ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Product name:
Roofing Membranes

Producer:

"FOLIAREX" Spółka z ograniczoną odpowiedzialnością

Address:
ul. Osiedle Przemysłowe 22
Słubice, Polska

Issued on 16 January 2025
Valid until 16 January 2030

GENERAL INFORMATION

EPD OWNER

Manufacturer / EPD Holder	"FOLIAREX" Spółka z ograniczoną odpowiedzialnością
Address	ul. Osiedle Przemysłowe 22 Słubice, Polska
Contact details	Piotr Kraciński piotr.kracinski@foliarex.com.pl
Website	www.foliarex.com.pl

PRODUCT IDENTIFICATION

Product name	Roofing Membranes
Place(s) of production	Słubice, Polska

EPD INFORMATION

EPD Poland program operator	Multicert Sp. z o.o. Ul. Mydlarska 47, 04-690 Warszawa, Poland www.epd.org.pl, epd@epd.org.pl
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804+A2 serves as the core PCR.
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☒ External verification
EPD verifier	Daniel Wałach, Ph.D.
EPD number	EPD-P 02.01.2025
Registration:	EPD Polska www.epd.org.pl
Publishing date	16 January 2025
EPD valid until	16 January 2030
Reasons for performing LCA	B2B
Accountability	The EPD Holder is responsible for the information provided and evidence. Multicert Sp. z o.o. does not hold responsibility for the manufacturer information, life cycle assessment data nor supporting evidence.

EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

COMPANY INFORMATION

HOLDER OF THE EPD

"FOLIAREX" Spółka z ograniczoną odpowiedzialnością
ul. Osiedle Przemysłowe 22
Słubice, Polska

COMPANY PROFILE

Foliarex Sp. z o.o. is a Polish company with over 30 years of experience in the production of packaging films, construction films, horticultural films, and modern roofing membranes. The company operates three production facilities located in Drożdżyce, Stęszew, and Słubice, collectively processing tens of thousands of tons of polyethylene and polypropylene annually.

Foliarex prioritizes quality and innovation in its products, adhering to the requirements of the System 3 for the Assessment and Verification of Constancy of Performance (AVCP). By incorporating modern technologies, such as production material recycling lines, the company delivers solutions precisely tailored to the needs of clients in the construction industry.

With years of experience, a skilled workforce, and an extensive product portfolio, Foliarex is a trusted partner for projects involving films and roofing membranes. The company ensures professionalism, reliability, and the highest quality at every stage of cooperation.

PRODUCT INFORMATION

PRODUCT DESCRIPTION

Roofing Membranes
Foliarex roofing membranes are high-quality products with a wide range of applications, offering durability and a modern approach to roof protection. They are ideal for residential and industrial construction, providing effective protection against moisture and weather conditions in both new and renovated buildings. These membranes are manufactured using advanced production technologies, such as multi-layer lamination and precise quality control, ensuring their reliabilitya and share the following key features:

Durability and Weather Resistance:
The membranes demonstrate high resistance to changing weather conditions, including heavy rainfall, snow, UV radiation, and strong winds, ensuring a long lifespan.

Thermal Insulation and Vapor Permeability:
High thermal insulation parameters and excellent water vapor permeability (Sd coefficient ranging from 0.02 m to 0.16 m) protect against dampness and support optimal insulation.

Waterproof and UV Resistant:
The membranes are fully waterproof (class W1), meaning they resist water penetration under pressure, and are UV-resistant for 1 to 6 months.

Construction and Availability:
Products feature a multi-layer structure (2 to 4 layers) and are available in weights ranging from 95 g/m² to 230 g/m². Options with adhesive strips are available to facilitate installation.

Operating Temperature Range:
The membranes can be used in a wide temperature range (-30°C to 80°C), making them versatile for various climatic conditions.

Fire Reaction:
Fire reaction class E.

This EPD declaration applies to selected roofing membranes manufactured by Foliarex, grouped by their weight:

Low-Weight Membranes:	Medium-Weight Membranes:
1. STROTEX TOPLES – 95 g/m² 2. STROTEX BASIC – 115 g/m² 3. STROTEX EXPERT – 115 g/m²	4. STROTEX V – 135 g/m² 5. STROTEX-Q MEDIUM – 150 g/m² 6. STROTEX-Q SUPREME – 170 g/m²
High-Weight Membranes:	
7. STROTEX-Q EXTREME – 180 g/m² 8. STROTEX-Q NEXTREME – 200 g/m² 9. STROTEX-Q PERFORMANCE – 220 g/m² 10. STROTEX-Q UV PROTECT – 230 g/m².	

PRODUCT APPLICATION

Product Applications/Purpose:

- Insulation of pitched roofs;
- Protection against wind and water in *building* envelopes;
- Vapor control in roof and wall constructions;
- Applicable in new constructions and renovations;
- Suitable for use in both ventilated and unventilated roofs.

PRODUCT STANDARDS

The product complies with:

EN 13859-1:2010: Flexible sheets for waterproofing – Definitions and characteristics of underlay products – Part 1: Underlays for discontinuous roofing.

EN 13859-2:2010: Flexible sheets for waterproofing -- Definitions and characteristics of underlays -- Part 2: Underlays for walls.

ADDITIONAL TECHNICAL INFORMATION

Following are the essential characteristics and performance properties of the products:

Essential Characteristics				
No	Membrane type	Basis weight	Roll width	Roll length
		[g/m2]	[m]	[m]
1	STROTEX TOPLES	95 ± 10%	1,5 ± 0,5%	50 (-0/+2%)
2	STROTEX BASIC	115 ± 15%	1,5 ± 0,5%	50 (-0/+2%)
3	STROTEX EXPERT	115 ± 15%	1,5 ± 0,5%	50 (-0/+2%)
4	STROTEX V	135 ± 15%	1,5 ± 0,5%	50 (-0/+2%)
5	STROTEX-Q MEDIUM	150 ± 10%	1,5 ± 0,5%	50 (-0/+2%)
6	STROTEX-Q SUPREME	170 ± 15%	1,5 ± 0,5%	50 (-0/+2%)
7	STROTEX-Q EXTREME	180 ± 15%	1,5 ± 0,5%	50 (-0/+2%)
8	STROTEX-Q NEXTREME	200 +/- 10%	1,5 ± 0,5%	50 (-0/+2%)
9	STROTEX-Q PERFORMANCE	220 +/- 10%	1,5 ± 0,5%	50 (-0/+2%)
10	STROTEX-Q UV PROTECT	230 ± 5%	1,5 ± 0,5%	50 (-0/+2%)

Performance Properties									
No	Membrane type	Water Vapor Transmission	Water Tightness	Reaction to Fire	Tensile Strength Longitudinal	Tensile Strength Transverse	Tear Resistance Longitudinal	Tear Resistance Transverse	Application Temperature Range
		[(g/m2) /24h]	Class		[N/50mm]	[N/50mm]	[N]	[N]	[°C]
1	STROTEX TOPLES	>1700	W1	E	150 (+30/-30)	85 (+20/-20)	100 (+30/-30)	110 (+30/-30)	-30 / +80
2	STROTEX BASIC	>1700	W1	E	190 (+50/-50)	100 (+40/-40)	120 (+50/-50)	130 (+40/-40)	-30 / +80
3	STROTEX EXPERT	>1700	W1	E	190 (+50/-50)	100 (+40/-40)	120 (+50/-50)	130 (+50/-50)	-30 / +80
4	STROTEX V	>1700	W1	E	230 (+60/-60)	120 (+40/-40)	130 (+50/-50)	140 (+50/-50)	-30 / +80
5	STROTEX-Q MEDIUM	>1700	W1	E	240 (+60/-60)	130 (+40/-40)	160 (+50/-50)	170 (+50/-50)	-30 / +80
6	STROTEX-Q SUPREME	>1700	W1	E	270 (+60/-60)	140 (+35/-35)	170 (+60/-60)	180 (+60/-60)	-30 / +80
7	STROTEX-Q EXTREME	>1700	W1	E	280 (+60/-60)	150 (+40/-40)	180 (+60/-60)	190 (+60/-60)	-30 / +80
8	STROTEX-Q NEXTREME	>1700	W1	E	300 (+60/-60)	160 (+50/-50)	210 (+60/-60)	210 (+60/-60)	-30 / +80
9	STROTEX-Q PERFORMANCE	>1700	W1	E	320 (+60/-60)	180 (+50/-50)	250 (+60/-60)	250 (+60/-60)	-30 / +80
10	STROTEX-Q UV PROTECT	>1700	W1	E	480 (+50/-50)	270 (+40/-40)	230 (+60/-60)	230 (+60/-60)	-30 / +80

Further information can be found at www.foliarex.com.pl

PRODUCT RAW MATERIAL COMPOSITION

Material / Roofing Membranes	Polypropylene Granulate (PP)	Limestone Powder	Polyethylene Linear Low Density Granulate (LLDPE)	Additives (Elastomer, Pigment, UV Stabilizer, Antioxidant)
STROTEX TOPLES – 95g/m²	75.85%	17.40%	2.90%	3.85%
STROTEX BASIC – 115g/m²	79.21%	14.64%	2.50%	3.65%
STROTEX EXPERT – 115g/m²	79.21%	14.64%	2.50%	3.65%
STROTEX V – 135g/m²	82.03%	12.42%	2.07%	3.48%
STROTEX-Q MEDIUM – 150g/m²	82.19%	12.23%	2.03%	3.55%
STROTEX-Q SUPREME – 170g/m²	85.44%	9.89%	1.65%	3.02%
STROTEX-Q EXTREME – 180g/m²	86.13%	9.33%	1.55%	2.99%
STROTEX-Q NEXTREME – 200g/m²	87.24%	8.40%	1.40%	2.96%
STROTEX-Q PERFORMANCE – 220g/m²	88.26%	7.64%	1.27%	2.83%
STROTEX-Q UV PROTECT – 230g/m²	88.74%	7.31%	1.22%	2.73%

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0.1% (1000 ppm).

PRODUCT LIFE-CYCLE

RAW MATERIALS ACQUISITION TRANSPORT (A1, A2)

A1-A2 Raw Materials Supply and Transport: Modules A1 and A2 encompass the extraction and processing of raw materials. Transportation, covered under Module A2, involves truck transport and relies on Polish and European average data for fuel consumption. The average transport distances of each materials were calculated based on locations of all suppliers and allocated as per the declared unit.

MANUFACTURING (A3)

Roofing membranes are manufactured on automated production lines.

1. Material Preparation:

Preparing components such as polymer granulate and other additives required for extrusion processes.

2. Extrusion of Inner (Functional) and Bottom Layers of the membrane:

The films for the functional inner layer and bottom layer are extruded separately using dedicated extrusion lines. The extrusion process includes:

a. Mixing and Feeding: Granulates and additives are thoroughly mixed and fed into the extruder.

b. Melting and Forming: Inside the extruder, the materials are melted to a plasticized state.

- Inner Layer (Functional Film): After extrusion, the melted material is formed into a highly vapor-permeable yet waterproof film, cooled, and shaped using stretching rollers.

- Bottom Layer (Spunbond Fabric): Melted material is extruded into fine fibers, which are then subjected to calendaring at high temperatures and pressure to form a durable nonwoven spunbond layer.

3. Creating the Top Layer and Combining the layers into final STROTEX membrane:

The Top Layer is formed by melting polymer granulates in the extruder and shaping them into fine fibers. This layer is then combined with the inner and bottom layers and passed through calendering rollers to form the final STROTEX membrane.

4. Cutting:

The membrane is cut into specified widths and lengths using precise cutting blades to meet production requirements.

5. Packaging:

The finished membranes are rolled, wrapped in protective polyethylene film, and stacked on wooden pallets for storage and transportation.

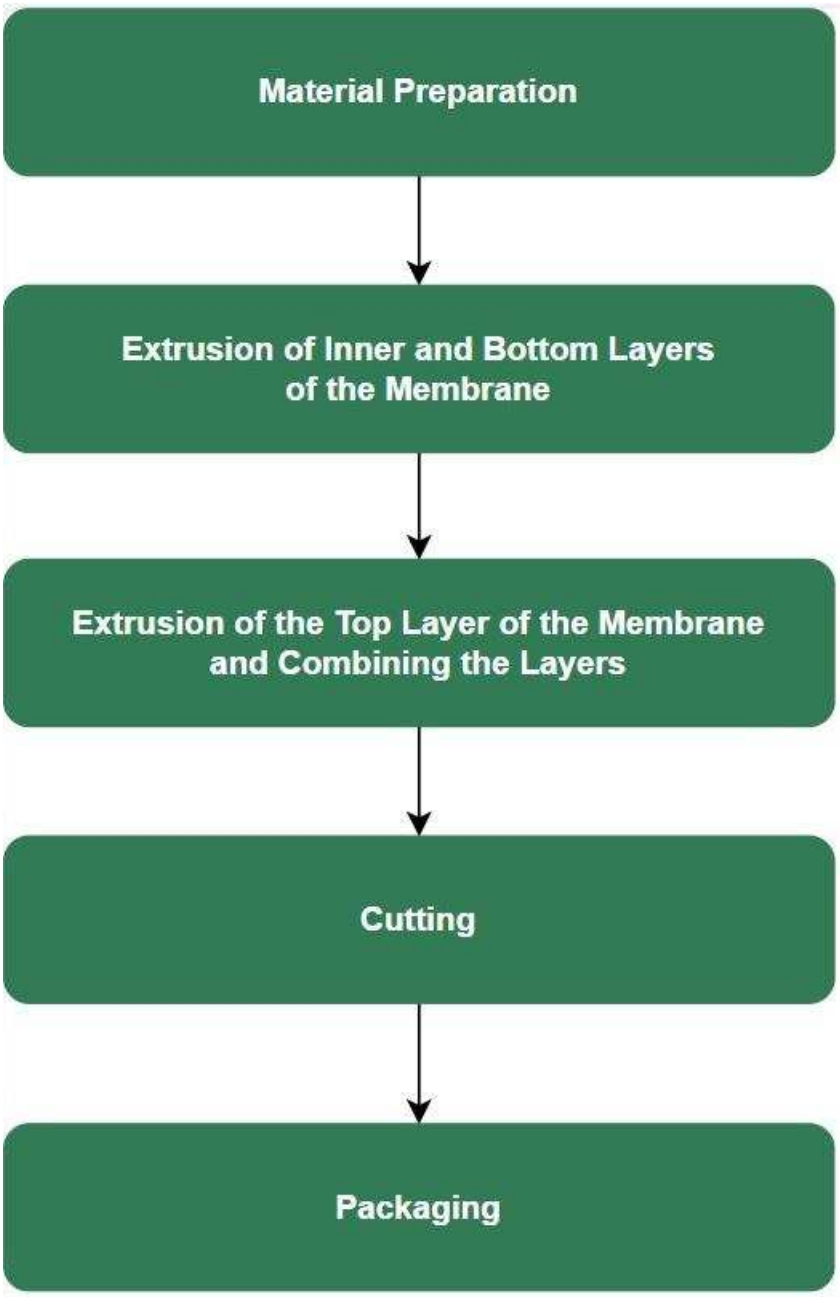

Figure 1 – Diagram of the manufacturing process

END OF LIFE (C1, C2, C3, C4, D)

At the end-of-life, during the deconstruction stage, 100% of the product is expected to be manually removed as separated construction waste designated for recycling, with no energy or material usage accounted for in this phase (C1). The entire product is assumed to be transported to the nearest recycling facility (C2). The waste is processed through stages like washing, shredding, melting, and pelletizing to produce granulate (C3). None of the waste is assumed to be directed to landfills (C4). Beyond the system's boundaries, 100% of the virgin granulate are replaced by recycled granulate, reducing the need for primary material production (D).

LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	2023 year

DECLARED AND FUNCTIONAL UNIT

Declared unit	1 m^2
Mass per declared unit:	
STROTEX TOPLES – 95g/m^2	0.095 kg
STROTEX BASIC – 115g/m^2	0.115 kg
STROTEX EXPERT – 115g/m^2	0.115 kg
STROTEX V – 135g/m^2	0.135 kg
STROTEX-Q MEDIUM – 150g/m^2	0.150 kg
STROTEX-Q SUPREME – 170g/m^2	0.170 kg
STROTEX-Q EXTREME – 180g/m^2	0.180 kg
STROTEX-Q NEXTREME – 200g/m^2	0.200 kg
STROTEX-Q PERFORMANCE – 220g/m^2	0.220 kg
STROTEX-Q UV PROTECT – 230g/m^2	0.230 kg

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	-
Biogenic carbon content in packaging*, kg C	-

*Pallets (biogenic carbon carrier) are also used for packaging but is considered to be reused and are therefore not included.

SYSTEM BOUNDARY

The scope of the EPD is Cadle to Gate with modules C1-C4 and D. The modules A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), C1 (Deconstruction/Demolition), C2 (Waste Transport), C3 (Waste Processing), C4 (Waste Disposal) and D are included in the study.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries
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
Raw materials`	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse / Recycling

Modules not declared = MND. Modules not relevant = MNR.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the *EN 15804:2012+A2:2019*. The study does not exclude any hazardous materials or substances.

The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes which data are available for are included in the calculation. There is no neglected unit process more than 1% of total mass and energy flows. The total neglected input and output flows do also not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy, and water use related to company management and sales activities are excluded.

ESTIMATES AND ASSUMPTIONS

This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs. All estimations and assumptions are given below:

- **Module (A1-A3):** All relevant data declared by FOLIAREX have been included. The average transport distances of each material were calculated based on the locations of all suppliers and allocated as per the declared unit. Energy resources were considered and accounted for as disclosed. Additionally, on-site waste management has been addressed.
- **Module (C1):** Roofing membranes at the end of their service life are dismantled without requiring additional equipment or energy.
- **Module (C2):** 100 kms of distance is taken as an average for the transportation of waste to the recycling facility.
- **Module (C3):** It is presumed that 100% of the products are collected and sent to recycling plants, where they undergo processes like washing, shredding, melting, pelletizing to produce granulate.
- **Module (C4):** It is presumed that no products (0%) are sent directly to landfills.
- **Module (D):** The advantages are attributed to module D, which pertains to materials and energy that leave the system during modules C. These outputs can then serve as substitutes for primary materials or energy sources that would otherwise need to be generated.

ALLOCATION

The allocation is carried out in accordance with the provisions of EN 15804. The information provided for the year 2023 includes all Roofing Membranes produced at FOLIAREX 's facilities during that year. The allocation included the following data: LPG, electricity, waste, and packaging. For the listed inputs and outputs, the data was compiled by the manufacturer collectively for the entire factory. Due to the similarity in the production processes of other products, a mass allocation approach was used to inventory data for individual products.

DATA QUALITY

For foreground data, the LCA study relies on high-quality primary data gathered by FOLIAREX Sp. z o.o. All relevant background data sets have been sourced from the LCA for Experts, version 10.9.0.20. – software's database Sphera Managed LCA Content Databases v2024.2 and from available EPD.

GEOGRAPHIC REPRESENTATIVENESS

The specified land or region where the product system is manufactured and managed is Poland, Europe.

ENVIRONMENTAL IMPACT DATA

FOR STROTEX TOPLES – 95 g/m²

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+e	3.45E-04	MND	MND	MND	0.00E+00	1.24E-06	4.24E-05	0.00E+00	-4.44E-04
Climate change – total	kg CO2e	2.27E-01	MND	MND	MND	0.00E+00	8.08E-04	3.12E-02	0.00E+00	-1.24E-01
Climate change – fossil	kg CO2e	2.26E-01	MND	MND	MND	0.00E+00	8.15E-04	3.10E-02	0.00E+00	-1.24E-01
Climate change – biogenic	kg CO2e	4.43E-04	MND	MND	MND	0.00E+00	-2.07E-05	2.09E-04	0.00E+00	2.11E-04
Climate change – LULUC	kg CO2e	2.71E-04	MND	MND	MND	0.00E+00	1.35E-05	5.28E-06	0.00E+00	4.95E-06
Abiotic depletion of fossil resources	MJ	6.42E+00	MND	MND	MND	0.00E+00	1.05E-02	4.35E-01	0.00E+00	-6.48E+00
Eutrophication, aquatic freshwater	kg PO4e	3.94E-07	MND	MND	MND	0.00E+00	3.43E-09	3.08E-07	0.00E+00	-4.62E-06
Eutrophication, aquatic marine	kg Ne	9.53E-05	MND	MND	MND	0.00E+00	4.77E-07	1.12E-05	0.00E+00	-9.78E-05
Eutrophication, terrestrial	mol Ne	1.02E-03	MND	MND	MND	0.00E+00	5.60E-06	1.18E-04	0.00E+00	-1.06E-03
Abiotic depletion, minerals & metals	kg Sbe	9.82E-04	MND	MND	MND	0.00E+00	6.84E-11	7.09E-09	0.00E+00	-2.12E-09
Ozone depletion	kg CFC11e	4.19E-10	MND	MND	MND	0.00E+00	8.09E-17	4.09E-13	0.00E+00	-4.77E-13
Photochemical ozone formation	kg NMVOCe	3.73E-04	MND	MND	MND	0.00E+00	1.16E-06	3.00E-05	0.00E+00	-4.94E-04
Water use	m3e depr.	1.10E-02	MND	MND	MND	0.00E+00	1.20E-05	6.15E-03	0.00E+00	-1.36E-01

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Eco-toxicity (freshwater)	CTUe	3.19E+00	MND	MND	MND	0.00E+00	7.71E-03	1.34E-01	0.00E+00	-1.15E+00
Human toxicity, cancer effects	CTUh	7.56E-11	MND	MND	MND	0.00E+00	1.55E-13	7.08E-12	0.00E+00	-1.42E-11
Human toxicity, non-cancer effects	CTUh	2.80E-09	MND	MND	MND	0.00E+00	6.89E-12	1.50E-10	0.00E+00	-4.51E-10
Ionizing radiation, human health	kBq U235e	4.96E-03	MND	MND	MND	0.00E+00	1.89E-06	9.91E-03	0.00E+00	4.72E-03
Particulate matter	Incidence	3.14E-09	MND	MND	MND	0.00E+00	1.00E-11	3.62E-10	0.00E+00	-5.49E-09

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Ionizing radiation, human health. 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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Total use of non-renewable PER	MJ	6.30E+00	MND	MND	MND	0.00E+00	1.05E-02	4.35E-01	0.00E+00	-6.48E+00
Total use of renewable PER	MJ	5.57E-01	MND	MND	MND	0.00E+00	8.86E-04	2.74E-01	0.00E+00	1.72E-01
Use of net fresh water	m_3	7.31E-04	MND	MND	MND	0.00E+00	9.95E-07	2.37E-04	0.00E+00	-3.08E-03
Use of renewable secondary fuels	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary materials	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.50E-02

PER abbreviation stands for primary energy resources
MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	2.56E-09	MND	MND	MND	0.00E+00	3.39E-13	1.37E-08	0.00E+00	1.37E-08
Radioactive waste disposed	kg	3.78E-05	MND	MND	MND	0.00E+00	1.36E-08	6.02E-05	0.00E+00	6.02E-05
Non-hazardous waste	kg	2.56E-03	MND	MND	MND	0.00E+00	1.63E-06	1.20E-02	0.00E+00	1.20E-02

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	6.26E-03	MND	MND	MND	0.00E+00	0.00E+00	9.50E-02	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

ENVIRONMENTAL IMPACT DATA

FOR STROTEX BASIC – 115 g/m²

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+e	4.33E-04	MND	MND	MND	0.00E+00	1.51E-06	5.14E-05	0.00E+00	-5.37E-04
Climate change – total	kg CO2e	2.87E-01	MND	MND	MND	0.00E+00	9.78E-04	3.77E-02	0.00E+00	-1.50E-01
Climate change – fossil	kg CO2e	2.86E-01	MND	MND	MND	0.00E+00	9.87E-04	3.75E-02	0.00E+00	-1.50E-01
Climate change – biogenic	kg CO2e	6.40E-04	MND	MND	MND	0.00E+00	-2.50E-05	2.53E-04	0.00E+00	2.55E-04
Climate change – LULUC	kg CO2e	3.20E-04	MND	MND	MND	0.00E+00	1.63E-05	6.39E-06	0.00E+00	5.99E-06
Abiotic depletion of fossil resources	MJ	8.07E+00	MND	MND	MND	0.00E+00	1.27E-02	5.27E-01	0.00E+00	-7.84E+00
Eutrophication, aquatic freshwater	kg PO4e	5.52E-07	MND	MND	MND	0.00E+00	4.15E-09	3.73E-07	0.00E+00	-5.59E-06
Eutrophication, aquatic marine	kg Ne	1.18E-04	MND	MND	MND	0.00E+00	5.78E-07	1.36E-05	0.00E+00	-1.18E-04
Eutrophication, terrestrial	mol Ne	1.27E-03	MND	MND	MND	0.00E+00	6.78E-06	1.43E-04	0.00E+00	-1.28E-03
Abiotic depletion, minerals & metals	kg Sbe	1.34E-03	MND	MND	MND	0.00E+00	8.28E-11	8.59E-09	0.00E+00	-2.57E-09
Ozone depletion	kg CFC11e	5.70E-10	MND	MND	MND	0.00E+00	9.80E-17	4.95E-13	0.00E+00	-5.77E-13
Photochemical ozone formation	kg NMVOCe	4.65E-04	MND	MND	MND	0.00E+00	1.41E-06	3.63E-05	0.00E+00	-5.98E-04
Water use	m3e depr.	1.48E-02	MND	MND	MND	0.00E+00	1.45E-05	7.44E-03	0.00E+00	-1.65E-01

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Eco-toxicity (freshwater)	CTUe	3.99E+00	MND	MND	MND	0.00E+00	9.34E-03	1.63E-01	0.00E+00	-1.39E+00
Human toxicity, cancer effects	CTUh	9.52E-11	MND	MND	MND	0.00E+00	1.87E-13	8.58E-12	0.00E+00	-1.72E-11
Human toxicity, non-cancer effects	CTUh	3.51E-09	MND	MND	MND	0.00E+00	8.34E-12	1.82E-10	0.00E+00	-5.46E-10
Ionizing radiation, human health	kBq U235e	8.17E-03	MND	MND	MND	0.00E+00	2.29E-06	1.20E-02	0.00E+00	5.72E-03
Particulate matter	Incidence	3.88E-09	MND	MND	MND	0.00E+00	1.21E-11	4.38E-10	0.00E+00	-6.64E-09

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Ionizing radiation, human health. 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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Total use of non-renewable PER	MJ	7.91E+00	MND	MND	MND	0.00E+00	1.27E-02	5.27E-01	0.00E+00	-7.84E+00
Total use of renewable PER	MJ	7.37E-01	MND	MND	MND	0.00E+00	1.07E-03	3.32E-01	0.00E+00	2.09E-01
Use of net fresh water	m_3	9.54E-04	MND	MND	MND	0.00E+00	1.20E-06	2.87E-04	0.00E+00	-3.73E-03
Use of renewable secondary fuels	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary materials	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.15E-01

PER abbreviation stands for primary energy resources
MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	5.88E-09	MND	MND	MND	0.00E+00	4.11E-13	1.66E-08	0.00E+00	1.66E-08
Radioactive waste disposed	kg	5.91E-05	MND	MND	MND	0.00E+00	1.64E-08	7.29E-05	0.00E+00	7.29E-05
Non-hazardous waste	kg	5.65E-03	MND	MND	MND	0.00E+00	1.97E-06	1.45E-02	0.00E+00	1.45E-02

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	2.74E-02	MND	MND	MND	0.00E+00	0.00E+00	1.15E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

ENVIRONMENTAL IMPACT DATA

FOR STROTEX EXPERT – 115 g/m²

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+e	4.33E-04	MND	MND	MND	0.00E+00	1.51E-06	5.14E-05	0.00E+00	-5.37E-04
Climate change – total	kg CO2e	2.87E-01	MND	MND	MND	0.00E+00	9.78E-04	3.77E-02	0.00E+00	-1.50E-01
Climate change – fossil	kg CO2e	2.86E-01	MND	MND	MND	0.00E+00	9.87E-04	3.75E-02	0.00E+00	-1.50E-01
Climate change – biogenic	kg CO2e	6.38E-04	MND	MND	MND	0.00E+00	-2.50E-05	2.53E-04	0.00E+00	2.55E-04
Climate change – LULUC	kg CO2e	3.20E-04	MND	MND	MND	0.00E+00	1.63E-05	6.39E-06	0.00E+00	5.99E-06
Abiotic depletion of fossil resources	MJ	8.07E+00	MND	MND	MND	0.00E+00	1.27E-02	5.27E-01	0.00E+00	-7.84E+00
Eutrophication, aquatic freshwater	kg PO4e	5.52E-07	MND	MND	MND	0.00E+00	4.15E-09	3.73E-07	0.00E+00	-5.59E-06
Eutrophication, aquatic marine	kg Ne	1.18E-04	MND	MND	MND	0.00E+00	5.78E-07	1.36E-05	0.00E+00	-1.18E-04
Eutrophication, terrestrial	mol Ne	1.27E-03	MND	MND	MND	0.00E+00	6.78E-06	1.43E-04	0.00E+00	-1.28E-03
Abiotic depletion, minerals & metals	kg Sbe	1.34E-03	MND	MND	MND	0.00E+00	8.28E-11	8.59E-09	0.00E+00	-2.57E-09
Ozone depletion	kg CFC11e	5.70E-10	MND	MND	MND	0.00E+00	9.80E-17	4.95E-13	0.00E+00	-5.77E-13
Photochemical ozone formation	kg NMVOCe	4.65E-04	MND	MND	MND	0.00E+00	1.41E-06	3.63E-05	0.00E+00	-5.98E-04
Water use	m3e depr.	1.48E-02	MND	MND	MND	0.00E+00	1.45E-05	7.44E-03	0.00E+00	-1.65E-01

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Eco-toxicity (freshwater)	CTUe	3.99E+00	MND	MND	MND	0.00E+00	9.34E-03	1.63E-01	0.00E+00	-1.39E+00
Human toxicity, cancer effects	CTUh	9.52E-11	MND	MND	MND	0.00E+00	1.87E-13	8.58E-12	0.00E+00	-1.72E-11
Human toxicity, non-cancer effects	CTUh	3.51E-09	MND	MND	MND	0.00E+00	8.34E-12	1.82E-10	0.00E+00	-5.46E-10
Ionizing radiation, human health	kBq U235e	8.17E-03	MND	MND	MND	0.00E+00	2.29E-06	1.20E-02	0.00E+00	5.72E-03
Particulate matter	Incidence	3.88E-09	MND	MND	MND	0.00E+00	1.21E-11	4.38E-10	0.00E+00	-6.64E-09

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Ionizing radiation, human health. 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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Total use of non-renewable PER	MJ	7.91E+00	MND	MND	MND	0.00E+00	1.27E-02	5.27E-01	0.00E+00	-7.84E+00
Total use of renewable PER	MJ	7.37E-01	MND	MND	MND	0.00E+00	1.07E-03	3.32E-01	0.00E+00	2.09E-01
Use of net fresh water	m_3	9.54E-04	MND	MND	MND	0.00E+00	1.20E-06	2.87E-04	0.00E+00	-3.73E-03
Use of renewable secondary fuels	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary materials	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.15E-01

PER abbreviation stands for primary energy resources
MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	5.89E-09	MND	MND	MND	0.00E+00	4.11E-13	1.66E-08	0.00E+00	1.66E-08
Radioactive waste disposed	kg	5.91E-05	MND	MND	MND	0.00E+00	1.64E-08	7.29E-05	0.00E+00	7.29E-05
Non-hazardous waste	kg	5.65E-03	MND	MND	MND	0.00E+00	1.97E-06	1.45E-02	0.00E+00	1.45E-02

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	2.74E-02	MND	MND	MND	0.00E+00	0.00E+00	1.15E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

ENVIRONMENTAL IMPACT DATA

FOR STROTEX V – 135 g/m²

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+e	5.22E-04	MND	MND	MND	0.00E+00	1.77E-06	6.03E-05	0.00E+00	-6.31E-04
Climate change – total	kg CO2e	3.48E-01	MND	MND	MND	0.00E+00	1.15E-03	4.43E-02	0.00E+00	-1.76E-01
Climate change – fossil	kg CO2e	3.47E-01	MND	MND	MND	0.00E+00	1.16E-03	4.40E-02	0.00E+00	-1.76E-01
Climate change – biogenic	kg CO2e	8.33E-04	MND	MND	MND	0.00E+00	-2.94E-05	2.97E-04	0.00E+00	2.99E-04
Climate change – LULUC	kg CO2e	3.68E-04	MND	MND	MND	0.00E+00	1.92E-05	7.50E-06	0.00E+00	7.04E-06
Abiotic depletion of fossil resources	MJ	9.77E+00	MND	MND	MND	0.00E+00	1.49E-02	6.19E-01	0.00E+00	-9.20E+00
Eutrophication, aquatic freshwater	kg PO4e	7.14E-07	MND	MND	MND	0.00E+00	4.87E-09	4.38E-07	0.00E+00	-6.56E-06
Eutrophication, aquatic marine	kg Ne	1.41E-04	MND	MND	MND	0.00E+00	6.78E-07	1.60E-05	0.00E+00	-1.39E-04
Eutrophication, terrestrial	mol Ne	1.51E-03	MND	MND	MND	0.00E+00	7.96E-06	1.68E-04	0.00E+00	-1.50E-03
Abiotic depletion, minerals & metals	kg Sbe	1.70E-03	MND	MND	MND	0.00E+00	9.72E-11	1.01E-08	0.00E+00	-3.01E-09
Ozone depletion	kg CFC11e	7.22E-10	MND	MND	MND	0.00E+00	1.15E-16	5.82E-13	0.00E+00	-6.77E-13
Photochemical ozone formation	kg NMVOCe	5.59E-04	MND	MND	MND	0.00E+00	1.65E-06	4.26E-05	0.00E+00	-7.02E-04
Water use	m3e depr.	1.87E-02	MND	MND	MND	0.00E+00	1.70E-05	8.74E-03	0.00E+00	-1.94E-01

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Eco-toxicity (freshwater)	CTUe	4.81E+00	MND	MND	MND	0.00E+00	1.10E-02	1.91E-01	0.00E+00	-1.63E+00
Human toxicity, cancer effects	CTUh	1.15E-10	MND	MND	MND	0.00E+00	2.20E-13	1.01E-11	0.00E+00	-2.02E-11
Human toxicity, non-cancer effects	CTUh	4.25E-09	MND	MND	MND	0.00E+00	9.79E-12	2.13E-10	0.00E+00	-6.41E-10
Ionizing radiation, human health	kBq U235e	1.15E-02	MND	MND	MND	0.00E+00	2.69E-06	1.41E-02	0.00E+00	6.71E-03
Particulate matter	Incidence	4.64E-09	MND	MND	MND	0.00E+00	1.42E-11	5.14E-10	0.00E+00	-7.80E-09

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Ionizing radiation, human health. 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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Total use of non-renewable PER	MJ	9.56E+00	MND	MND	MND	0.00E+00	1.49E-02	6.19E-01	0.00E+00	-9.20E+00
Total use of renewable PER	MJ	9.21E-01	MND	MND	MND	0.00E+00	1.26E-03	3.89E-01	0.00E+00	2.45E-01
Use of net fresh water	m_3	1.18E-03	MND	MND	MND	0.00E+00	1.41E-06	3.37E-04	0.00E+00	-4.38E-03
Use of renewable secondary fuels	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary materials	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.35E-01

PER abbreviation stands for primary energy resources
MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	9.37E-09	MND	MND	MND	0.00E+00	4.82E-13	1.95E-08	0.00E+00	1.95E-08
Radioactive waste disposed	kg	8.09E-05	MND	MND	MND	0.00E+00	1.93E-08	8.56E-05	0.00E+00	8.56E-05
Non-hazardous waste	kg	8.81E-03	MND	MND	MND	0.00E+00	2.32E-06	1.70E-02	0.00E+00	1.70E-02

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	4.90E-02	MND	MND	MND	0.00E+00	0.00E+00	1.35E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

ENVIRONMENTAL IMPACT DATA

FOR STROTEX-Q MEDIUM – 150 g/m²

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+e	5.95E-04	MND	MND	MND	0.00E+00	1.97E-06	6.70E-05	0.00E+00	-7.01E-04
Climate change – total	kg CO2e	3.96E-01	MND	MND	MND	0.00E+00	1.28E-03	4.92E-02	0.00E+00	-1.95E-01
Climate change – fossil	kg CO2e	3.94E-01	MND	MND	MND	0.00E+00	1.29E-03	4.89E-02	0.00E+00	-1.96E-01
Climate change – biogenic	kg CO2e	1.01E-03	MND	MND	MND	0.00E+00	-3.27E-05	3.30E-04	0.00E+00	3.33E-04
Climate change – LULUC	kg CO2e	3.92E-04	MND	MND	MND	0.00E+00	2.13E-05	8.33E-06	0.00E+00	7.82E-06
Abiotic depletion of fossil resources	MJ	1.11E+01	MND	MND	MND	0.00E+00	1.66E-02	6.88E-01	0.00E+00	-1.02E+01
Eutrophication, aquatic freshwater	kg PO4e	8.29E-07	MND	MND	MND	0.00E+00	5.41E-09	4.86E-07	0.00E+00	-7.29E-06
Eutrophication, aquatic marine	kg Ne	1.61E-04	MND	MND	MND	0.00E+00	7.54E-07	1.77E-05	0.00E+00	-1.54E-04
Eutrophication, terrestrial	mol Ne	1.73E-03	MND	MND	MND	0.00E+00	8.84E-06	1.87E-04	0.00E+00	-1.67E-03
Abiotic depletion, minerals & metals	kg Sbe	1.88E-03	MND	MND	MND	0.00E+00	1.08E-10	1.12E-08	0.00E+00	-3.35E-09
Ozone depletion	kg CFC11e	7.98E-10	MND	MND	MND	0.00E+00	1.28E-16	6.46E-13	0.00E+00	-7.53E-13
Photochemical ozone formation	kg NMVOCe	6.33E-04	MND	MND	MND	0.00E+00	1.84E-06	4.74E-05	0.00E+00	-7.80E-04
Water use	m3e depr.	2.20E-02	MND	MND	MND	0.00E+00	1.89E-05	9.71E-03	0.00E+00	-2.15E-01

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Eco-toxicity (freshwater)	CTUe	5.44E+00	MND	MND	MND	0.00E+00	1.22E-02	2.12E-01	0.00E+00	-1.81E+00
Human toxicity, cancer effects	CTUh	1.31E-10	MND	MND	MND	0.00E+00	2.44E-13	1.12E-11	0.00E+00	-2.25E-11
Human toxicity, non-cancer effects	CTUh	4.79E-09	MND	MND	MND	0.00E+00	1.09E-11	2.37E-10	0.00E+00	-7.13E-10
Ionizing radiation, human health	kBq U235e	1.41E-02	MND	MND	MND	0.00E+00	2.99E-06	1.56E-02	0.00E+00	7.46E-03
Particulate matter	Incidence	5.27E-09	MND	MND	MND	0.00E+00	1.58E-11	5.72E-10	0.00E+00	-8.66E-09

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Ionizing radiation, human health. 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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Total use of non-renewable PER	MJ	1.08E+01	MND	MND	MND	0.00E+00	1.66E-02	6.88E-01	0.00E+00	-1.02E+01
Total use of renewable PER	MJ	1.06E+00	MND	MND	MND	0.00E+00	1.40E-03	4.32E-01	0.00E+00	2.72E-01
Use of net fresh water	m_3	1.36E-03	MND	MND	MND	0.00E+00	1.57E-06	3.74E-04	0.00E+00	-4.87E-03
Use of renewable secondary fuels	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary materials	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E-01

PER abbreviation stands for primary energy resources
MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	1.19E-08	MND	MND	MND	0.00E+00	5.36E-13	2.16E-08	0.00E+00	2.16E-08
Radioactive waste disposed	kg	9.88E-05	MND	MND	MND	0.00E+00	2.14E-08	9.51E-05	0.00E+00	9.51E-05
Non-hazardous waste	kg	1.12E-02	MND	MND	MND	0.00E+00	2.57E-06	1.89E-02	0.00E+00	1.89E-02

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	6.49E-02	MND	MND	MND	0.00E+00	0.00E+00	1.50E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

ENVIRONMENTAL IMPACT DATA

FOR STROTEX-Q SUPREME – 170 g/m²

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+e	6.73E-04	MND	MND	MND	0.00E+00	2.23E-06	7.59E-05	0.00E+00	-7.94E-04
Climate change – total	kg CO2e	4.54E-01	MND	MND	MND	0.00E+00	1.45E-03	5.58E-02	0.00E+00	-2.21E-01
Climate change – fossil	kg CO2e	4.53E-01	MND	MND	MND	0.00E+00	1.46E-03	5.54E-02	0.00E+00	-2.22E-01
Climate change – biogenic	kg CO2e	1.16E-03	MND	MND	MND	0.00E+00	-3.70E-05	3.74E-04	0.00E+00	3.77E-04
Climate change – LULUC	kg CO2e	4.51E-04	MND	MND	MND	0.00E+00	2.42E-05	9.44E-06	0.00E+00	8.86E-06
Abiotic depletion of fossil resources	MJ	1.27E+01	MND	MND	MND	0.00E+00	1.88E-02	7.79E-01	0.00E+00	-1.16E+01
Eutrophication, aquatic freshwater	kg PO4e	9.78E-07	MND	MND	MND	0.00E+00	6.14E-09	5.51E-07	0.00E+00	-8.27E-06
Eutrophication, aquatic marine	kg Ne	1.82E-04	MND	MND	MND	0.00E+00	8.54E-07	2.01E-05	0.00E+00	-1.75E-04
Eutrophication, terrestrial	mol Ne	1.95E-03	MND	MND	MND	0.00E+00	1.00E-05	2.12E-04	0.00E+00	-1.89E-03
Abiotic depletion, minerals & metals	kg Sbe	1.96E-03	MND	MND	MND	0.00E+00	1.22E-10	1.27E-08	0.00E+00	-3.79E-09
Ozone depletion	kg CFC11e	8.37E-10	MND	MND	MND	0.00E+00	1.45E-16	7.32E-13	0.00E+00	-8.53E-13
Photochemical ozone formation	kg NMVOCe	7.20E-04	MND	MND	MND	0.00E+00	2.08E-06	5.37E-05	0.00E+00	-8.84E-04
Water use	m3e depr.	2.54E-02	MND	MND	MND	0.00E+00	2.14E-05	1.10E-02	0.00E+00	-2.44E-01

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Eco-toxicity (freshwater)	CTUe	6.26E+00	MND	MND	MND	0.00E+00	1.38E-02	2.41E-01	0.00E+00	-2.05E+00
Human toxicity, cancer effects	CTUh	1.51E-10	MND	MND	MND	0.00E+00	2.77E-13	1.27E-11	0.00E+00	-2.55E-11
Human toxicity, non-cancer effects	CTUh	5.53E-09	MND	MND	MND	0.00E+00	1.23E-11	2.69E-10	0.00E+00	-8.08E-10
Ionizing radiation, human health	kBq U235e	1.72E-02	MND	MND	MND	0.00E+00	3.39E-06	1.77E-02	0.00E+00	8.46E-03
Particulate matter	Incidence	5.97E-09	MND	MND	MND	0.00E+00	1.79E-11	6.48E-10	0.00E+00	-9.82E-09

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Ionizing radiation, human health. 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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Total use of non-renewable PER	MJ	1.25E+01	MND	MND	MND	0.00E+00	1.88E-02	7.79E-01	0.00E+00	-1.16E+01
Total use of renewable PER	MJ	1.24E+00	MND	MND	MND	0.00E+00	1.59E-03	4.90E-01	0.00E+00	3.09E-01
Use of net fresh water	m_3	1.58E-03	MND	MND	MND	0.00E+00	1.78E-06	4.24E-04	0.00E+00	-5.52E-03
Use of renewable secondary fuels	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary materials	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-01

PER abbreviation stands for primary energy resources
MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	1.54E-08	MND	MND	MND	0.00E+00	6.07E-13	2.45E-08	0.00E+00	2.45E-08
Radioactive waste disposed	kg	1.19E-04	MND	MND	MND	0.00E+00	2.42E-08	1.08E-04	0.00E+00	1.08E-04
Non-hazardous waste	kg	1.43E-02	MND	MND	MND	0.00E+00	2.92E-06	2.14E-02	0.00E+00	2.14E-02

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	8.64E-02	MND	MND	MND	0.00E+00	0.00E+00	1.70E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

ENVIRONMENTAL IMPACT DATA

FOR STROTEX-Q EXTREME – 180 g/m²

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+e	7.17E-04	MND	MND	MND	0.000E+00	2.36E-06	8.04E-05	0.000E+00	-8.41E-04
Climate change – total	kg CO2e	4.84E-01	MND	MND	MND	0.00E+00	1.53E-03	5.91E-02	0.000E+00	-2.35E-01
Climate change – fossil	kg CO2e	4.83E-01	MND	MND	MND	0.00E+00	1.54E-03	5.87E-02	0.000E+00	-2.35E-01
Climate change – biogenic	kg CO2e	1.26E-03	MND	MND	MND	0.00E+00	-3.921E-05	3.97E-04	0.000E+00	3.99E-04
Climate change – LULUC	kg CO2e	4.75E-04	MND	MND	MND	0.00E+00	2.56E-05	1.00E-05	0.000E+00	9.38E-06
Abiotic depletion of fossil resources	MJ	1.35E+01	MND	MND	MND	0.00E+00	1.99E-02	8.25E-01	0.000E+00	-1.23E+01
Eutrophication, aquatic freshwater	kg PO4e	1.06E-06	MND	MND	MND	0.00E+00	6.50E-09	5.83E-07	0.000E+00	-8.75E-06
Eutrophication, aquatic marine	kg Ne	1.94E-04	MND	MND	MND	0.00E+00	9.04E-07	2.13E-05	0.000E+00	-1.85E-04
Eutrophication, terrestrial	mol Ne	2.07E-03	MND	MND	MND	0.00E+00	1.06E-05	2.24E-04	0.000E+00	-2.00E-03
Abiotic depletion, minerals & metals	kg Sbe	2.14E-03	MND	MND	MND	0.00E+00	1.30E-10	1.34E-08	0.000E+00	-4.02E-09
Ozone depletion	kg CFC11e	9.13E-10	MND	MND	MND	0.00E+00	1.53E-16	7.75E-13	0.000E+00	-9.03E-13
Photochemical ozone formation	kg NMVOCe	7.66E-04	MND	MND	MND	0.00E+00	2.20E-06	5.68E-05	0.000E+00	-9.36E-04
Water use	m3e depr.	2.73E-02	MND	MND	MND	0.00E+00	2.27E-05	1.17E-02	0.000E+00	-2.58E-01

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Eco-toxicity (freshwater)	CTUe	6.659E+00	MND	MND	MND	0.000E+00	1.462E-02	2.548E-01	0.000E+00	-2.170E+00
Human toxicity, cancer effects	CTUh	1.608E-10	MND	MND	MND	0.000E+00	2.932E-13	1.342E-11	0.000E+00	-2.695E-11
Human toxicity, non-cancer effects	CTUh	5.892E-09	MND	MND	MND	0.000E+00	1.306E-11	2.846E-10	0.000E+00	-8.551E-10
Ionizing radiation, human health	kBq U235e	1.877E-02	MND	MND	MND	0.000E+00	3.585E-06	1.877E-02	0.000E+00	8.952E-03
Particulate matter	Incidence	6.345E-09	MND	MND	MND	0.000E+00	1.899E-11	6.859E-10	0.000E+00	-1.039E-08

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Ionizing radiation, human health. 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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Total use of non-renewable PER	MJ	1.33E+01	MND	MND	MND	0.00E+00	1.99E-02	8.25E-01	0.00E+00	-1.23E+01
Total use of renewable PER	MJ	1.33E+00	MND	MND	MND	0.00E+00	1.68E-03	5.19E-01	0.00E+00	3.27E-01
Use of net fresh water	m_3	1.69E-03	MND	MND	MND	0.00E+00	1.89E-06	4.49E-04	0.00E+00	-5.84E-03
Use of renewable secondary fuels	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary materials	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-01

PER abbreviation stands for primary energy resources
MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	1.71E-08	MND	MND	MND	0.00E+00	6.43E-13	2.60E-08	0.00E+00	2.60E-08
Radioactive waste disposed	kg	1.29E-04	MND	MND	MND	0.00E+00	2.57E-08	1.14E-04	0.00E+00	1.14E-04
Non-hazardous waste	kg	1.58E-02	MND	MND	MND	0.00E+00	3.09E-06	2.27E-02	0.00E+00	2.27E-02

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	9.70E-02	MND	MND	MND	0.00E+00	0.00E+00	1.80E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

ENVIRONMENTAL IMPACT DATA

FOR STROTEX-Q NEXTREME – 200 g/m²

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+e	8.05E-04	MND	MND	MND	0.00E+00	2.62E-06	8.93E-05	0.00E+00	-9.34E-04
Climate change – total	kg CO2e	5.45E-01	MND	MND	MND	0.00E+00	1.70E-03	6.56E-02	0.00E+00	-2.61E-01
Climate change – fossil	kg CO2e	5.43E-01	MND	MND	MND	0.00E+00	1.72E-03	6.52E-02	0.00E+00	-2.61E-01
Climate change – biogenic	kg CO2e	1.46E-03	MND	MND	MND	0.00E+00	-4.36E-05	4.41E-04	0.00E+00	4.44E-04
Climate change – LULUC	kg CO2e	5.23E-04	MND	MND	MND	0.00E+00	2.84E-05	1.11E-05	0.00E+00	1.04E-05
Abiotic depletion of fossil resources	MJ	1.52E+01	MND	MND	MND	0.00E+00	2.21E-02	9.17E-01	0.00E+00	-1.36E+01
Eutrophication, aquatic freshwater	kg PO4e	1.22E-06	MND	MND	MND	0.00E+00	7.22E-09	6.48E-07	0.00E+00	-9.72E-06
Eutrophication, aquatic marine	kg Ne	2.17E-04	MND	MND	MND	0.00E+00	1.00E-06	2.36E-05	0.00E+00	-2.06E-04
Eutrophication, terrestrial	mol Ne	2.31E-03	MND	MND	MND	0.00E+00	1.18E-05	2.49E-04	0.00E+00	-2.23E-03
Abiotic depletion, minerals & metals	kg Sbe	2.50E-03	MND	MND	MND	0.00E+00	1.44E-10	1.49E-08	0.00E+00	-4.46E-09
Ozone depletion	kg CFC11e	1.06E-09	MND	MND	MND	0.00E+00	1.70E-16	8.62E-13	0.00E+00	-1.00E-12
Photochemical ozone formation	kg NMVOCe	8.59E-04	MND	MND	MND	0.00E+00	2.45E-06	6.32E-05	0.00E+00	-1.04E-03
Water use	m3e depr.	3.11E-02	MND	MND	MND	0.00E+00	2.52E-05	1.29E-02	0.00E+00	-2.87E-01

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Eco-toxicity (freshwater)	CTUe	7.47E+00	MND	MND	MND	0.00E+00	1.62E-02	2.83E-01	0.00E+00	-2.41E+00
Human toxicity, cancer effects	CTUh	1.81E-10	MND	MND	MND	0.00E+00	3.26E-13	1.49E-11	0.00E+00	-2.99E-11
Human toxicity, non-cancer effects	CTUh	6.61E-09	MND	MND	MND	0.00E+00	1.45E-11	3.16E-10	0.00E+00	-9.50E-10
Ionizing radiation, human health	kBq U235e	2.20E-02	MND	MND	MND	0.00E+00	3.98E-06	2.09E-02	0.00E+00	9.95E-03
Particulate matter	Incidence	7.09E-09	MND	MND	MND	0.00E+00	2.11E-11	7.62E-10	0.00E+00	-1.15E-08

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Ionizing radiation, human health. 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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Total use of non-renewable PER	MJ	1.49E+01	MND	MND	MND	0.00E+00	2.21E-02	9.17E-01	0.00E+00	-1.36E+01
Total use of renewable PER	MJ	1.51E+00	MND	MND	MND	0.00E+00	1.87E-03	5.77E-01	0.00E+00	3.63E-01
Use of net fresh water	m_3	1.92E-03	MND	MND	MND	0.00E+00	2.10E-06	4.99E-04	0.00E+00	-6.49E-03
Use of renewable secondary fuels	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary materials	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.00E-01

PER abbreviation stands for primary energy resources
MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	2.05E-08	MND	MND	MND	0.00E+00	7.14E-13	2.89E-08	0.00E+00	2.89E-08
Radioactive waste disposed	kg	1.51E-04	MND	MND	MND	0.00E+00	2.85E-08	1.27E-04	0.00E+00	1.27E-04
Non-hazardous waste	kg	1.89E-02	MND	MND	MND	0.00E+00	3.43E-06	2.52E-02	0.00E+00	2.52E-02

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.18E-01	MND	MND	MND	0.00E+00	0.00E+00	2.00E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

ENVIRONMENTAL IMPACT DATA

FOR STROTEX-Q PERFORMANCE – 220 g/m²

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+e	8.92E-04	MND	MND	MND	0.00E+00	2.88E-06	9.82E-05	0.00E+00	-1.03E-03
Climate change – total	kg CO2e	6.06E-01	MND	MND	MND	0.00E+00	1.87E-03	7.22E-02	0.00E+00	-2.87E-01
Climate change – fossil	kg CO2e	6.03E-01	MND	MND	MND	0.00E+00	1.89E-03	7.17E-02	0.00E+00	-2.87E-01
Climate change – biogenic	kg CO2e	1.65E-03	MND	MND	MND	0.00E+00	-4.79E-05	4.85E-04	0.00E+00	4.88E-04
Climate change – LULUC	kg CO2e	5.70E-04	MND	MND	MND	0.00E+00	3.13E-05	1.22E-05	0.00E+00	1.15E-05
Abiotic depletion of fossil resources	MJ	1.69E+01	MND	MND	MND	0.00E+00	2.43E-02	1.01E+00	0.00E+00	-1.50E+01
Eutrophication, aquatic freshwater	kg PO4e	1.37E-06	MND	MND	MND	0.00E+00	7.94E-09	7.13E-07	0.00E+00	-1.07E-05
Eutrophication, aquatic marine	kg Ne	2.40E-04	MND	MND	MND	0.00E+00	1.11E-06	2.60E-05	0.00E+00	-2.26E-04
Eutrophication, terrestrial	mol Ne	2.56E-03	MND	MND	MND	0.00E+00	1.30E-05	2.74E-04	0.00E+00	-2.45E-03
Abiotic depletion, minerals & metals	kg Sbe	2.68E-03	MND	MND	MND	0.00E+00	1.58E-10	1.64E-08	0.00E+00	-4.91E-09
Ozone depletion	kg CFC11e	1.14E-09	MND	MND	MND	0.00E+00	1.87E-16	9.48E-13	0.00E+00	-1.10E-12
Photochemical ozone formation	kg NMVOCe	9.52E-04	MND	MND	MND	0.00E+00	2.69E-06	6.95E-05	0.00E+00	-1.14E-03
Water use	m3e depr.	3.50E-02	MND	MND	MND	0.00E+00	2.77E-05	1.42E-02	0.00E+00	-3.16E-01

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Eco-toxicity (freshwater)	CTUe	8.29E+00	MND	MND	MND	0.00E+00	1.79E-02	3.11E-01	0.00E+00	-2.65E+00
Human toxicity, cancer effects	CTUh	2.01E-10	MND	MND	MND	0.00E+00	3.58E-13	1.64E-11	0.00E+00	-3.29E-11
Human toxicity, non-cancer effects	CTUh	7.35E-09	MND	MND	MND	0.00E+00	1.60E-11	3.48E-10	0.00E+00	-1.05E-09
Ionizing radiation, human health	kBq U235e	2.53E-02	MND	MND	MND	0.00E+00	4.38E-06	2.29E-02	0.00E+00	1.09E-02
Particulate matter	Incidence	7.86E-09	MND	MND	MND	0.00E+00	2.32E-11	8.38E-10	0.00E+00	-1.27E-08

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Ionizing radiation, human health. 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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Total use of non-renewable PER	MJ	1.66E+01	MND	MND	MND	0.00E+00	2.43E-02	1.01E+00	0.00E+00	-1.50E+01
Total use of renewable PER	MJ	1.70E+00	MND	MND	MND	0.00E+00	2.05E-03	6.34E-01	0.00E+00	3.99E-01
Use of net fresh water	m_3	2.15E-03	MND	MND	MND	0.00E+00	2.31E-06	5.49E-04	0.00E+00	-7.14E-03
Use of renewable secondary fuels	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary materials	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.20E-01

PER abbreviation stands for primary energy resources
MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	2.40E-08	MND	MND	MND	0.00E+00	7.86E-13	3.17E-08	0.00E+00	3.17E-08
Radioactive waste disposed	kg	1.72E-04	MND	MND	MND	0.00E+00	3.14E-08	1.39E-04	0.00E+00	1.39E-04
Non-hazardous waste	kg	2.21E-02	MND	MND	MND	0.00E+00	3.78E-06	2.77E-02	0.00E+00	2.77E-02

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.40E-01	MND	MND	MND	0.00E+00	0.00E+00	2.20E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

ENVIRONMENTAL IMPACT DATA

FOR STROTEX-Q UV PROTECT – 230 g/m²

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+e	9.34E-04	MND	MND	MND	0.00E+00	3.01E-06	1.03E-04	0.00E+00	-1.07E-03
Climate change – total	kg CO2e	6.35E-01	MND	MND	MND	0.00E+00	1.96E-03	7.55E-02	0.00E+00	-3.00E-01
Climate change – fossil	kg CO2e	6.33E-01	MND	MND	MND	0.00E+00	1.97E-03	7.50E-02	0.00E+00	-3.00E-01
Climate change – biogenic	kg CO2e	1.79E-03	MND	MND	MND	0.00E+00	-5.01E-05	5.07E-04	0.00E+00	5.10E-04
Climate change – LULUC	kg CO2e	5.93E-04	MND	MND	MND	0.00E+00	3.27E-05	1.28E-05	0.00E+00	1.20E-05
Abiotic depletion of fossil resources	MJ	1.77E+01	MND	MND	MND	0.00E+00	2.54E-02	1.05E+00	0.00E+00	-1.57E+01
Eutrophication, aquatic freshwater	kg PO4e	1.44E-06	MND	MND	MND	0.00E+00	8.30E-09	7.46E-07	0.00E+00	-1.12E-05
Eutrophication, aquatic marine	kg Ne	2.52E-04	MND	MND	MND	0.00E+00	1.16E-06	2.72E-05	0.00E+00	-2.37E-04
Eutrophication, terrestrial	mol Ne	2.69E-03	MND	MND	MND	0.00E+00	1.36E-05	2.86E-04	0.00E+00	-2.56E-03
Abiotic depletion, minerals & metals	kg Sbe	2.68E-03	MND	MND	MND	0.00E+00	1.66E-10	1.72E-08	0.00E+00	-5.13E-09
Ozone depletion	kg CFC11e	1.14E-09	MND	MND	MND	0.00E+00	1.96E-16	9.91E-13	0.00E+00	-1.15E-12
Photochemical ozone formation	kg NMVOCe	9.97E-04	MND	MND	MND	0.00E+00	2.81E-06	7.26E-05	0.00E+00	-1.20E-03
Water use	m3e depr.	3.68E-02	MND	MND	MND	0.00E+00	2.90E-05	1.49E-02	0.00E+00	-3.30E-01

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Eco-toxicity (freshwater)	CTUe	8.70E+00	MND	MND	MND	0.00E+00	1.87E-02	3.26E-01	0.00E+00	-2.77E+00
Human toxicity, cancer effects	CTUh	2.11E-10	MND	MND	MND	0.00E+00	3.75E-13	1.72E-11	0.00E+00	-3.44E-11
Human toxicity, non-cancer effects	CTUh	7.72E-09	MND	MND	MND	0.00E+00	1.67E-11	3.64E-10	0.00E+00	-1.09E-09
Ionizing radiation, human health	kBq U235e	2.69E-02	MND	MND	MND	0.00E+00	4.58E-06	2.40E-02	0.00E+00	1.14E-02
Particulate matter	Incidence	8.23E-09	MND	MND	MND	0.00E+00	2.43E-11	8.76E-10	0.00E+00	-1.33E-08

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Ionizing radiation, human health. 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.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Total use of non-renewable PER	MJ	1.74E+01	MND	MND	MND	0.00E+00	2.54E-02	1.05E+00	0.00E+00	-1.57E+01
Total use of renewable PER	MJ	1.79E+00	MND	MND	MND	0.00E+00	2.15E-03	6.63E-01	0.00E+00	4.17E-01
Use of net fresh water	m_3	2.26E-03	MND	MND	MND	0.00E+00	2.41E-06	5.74E-04	0.00E+00	-7.46E-03
Use of renewable secondary fuels	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary materials	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E-01

PER abbreviation stands for primary energy resources
MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	2.54E-08	MND	MND	MND	0.00E+00	8.21E-13	3.32E-08	0.00E+00	3.32E-08
Radioactive waste disposed	kg	1.83E-04	MND	MND	MND	0.00E+00	3.28E-08	1.46E-04	0.00E+00	1.46E-04
Non-hazardous waste	kg	2.36E-02	MND	MND	MND	0.00E+00	3.95E-06	2.90E-02	0.00E+00	2.90E-02

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.50E-01	MND	MND	MND	0.00E+00	0.00E+00	2.30E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity, medium voltage, production mix (Reference product: electricity, medium voltage), Poland, 2023
Electricity CO2 / kWh	0.669 kg CO_2 / kWh

End of life scenario documentation

Scenario parameter	Value
Collection process – % collected separately	100
Collection process – % collected with mixed waste	-
Recovery process – % for re-use	-
Recovery process – % for recycling	100
Recovery process – % for energy recovery	-
Disposal (total) – % for final deposition	-
Scenario assumptions for transportation	End-of-life product is transported 100 km with Truck, Euro mix, 24.7t payload capacity

BIBLIOGRAPHY

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations. Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

EN 15804:2012+A2:2019 Sustainability in construction works - Environmental product declarations - Core rules for the product category of construction products.

ISO 15686-1:2011 Buildings and constructed assets – Service life planning – Part 1: General principles and framework

ISO 15686-8:2008 Buildings and constructed assets – Service life planning – Part 8: Reference service life and service-life estimation

Sphera. LCA Database. Available at: https://lcadatabase.sphera.com/ [Accessed: 18.12.2024].

AIB. European Residual Mix 2023. Available at: https://www.aib-net.org/facts/european-residual-mix/2023 [Accessed: 18.12.2024].

Act of December 14, 2012 on Waste, Dz.U. 2013 poz. 21, with later amendments. Available at: https://isap.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=wdu20130000021 [Accessed: 18.12.2024].

EPD VERIFICATION:

The verification procedure for this Environmental Product Declaration (EPD) has been carried out in accordance with the requirements of ISO 14025 standards. Once the verification process is complete, the EPD remains valid for a period of 5 years. There is no need to recalculate the parameters contained in the EPD after this period, provided that the data underlying the declaration have not changed substantially.

EPD CONTRIBUTORS

Manufacturer representative	Piotr Kraciński
EPD verifier	Daniel Wałach, Ph.D.
Note: The sole ownership, liability, and liability of this declaration are with the owner. Construction product declarations may not be comparable if they do not comply with EN 15804. For detailed information on comparability, please refer to EN 15804 and ISO 14025.	

EPD Poland Certificate

Program EPDPoland Operator: MULTICERT Sp. z o.o.

Reg. No. EPD-P 02.01.2025

CERTIFICATE

EPD TYPE III DECLARATION

(ENVIRONMENTAL PRODUCT DECLARATION)

This document confirms that the Environmental Product Declaration developed by

„FOLIAREX" Sp. z o.o. (Limited Liability Company) for Roofing Membranes

manufactured in accordance with standards

EN 13859-1, EN 13859-2,

meets the requirements of standards

EN 15804 + A2 and ISO 14025,

and that the data contained therein has been prepared correctly.

EPD Environmental Product Declaration EPD VERIFIED EPD POLAND

Verification carried out by:

Daniel Wałach , Ph.D

Program Manager

Grzegorz Suwara

This document is valid until January 16, 2030, or until EPD is deregistered and its publication on the website www.epd.org.pl is discontinued.

EPD Polska Registration Office,
Warsaw, January 16, 2025

www.epd.com.pl