9,59E-10	2,52E-11	-3,49E-08
NHWD	[kg]	2,17E+01	0,00E+00	7,14E-05	2,19E-02	1,37E+00	-1,52E+01
RWD	[kg]	1,21E-01	0,00E+00	8,76E-07	1,97E-03	5,44E-06	-6,98E-02
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	1,94E+00	0,00E+00	0,00E+00	1,25E+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
EEE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+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						

105 mm headbox, motor controlled

BIOGENIC CARBON CONTENT PER PRODUKT PER M ²		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	0,00
Biogenic carbon content in accompanying packaging	kg C	0,96

Blackout System with 125 mm headbox, motor controlled

125 mm headbox, motor controlled

ENVIRONMENTAL EFFECTS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	1,27E+02	0,00E+00	4,06E-02	9,36E-01	3,66E-02	-8,58E+01
GWP-fossil	[kg CO ₂ eq.]	1,27E+02	0,00E+00	4,02E-02	9,28E-01	3,74E-02	-8,58E+01
GWP-bio	[kg CO ₂ eq.]	3,43E-01	0,00E+00	9,20E-05	7,64E-03	-8,91E-04	3,12E-02
GWP-luluc	[kg CO ₂ eq.]	5,68E-02	0,00E+00	3,77E-04	9,79E-05	7,61E-05	-1,54E-02
ODP	[kg CFC 11 eq.]	1,60E-09	0,00E+00	5,29E-15	1,57E-11	8,04E-14	-7,58E-11
AP	[mol H ⁺ eq.]	4,61E-01	0,00E+00	6,00E-05	1,86E-03	1,94E-04	-2,97E-01
EP-fw	[kg PO ₄ eq.]	5,47E-04	0,00E+00	1,49E-07	4,33E-06	3,51E-06	-6,70E-05
EP-mar	[kg N eq.]	8,06E-02	0,00E+00	2,17E-05	4,49E-04	4,86E-05	-5,59E-02
EP-ter	[mol N eq.]	8,24E-01	0,00E+00	2,57E-04	4,70E-03	5,34E-04	-6,08E-01
POCP	[kg NMVOC eq.]	2,41E-01	0,00E+00	5,25E-05	1,20E-03	1,48E-04	-1,68E-01
ADP-mm ¹	[kg Sb eq.]	5,25E-04	0,00E+00	2,70E-09	1,32E-07	1,39E-09	-2,71E-04
ADP-fos ¹	[MJ]	1,86E+03	0,00E+00	5,54E-01	1,83E+01	5,32E-01	-1,14E+03
WDP ¹	[m ³]	3,06E+01	0,00E+00	4,91E-04	1,96E-01	1,91E-03	-5,51E+00
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-bio = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use						
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						

125 mm headbox, motor controlled

ADDITIONAL ENVIRONMENTAL EFFECTS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PM	[Disease incidence]	9,14E-06	0,00E+00	5,17E-10	1,57E-08	2,25E-09	-3,19E-06
IRP ²	[kBq U235 eq.]	2,55E+01	0,00E+00	1,55E-04	4,74E-01	8,17E-04	-1,68E+01
ETP-fw ¹	[CTUe]	5,80E+02	0,00E+00	3,97E-01	5,07E+00	3,86E-01	-2,85E+02
HTP-c ¹	[CTUh]	5,66E-08	0,00E+00	8,05E-12	2,71E-10	3,39E-11	-4,57E-08
HTP-nc ¹	[CTUh]	2,18E-06	0,00E+00	3,58E-10	4,73E-09	3,27E-09	-6,23E-07
SQP ¹	-	6,92E+02	0,00E+00	2,31E-01	7,04E+00	8,71E-02	-6,62E+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)						
Disclaimers	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						
	² This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.						

125 mm headbox, motor controlled

RESSOURCE CONSUMPTION PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6,42E+02	0,00E+00	4,03E-02	1,07E+01	6,71E-02	-3,32E+02
PERM	[MJ]	2,98E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	6,72E+02	0,00E+00	4,03E-02	1,07E+01	6,71E-02	-3,32E+02
PENRE	[MJ]	1,83E+03	0,00E+00	5,56E-01	1,83E+01	5,32E-01	-1,14E+03
PENRM	[MJ]	3,70E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,86E+03	0,00E+00	5,56E-01	1,83E+01	5,32E-01	-1,14E+03
SM	[kg]	2,85E+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
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	1,08E+00	0,00E+00	4,42E-05	8,80E-03	6,90E-05	-7,02E-01
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						

125 mm headbox, motor controlled

WASTE CATEGORIES AND OUTPUT FLOWS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2,51E-05	0,00E+00	1,72E-12	-1,35E-09	2,84E-11	-3,85E-08
NHWD	[kg]	2,39E+01	0,00E+00	8,48E-05	8,16E-02	1,58E+00	-1,67E+01
RWD	[kg]	1,33E-01	0,00E+00	1,04E-06	2,85E-03	6,18E-06	-7,64E-02
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	2,22E+00	0,00E+00	0,00E+00	1,60E+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
EEE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+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						

125 mm headbox, motor controlled

BIOGENIC CARBON CONTENT PER PRODUKT PER M ²		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	0,00
Biogenic carbon content in accompanying packaging	kg C	0,96

Blackout System model Build-In without a headbox, motor controlled

Build-In, without headbox, motor controlled

ENVIRONMENTAL EFFECTS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	6,76E+01	0,00E+00	2,83E-02	4,38E-01	2,95E-02	-3,99E+01
GWP-fossil	[kg CO ₂ eq.]	6,75E+01	0,00E+00	2,79E-02	4,34E-01	3,02E-02	-3,99E+01
GWP-bio	[kg CO ₂ eq.]	4,84E-02	0,00E+00	6,40E-05	3,71E-03	-6,87E-04	2,03E-02
GWP-luluc	[kg CO ₂ eq.]	3,89E-02	0,00E+00	2,62E-04	4,68E-05	5,81E-05	-8,80E-03
ODP	[kg CFC 11 eq.]	1,01E-09	0,00E+00	3,68E-15	7,81E-12	6,36E-14	-1,95E-11
AP	[mol H ⁺ eq.]	2,60E-01	0,00E+00	4,17E-05	9,10E-04	1,51E-04	-1,36E-01
EP-fw	[kg PO ₄ eq.]	2,95E-04	0,00E+00	1,03E-07	1,74E-06	3,09E-06	-2,06E-05
EP-mar	[kg N eq.]	4,50E-02	0,00E+00	1,51E-05	2,18E-04	3,75E-05	-2,56E-02
EP-ter	[mol N eq.]	4,63E-01	0,00E+00	1,79E-04	2,28E-03	4,12E-04	-2,79E-01
POCP	[kg NMVOC eq.]	1,37E-01	0,00E+00	3,65E-05	5,82E-04	1,15E-04	-7,77E-02
ADP-mm ¹	[kg Sb eq.]	5,40E-04	0,00E+00	1,87E-09	6,55E-08	1,09E-09	-2,69E-04
ADP-fos ¹	[MJ]	9,56E+02	0,00E+00	3,85E-01	8,96E+00	4,31E-01	-4,98E+02
WDP ¹	[m ³]	1,50E+01	0,00E+00	3,42E-04	9,52E-02	1,37E-03	-2,26E+00
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-bio = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use						
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						

Build-In, without headbox, motor controlled

ADDITIONAL ENVIRONMENTAL EFFECTS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PM	[Disease incidence]	5,87E-06	0,00E+00	3,59E-10	7,66E-09	1,73E-09	-1,49E-06
IRP ²	[kBq U235 eq.]	1,10E+01	0,00E+00	1,08E-04	2,36E-01	6,70E-04	-7,01E+00
ETP-fw ¹	[CTUe]	2,99E+02	0,00E+00	2,76E-01	2,49E+00	3,16E-01	-1,24E+02
HTP-c ¹	[CTUh]	3,58E-08	0,00E+00	5,60E-12	1,32E-10	2,66E-11	-2,54E-08
HTP-nc ¹	[CTUh]	1,35E-06	0,00E+00	2,49E-10	2,16E-09	2,54E-09	-2,60E-07
SQP ¹	-	6,05E+02	0,00E+00	1,61E-01	3,50E+00	6,75E-02	-2,73E+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)						
Disclaimers	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						
	² This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.						

Build-In, without headbox, motor controlled

RESSOURCE CONSUMPTION PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3,05E+02	0,00E+00	2,80E-02	5,33E+00	5,29E-02	-1,35E+02
PERM	[MJ]	2,98E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	3,35E+02	0,00E+00	2,80E-02	5,33E+00	5,29E-02	-1,35E+02
PENRE	[MJ]	9,39E+02	0,00E+00	3,87E-01	8,96E+00	4,31E-01	-4,99E+02
PENRM	[MJ]	1,76E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	9,56E+02	0,00E+00	3,87E-01	8,96E+00	4,31E-01	-4,99E+02
SM	[kg]	2,63E+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
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	5,29E-01	0,00E+00	3,07E-05	4,32E-03	5,11E-05	-2,94E-01
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						

Build-In, without headbox, motor controlled

WASTE CATEGORIES AND OUTPUT FLOWS PER PRODUKT PER M ²							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2,10E-05	0,00E+00	1,20E-12	-6,90E-10	2,42E-11	-1,63E-08
NHWD	[kg]	1,04E+01	0,00E+00	5,89E-05	1,61E-02	1,20E+00	-6,98E+00
RWD	[kg]	5,78E-02	0,00E+00	7,24E-07	1,42E-03	5,01E-06	-3,16E-02
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	1,67E+00	0,00E+00	0,00E+00	9,12E+00	0,00E+00	0,00E+00
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+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						

Build-In, without headbox, motor controlled

BIOGENIC CARBON CONTENT PER PRODUKT PER M ²		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	kg C	0,00
Biogenic carbon content in accompanying packaging	kg C	0,96

Additional information

LCA interpretation

The results show that the production of primary aluminum and glass fibre and PVC fabric are the dominating processes in most of the environmental impact categories. Here the aluminum contribute between 16% and 85% to the total impacts. The production of primary aluminum makes up at least 41% of the total Climate Change impacts. The production of the glass fiber and PVC fabric contributes between 31% and 96% to the total impacts and at least 8% of the total Climate Change impacts.

The environmental impact of Blackout Systems varies based on window dimensions.

The datasets used to model the processes that contribute the most to the overall impacts are all considered to be "good/very good" in regard to their representativity. The overall uncertainty of the results is thus considered to be low.

Technical information on scenarios

Reference service life

RSL information	Unit
Reference service Life	25 Years
Declared product properties	Technical specifications and guidance can be obtained from direct contact to Fischer at +45 7015 4055 or fischer@fischer-international.dk
Design application parameters	
Assumed quality of work	
Outdoor environment	
Indoor environment	
Usage conditions	
Maintenance	

End of life (C1-C4)

Scenario information	65 mm headbox, motor	85 mm headbox, motor	85 mm headbox, crank	95 mm headbox, motor	105 mm headbox, motor	125 mm headbox, motor	Build-In, no headbox, motor	Unit
Collected separately	4,68	11,42	8,81	11,13	13,88	17,70	10,33	kg
Collected with mixed waste	0	0	0	0	0	0	0	kg
For reuse	0	0	0	0	0	0	0	kg
For recycling	4,03	10,77	8,16	10,48	13,23	17,05	9,68	kg
For energy recovery	0	0	0	0	0	0	0	kg
For final disposal	0,65	0,65	0,65	0,65	0,65	0,65	0,65	kg
Assumptions for scenario development	Assumed dismantled using hand tools							

Re-use, recovery and recycling potential (D)

Avoided production	65 mm headbox, motor	85 mm headbox, motor	85 mm headbox, crank	95 mm headbox, motor	105 mm headbox, motor	125 mm headbox, motor	Build-In, no headbox, motor	Unit
Plastic	0.04.	0.03.	0.04.	0.03.	0.03.	0.10.	0.02.	kg
Steel	0.89.	1.15.	0.86.	0.89.	1.04.	1.00.	0.86.	kg
Aluminium	2.39.	1.55.	1.59.	1.61.	2.95.	1.53.	0.76.	kg
Copper	0.05.	0.03.	0.00.	0.03.	0.03.	0.02.	0.02.	kg

The avoided production is only calculated on the virgin fraction of the type of input material in A1.

Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 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

Publisher	 www.epddanmark.dk
Programme operator	Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	Maria Preilev Hansen Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk
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General programme instructions

Version 2.0

www.epddanmark.dk

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