



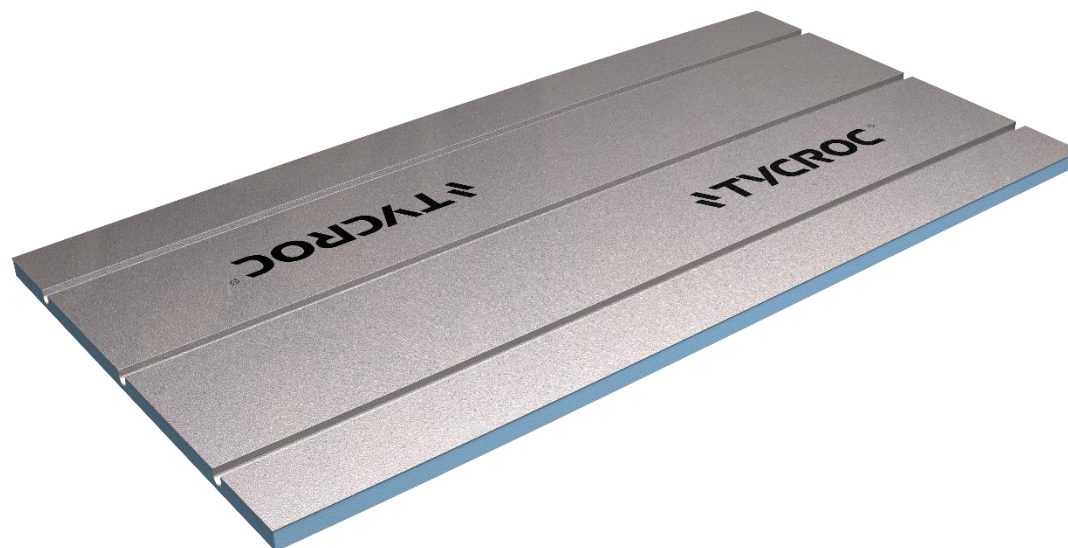
TYCROC®

ENVIRONMENTAL PRODUCT DECLARATION

MULTIPLE PRODUCT EPD WITH MULTIPLE DECLARED RESULTS
IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Underfloor heating panels (UHP)

Tycroc OÜ



Programme operator: Rakennustieto Oy
Malminkatu 16 A, 00100 Helsinki
<https://ymparisto.rakennustieto.fi/>
EPD registration number: RTS_477_26
Publication date: 16.04.2026
Valid until: 16.04.2031

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication.

Jukka Seppänen
RTS EPD Committee Secretary

Laura Apilo
Managing Director



GENERAL INFORMATION

MANUFACTURER

EPD owner	Tycroc OÜ
Address	Pirni 7/1, 10617, Tallinn
Contact details	info@tycroc.com
Website	www.tycroc.com

PRODUCT IDENTIFICATION

Product name	UHP underfloor heating panels
Product reference	UHP05, UHP16, UHP20
Place of production	Guowangzhibao industrial zone, Dacheng city, Langfang, China
Period for data	01.01.2024-31.12.2024

EPD INFORMATION

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. 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.

EPD program operator	Rakennustieto Oy
EPD standards	This EPD is in accordance with EN 15804+A2:2019 and ISO 14025
Product category rules	The CEN standard EN 15804 serves as the core PCR. In addition, the RTS EPD PCR 2024 (12.11.2024) is used.
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Andra Ainsaar, Sustinere OÜ
Category of EPD	Third party verified EPD
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	Anni Oviir, LCA Support (Rangi Maja OÜ)
EPD number	RTS_477_26
Verification date	15.04.2026
Publishing date	16.04.2026
EPD valid until	16.04.2031

PRODUCT INFORMATION

PRODUCT DESCRIPTION

Tycroc's underfloor heating panels (UHP) has been developed to simplify and accelerate the installation of underfloor heating pipes and cables without using concrete. Tycroc UHP is also suitable to be installed on concrete construction, but as the weight of the square meter of the panel is small, the solution is especially valuable in wooden structures / wooden buildings. The extruded polystyrene foam (XPS foam) panel with grooves specially cut for heating pipes or cables prevents downward heat loss, whilst the aluminium foil covering the panel is a good heat divider under the flooring.

Further information can be found at www.tycroc.com

PRODUCT APPLICATION

Installing the Tycroc UHP underfloor heating panels the underlying surface has to be level, dry, strong, rigid and stable. It also has to be free from dirt, oil or other lubricants and it cannot be frozen.

Tycroc UHP panels can be installed on wood structures (boarding, OSB, plywood) or concrete. For a stiffer base, fully glue panels with Tycroc Fast FIX acrylic adhesive or an appropriate tile adhesive according to the surface. For floating floors, panels can be fixed with Tycroc screws and washers.

Tycroc UHP can be used under all common floorings, including parquet, wood, ceramic tiles and natural stone. If necessary, the Tycroc UHP panel can be covered with concrete or gypsum casting and different ready-made dry floor covering materials, such as gypsum baseboards, cement fibre boards, or gypsum plasterboards. The parquet, laminate and wood flooring are installed directly onto the Tycroc UHP floating and ceramic tile and natural stones are glued using the proper adhesives.

Installation requirements are the same whether using heating pipes or cables.

TECHNICAL PROPERTIES

PARAMETER	VALUE	STANDARD
Dimensions	UHP05 - 1200x600x20 mm UHP16 - 1200x600x25 mm UHP20 - 1200x600x30 mm	
Aluminium foil thickness	UHP05 - 0.1 mm/100 µm UHP16,UHP20 - 0.2 mm/200 µm	
Channel spacing	UHP05 - 100 mm UHP 16, UHP20 - 200 mm	
Channel diameter	UHP05 - cable $\varnothing \leq 7$ mm UHP16 - pipes $\varnothing 16, \varnothing 17$ mm UHP20 - pipes $\varnothing 18, \varnothing 20$ mm	
Reaction to fire	Class E	EN 13501-1:2018-12
Thermal conductivity (λ_D)	0.031 W/(m·K)	EN 13164:2012+A1:2015
Thermal resistance (RD)	UHP05 - 0.65 m ² ·K/W UHP16 - 0.81 m ² ·K/W UHP20 - 0.97 m ² ·K/W	EN 13164:2012+A1:2015
Compressive stress at 10% deformation	450 kPa; CS(10)450	EN 13164:2012+A1:2015
Long-term water absorption by total immersion	WL(T) ≤ 0.4 %	EN 13164:2012+A1:2015
Tensile strength perpendicular to faces	512 kPa	EN 1607:2013
Tolerances: length, width, thickness, squareness, flatness	L(2), W(2), T(1), S(1), P(3)	EN 822:2013, EN 823:2013, EN 824:2013, EN 825:2013

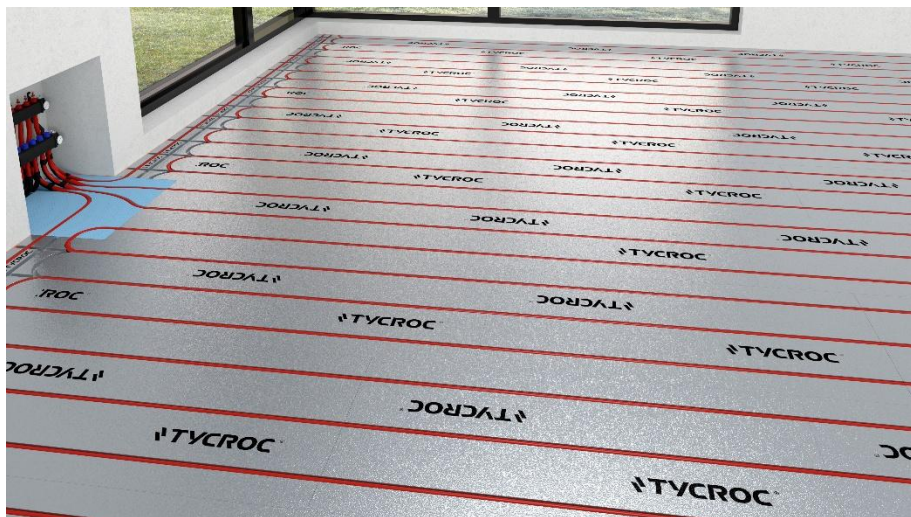
SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0



PRODUCT RAW MATERIAL COMPOSITION

All product raw materials are non-renewable materials (fossil and mineral).

Material	Amount, mass %	Usability			Origin
		Renewable	Non-renewable	Recycled	
UHP05 - 1200x600x20 mm					
Polystyrene	72%		x		CN
Aluminium foil	21%		x		CN
Adhesive	6%		x		CN
<i>Packaging raw material composition</i>					
Packaging film	100%		x		CN
UHP16 - 1200x600x25 mm					
Polystyrene	72%		x		CN
Aluminium foil	24%		x		CN
Adhesive	4%		x		CN
<i>Packaging raw material composition</i>					
Packaging film	100%		x		CN
UHP20 - 1200x600x30 mm					
Polystyrene	75%		x		CN
Aluminium foil	21%		x		CN
Adhesive	4%		x		CN
<i>Packaging raw material composition</i>					
Packaging film	100%		x		CN
Weight of packaging per DU			0.02 kg		

PRODUCT LIFE-CYCLE

MANUFACTURING AND PACKAGING (A1-A3)

The production of Tycroc underfloor heating panels starts with the selection of materials like polystyrene, aluminium foil, and adhesive (A1). These materials are transported (A2) to the factory in Langfang, China, where the panels are produced. The production process (A3) begins with polystyrene extrusion followed by cutting grooves in the panels and covering with aluminium foil for better heat distribution. The panels are wrapped in packaging film to protect them during transportation and storage.

TRANSPORT AND INSTALLATION (A4-A5)

Module A4 includes the transportation from the factory in China to the central warehouse in Rapla, Estonia, and then further to the main customers in Estonia, Finland, Latvia and Lithuania. Environmental impacts from installation (A5) into the building include 0.1% product installation loss and waste packaging. Installation materials, including energy, have not been assessed.

PRODUCT END OF LIFE (C1-C4, D)

Since the panels are installed in a building, the energy required to demolish the building (C1) at the end of life is taken into account. It is assumed that 100% of the waste is collected and transported (C2) to the waste treatment centre. Based on Estonian construction and demolition waste study (Keskkonnaagentuur, 2024), 100% of insulation material and other construction waste goes to landfill (C4). The benefits beyond the system boundaries (D) include the packaging film recycling from A5.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

DATA PERIOD

The period for data represents 01.01.2024-31.12.2024.

DECLARED UNIT

Declared unit	1 m ² of underfloor heating panel	
	Mass per declared unit, kg	Thickness, mm
UHP05	0.96	20
UHP16	1.24	25
UHP20	1.44	30

SYSTEM BOUNDARY

The scope of the EPD is cradle to gate with options, A4-A5, and modules C1-C4, D.

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	x	x	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = ND.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. 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, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do 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. Installation materials (e.g. screws and adhesives) are excluded from the assessment, as their type and quantity depend on the installation surface and method and are therefore not representative of the declared product; these materials have not been evaluated.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR.

- In this study, as per EN 15804, allocation is conducted in the following order;
1. Allocation should be avoided.
 2. Allocation should be based on physical properties (e.g. mass, volume) when the difference in revenue is small.
 3. Allocation should be based on economic values.

Most of the data is product specific. Energy consumed during the manufacturing stage have been allocated to the analysed product based on the amount of kg that is produced.

DATA QUALITY

Data collection for production, transport, and packaging was collected from the manufacturer via a questionnaire for reference year 2024. Upstream process calculations rely on generic data from the One Click LCA databases and Ecoinvent. The inventory and environmental data is assessed as good or very good quality.



LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

3rd CEER Report on Power Losses 2025, Council of European Energy Regulators. Accessed on: <https://www.ceer.eu/publication/3rd-ceer-report-on-power-losses/>

Bozdog, Ö. & Secer, M. 2007. Accessed on: www.irbnet.de/daten/iconda/CIB_DC24603.pdf

Ecoinvent 3.10.1/3.11 database

Ehitus- ja lammutusjäätmete teke ja käitlemine 2024, Keskkonnaagentuur. Accessed on: <https://keskkonnaportaal.ee/et/ehitus-ja-lammutusjaatmete-teke-ja-kaitlemine>

ENVIRONMENTAL IMPACT DATA (UHP05)

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	4,91E+00	8,47E-02	1,90E-01	5,18E+00	2,13E-01	2,74E-02	ND	ND	ND	ND	ND	ND	ND	3,48E-03	5,16E-03	0,00E+00	8,85E-02	-6,55E-02
GWP – fossil	kg CO ₂ e	4,89E+00	8,47E-02	1,91E-01	5,16E+00	2,12E-01	2,72E-02	ND	ND	ND	ND	ND	ND	ND	3,47E-03	5,16E-03	0,00E+00	8,84E-02	-6,67E-02
GWP – biogenic	kg CO ₂ e	2,00E-02	2,19E-05	-1,44E-03	1,86E-02	3,74E-05	1,65E-04	ND	ND	ND	ND	ND	ND	ND	6,62E-07	1,17E-06	0,00E+00	4,32E-05	1,35E-03
GWP – LULUC	kg CO ₂ e	1,17E-03	4,43E-05	8,61E-05	1,30E-03	1,09E-04	3,53E-05	ND	ND	ND	ND	ND	ND	ND	3,56E-07	2,31E-06	0,00E+00	6,45E-06	-6,31E-05
Ozone depletion pot.	kg CFC-11e	6,73E-08	1,19E-09	2,72E-09	7,12E-08	3,08E-09	2,04E-10	ND	ND	ND	ND	ND	ND	ND	5,16E-11	7,62E-11	0,00E+00	2,64E-10	-2,01E-09
Acidification potential	mol H ⁺ e	1,79E-02	3,16E-04	9,73E-04	1,92E-02	4,68E-03	6,56E-05	ND	ND	ND	ND	ND	ND	ND	3,11E-05	1,76E-05	0,00E+00	7,61E-05	-2,26E-04
EP-freshwater ²⁾	kg Pe	2,34E-04	7,60E-06	4,35E-05	2,85E-04	9,46E-06	6,28E-06	ND	ND	ND	ND	ND	ND	ND	1,12E-07	4,02E-07	0,00E+00	1,11E-06	-1,62E-05
EP-marine	kg Ne	3,48E-03	1,05E-04	1,44E-04	3,72E-03	1,18E-03	1,91E-05	ND	ND	ND	ND	ND	ND	ND	1,45E-05	5,78E-06	0,00E+00	1,97E-03	-4,55E-05
EP-terrestrial	mol Ne	3,74E-02	1,14E-03	1,45E-03	4,00E-02	1,31E-02	1,29E-04	ND	ND	ND	ND	ND	ND	ND	1,58E-04	6,29E-05	0,00E+00	3,10E-04	-4,74E-04
POCP (“smog”) ³⁾	kg NMVOCe	1,41E-02	4,20E-04	6,49E-04	1,52E-02	3,65E-03	4,35E-05	ND	ND	ND	ND	ND	ND	ND	4,74E-05	2,59E-05	0,00E+00	1,28E-04	-3,64E-04
ADP-minerals & metals ⁴⁾	kg Sbe	4,56E-06	3,51E-07	3,63E-07	5,27E-06	3,16E-07	9,60E-08	ND	ND	ND	ND	ND	ND	ND	1,25E-09	1,44E-08	0,00E+00	2,00E-08	-2,67E-07
ADP-fossil resources	MJ	8,96E+01	1,17E+00	3,26E+00	9,40E+01	2,74E+00	2,48E-01	ND	ND	ND	ND	ND	ND	ND	4,52E-02	7,49E-02	0,00E+00	2,34E-01	-1,89E+00
Water use ⁵⁾	m ³ e depr.	3,14E+00	5,98E-03	1,02E+00	4,16E+00	9,50E-03	8,94E-03	ND	ND	ND	ND	ND	ND	ND	1,17E-04	3,70E-04	0,00E+00	1,03E-02	-3,98E-02

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and 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 experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1,03E-07	5,68E-09	3,95E-09	1,12E-07	1,05E-08	3,31E-10	ND	ND	ND	ND	ND	ND	ND	8,87E-10	5,17E-10	0,00E+00	1,70E-09	-2,20E-09
Ionizing radiation ⁶⁾	kBq (1235e)	3,01E-04	1,10E-03	7,24E-03	8,64E-03	1,60E-03	3,95E-03	ND	ND	ND	ND	ND	ND	ND	1,93E-05	6,52E-05	0,00E+00	1,98E-04	-4,24E-03
Ecotoxicity (freshwater)	CTUe	1,42E+01	2,31E-01	2,74E+00	1,72E+01	2,61E-01	2,74E-01	ND	ND	ND	ND	ND	ND	ND	2,58E-02	1,06E-02	0,00E+00	3,77E+00	-2,11E+00
Human toxicity, cancer	CTUh	1,98E-10	1,52E-11	2,40E-11	2,37E-10	4,22E-11	4,55E-12	ND	ND	ND	ND	ND	ND	ND	3,54E-13	8,52E-13	0,00E+00	5,91E-12	-1,29E-11
Human tox. non-cancer	CTUh	2,53E-09	7,18E-10	1,10E-09	4,35E-09	1,02E-09	1,51E-10	ND	ND	ND	ND	ND	ND	ND	5,57E-12	4,85E-11	0,00E+00	1,03E-09	-3,59E-10
SQP ⁷⁾	-	5,52E-02	5,92E-01	4,00E-01	1,05E+00	1,02E+00	4,45E-02	ND	ND	ND	ND	ND	ND	ND	2,99E-03	7,54E-02	0,00E+00	5,52E-01	-2,34E-01

6) 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; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	1,68E+01	1,99E-02	1,12E-01	1,69E+01	2,62E-02	5,58E-02	ND	ND	ND	ND	ND	ND	ND	2,84E-04	1,03E-03	0,00E+00	3,22E-03	-7,20E-02
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	1,69E+01	1,99E-02	1,12E-01	1,70E+01	2,62E-02	5,58E-02	ND	ND	ND	ND	ND	ND	ND	2,84E-04	1,03E-03	0,00E+00	3,22E-03	-7,20E-02
Non-re. PER as energy	MJ	6,18E+01	1,17E+00	2,24E+00	6,53E+01	2,74E+00	-5,26E-01	ND	ND	ND	ND	ND	ND	ND	4,52E-02	7,49E-02	0,00E+00	-3,46E+01	-1,89E+00
Non-re. PER as material	MJ	2,76E+01	0,00E+00	9,76E-01	2,86E+01	0,00E+00	-9,76E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	-2,76E+01	0,00E+00
Total use of non-re. PER	MJ	8,95E+01	1,17E+00	3,21E+00	9,38E+01	2,74E+00	-1,50E+00	ND	ND	ND	ND	ND	ND	ND	4,52E-02	7,49E-02	0,00E+00	-6,22E+01	-1,89E+00
Secondary materials	kg	1,34E-03	6,05E-04	5,26E-04	2,48E-03	1,26E-03	3,47E-05	ND	ND	ND	ND	ND	ND	ND	1,87E-05	3,19E-05	0,00E+00	0,00E+00	0,00E+00
Renew. secondary fuels	MJ	2,91E-03	7,78E-06	6,99E-04	3,62E-03	6,64E-06	4,08E-06	ND	ND	ND	ND	ND	ND	ND	4,91E-08	4,05E-07	0,00E+00	1,61E-06	-8,16E-04
Non-ren. secondary fuels	MJ	2,33E-04	0,00E+00	0,00E+00	2,33E-04	0,00E+00	2,33E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	1,31E-01	1,68E-04	2,70E-03	1,34E-01	2,56E-04	2,30E-04	ND	ND	ND	ND	ND	ND	ND	2,90E-06	1,11E-05	0,00E+00	-3,55E-03	-9,41E-04

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	3,37E-02	2,33E-03	5,07E-03	4,11E-02	3,94E-03	5,57E-04	ND	ND	ND	ND	ND	ND	ND	5,07E-05	1,27E-04	0,00E+00	3,90E-04	-3,99E-03
Non-hazardous waste	kg	9,67E-01	4,51E-02	5,22E-01	1,53E+00	6,06E-02	4,57E-02	ND	ND	ND	ND	ND	ND	ND	7,39E-04	2,35E-03	0,00E+00	2,54E+00	-4,85E-01
Radioactive waste	kg	1,64E-03	2,71E-07	1,64E-06	1,64E-03	3,90E-07	2,65E-06	ND	ND	ND	ND	ND	ND	ND	4,73E-09	1,60E-08	0,00E+00	4,84E-08	-1,06E-06

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	5,27E-04	0,00E+00	4,24E-03	4,76E-03	0,00E+00	2,30E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACT DATA (UHP16)

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	6,69E+00	7,29E-02	1,68E-01	6,93E+00	2,13E-01	2,29E-02	ND	ND	ND	ND	ND	ND	ND	4,49E-03	6,67E-03	0,00E+00	1,14E-01	-4,71E-02
GWP – fossil	kg CO ₂ e	6,66E+00	7,28E-02	1,69E-01	6,90E+00	2,12E-01	2,28E-02	ND	ND	ND	ND	ND	ND	ND	4,49E-03	6,67E-03	0,00E+00	1,14E-01	-4,80E-02
GWP – biogenic	kg CO ₂ e	2,97E-02	1,86E-05	-1,02E-03	2,87E-02	3,74E-05	1,19E-04	ND	ND	ND	ND	ND	ND	ND	8,55E-07	1,51E-06	0,00E+00	5,58E-05	9,71E-04
GWP – LULUC	kg CO ₂ e	1,24E-03	3,76E-05	6,42E-05	1,34E-03	1,09E-04	2,58E-05	ND	ND	ND	ND	ND	ND	ND	4,60E-07	2,98E-06	0,00E+00	8,33E-06	-4,54E-05
Ozone depletion pot.	kg CFC-11E	6,72E-08	1,03E-09	2,13E-09	7,03E-08	3,08E-09	1,67E-10	ND	ND	ND	ND	ND	ND	ND	6,66E-11	9,84E-11	0,00E+00	3,42E-10	-1,45E-09
Acidification potential	mol H ⁺ e	2,44E-02	2,71E-04	8,91E-04	2,55E-02	4,68E-03	6,02E-05	ND	ND	ND	ND	ND	ND	ND	4,01E-05	2,27E-05	0,00E+00	9,83E-05	-1,63E-04
EP-freshwater ²⁾	kg Pe	2,25E-04	6,46E-06	3,78E-05	2,69E-04	9,46E-06	4,58E-06	ND	ND	ND	ND	ND	ND	ND	1,44E-07	5,19E-07	0,00E+00	1,43E-06	-1,17E-05
EP-marine	kg Ne	4,79E-03	8,97E-05	1,27E-04	5,00E-03	1,18E-03	1,65E-05	ND	ND	ND	ND	ND	ND	ND	1,87E-05	7,47E-06	0,00E+00	2,54E-03	-3,27E-05
EP-terrestrial	mol Ne	5,16E-02	9,77E-04	1,27E-03	5,38E-02	1,31E-02	1,21E-04	ND	ND	ND	ND	ND	ND	ND	2,04E-04	8,13E-05	0,00E+00	4,01E-04	-3,41E-04
POCP (“smog”) ³⁾	kg NMVOCe	1,91E-02	3,63E-04	5,31E-04	2,00E-02	3,65E-03	4,14E-05	ND	ND	ND	ND	ND	ND	ND	6,12E-05	3,35E-05	0,00E+00	1,65E-04	-2,62E-04
ADP-minerals & metals ⁴⁾	kg Sbe	3,97E-06	2,94E-07	2,74E-07	4,54E-06	3,16E-07	6,99E-08	ND	ND	ND	ND	ND	ND	ND	1,61E-09	1,86E-08	0,00E+00	2,58E-08	-1,92E-07
ADP-fossil resources	MJ	1,19E+02	1,01E+00	2,69E+00	1,23E+02	2,74E+00	2,34E-01	ND	ND	ND	ND	ND	ND	ND	5,85E-02	9,68E-02	0,00E+00	3,02E-01	-1,36E+00
Water use ⁵⁾	m ³ e depr.	3,91E+00	5,15E-03	1,00E+00	4,92E+00	9,50E-03	8,36E-03	ND	ND	ND	ND	ND	ND	ND	1,51E-04	4,78E-04	0,00E+00	1,33E-02	-2,86E-02

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and 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 experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1,31E-07	5,09E-09	3,00E-09	1,39E-07	1,05E-08	3,00E-10	ND	ND	ND	ND	ND	ND	ND	1,15E-09	6,68E-10	0,00E+00	2,19E-09	-1,58E-09
Ionizing radiation ⁶⁾	kBq U235e	3,86E-04	9,47E-04	1,38E-02	1,51E-02	1,60E-03	2,85E-03	ND	ND	ND	ND	ND	ND	ND	2,49E-05	8,43E-05	0,00E+00	2,55E-04	-3,05E-03
Ecotoxicity (freshwater)	CTUe	1,82E+01	1,95E-01	2,01E+00	2,04E+01	2,61E-01	2,05E-01	ND	ND	ND	ND	ND	ND	ND	3,34E-02	1,37E-02	0,00E+00	4,87E+00	-1,52E+00
Human toxicity, cancer	CTUh	2,54E-10	1,30E-11	1,81E-11	2,85E-10	4,22E-11	3,40E-12	ND	ND	ND	ND	ND	ND	ND	4,57E-13	1,10E-12	0,00E+00	7,64E-12	-9,27E-12
Human tox. non-cancer	CTUh	3,24E-09	6,23E-10	8,43E-10	4,71E-09	1,02E-09	1,11E-10	ND	ND	ND	ND	ND	ND	ND	7,19E-12	6,27E-11	0,00E+00	1,33E-09	-2,59E-10
SQP ⁷⁾	-	7,06E-02	5,57E-01	3,06E-01	9,34E-01	1,02E+00	3,26E-02	ND	ND	ND	ND	ND	ND	ND	3,86E-03	9,74E-02	0,00E+00	7,13E-01	-1,69E-01

6) 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; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	2,46E+01	1,69E-02	8,58E-02	2,47E+01	2,62E-02	5,27E-02	ND	ND	ND	ND	ND	ND	ND	3,67E-04	1,33E-03	0,00E+00	4,17E-03	-5,18E-02
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	2,46E+01	1,69E-02	8,58E-02	2,47E+01	2,62E-02	5,27E-02	ND	ND	ND	ND	ND	ND	ND	3,67E-04	1,33E-03	0,00E+00	4,17E-03	-5,18E-02
Non-re. PER as energy	MJ	8,40E+01	1,01E+00	1,92E+00	8,69E+01	2,74E+00	-3,40E-01	ND	ND	ND	ND	ND	ND	ND	5,85E-02	9,68E-02	0,00E+00	-4,47E+01	-1,36E+00
Non-re. PER as material	MJ	3,50E+01	0,00E+00	7,02E-01	3,57E+01	0,00E+00	-7,02E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	-3,50E+01	0,00E+00
Total use of non-re. PER	MJ	1,19E+02	1,01E+00	2,62E+00	1,23E+02	2,74E+00	-1,04E+00	ND	ND	ND	ND	ND	ND	ND	5,85E-02	9,68E-02	0,00E+00	-7,98E+01	-1,36E+00
Secondary materials	kg	1,11E-03	5,15E-04	3,82E-04	2,00E-03	1,26E-03	2,55E-05	ND	ND	ND	ND	ND	ND	ND	2,42E-05	4,12E-05	0,00E+00	0,00E+00	0,00E+00
Renew. secondary fuels	MJ	2,36E-03	6,61E-06	5,03E-04	2,87E-03	6,64E-06	3,20E-06	ND	ND	ND	ND	ND	ND	ND	6,34E-08	5,23E-07	0,00E+00	2,08E-06	-5,87E-04
Non-ren. secondary fuels	MJ	1,89E-04	0,00E+00	0,00E+00	1,89E-04	0,00E+00	1,89E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	1,34E-01	1,46E-04	2,42E-03	1,37E-01	2,56E-04	2,06E-04	ND	ND	ND	ND	ND	ND	ND	3,74E-06	1,43E-05	0,00E+00	-4,59E-03	-6,77E-04

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	4,10E-02	1,99E-03	3,70E-03	4,67E-02	3,94E-03	4,19E-04	ND	ND	ND	ND	ND	ND	ND	6,55E-05	1,64E-04	0,00E+00	5,04E-04	-2,87E-03
Non-hazardous waste	kg	1,39E+00	3,83E-02	3,80E-01	1,81E+00	6,06E-02	3,38E-02	ND	ND	ND	ND	ND	ND	ND	9,55E-04	3,03E-03	0,00E+00	3,28E+00	-3,49E-01
Radioactive waste	kg	2,41E-03	2,32E-07	1,29E-06	2,41E-03	3,90E-07	3,14E-06	ND	ND	ND	ND	ND	ND	ND	6,11E-09	2,06E-08	0,00E+00	6,25E-08	-7,60E-07

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	4,26E-04	0,00E+00	5,57E-03	5,99E-03	0,00E+00	1,65E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACT DATA (UHP20)

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	7,35E+00	8,46E-02	1,71E-01	7,61E+00	2,13E-01	2,32E-02	ND	ND	ND	ND	ND	ND	ND	5,22E-03	7,75E-03	0,00E+00	1,33E-01	-4,60E-02
GWP – fossil	kg CO ₂ e	7,32E+00	8,45E-02	1,72E-01	7,57E+00	2,13E-01	2,31E-02	ND	ND	ND	ND	ND	ND	ND	5,22E-03	7,75E-03	0,00E+00	1,33E-01	-4,69E-02
GWP – biogenic	kg CO ₂ e	3,48E-02	2,16E-05	-9,88E-04	3,38E-02	3,92E-05	1,16E-04	ND	ND	ND	ND	ND	ND	ND	9,93E-07	1,76E-06	0,00E+00	6,49E-05	9,48E-04
GWP – LULUC	kg CO ₂ e	1,36E-03	4,37E-05	6,37E-05	1,47E-03	1,10E-04	2,54E-05	ND	ND	ND	ND	ND	ND	ND	5,34E-07	3,47E-06	0,00E+00	9,68E-06	-4,43E-05
Ozone depletion pot.	kg CFC-11e	8,18E-08	1,20E-09	2,12E-09	8,51E-08	3,06E-09	1,79E-10	ND	ND	ND	ND	ND	ND	ND	7,74E-11	1,14E-10	0,00E+00	3,97E-10	-1,41E-09
Acidification potential	mol H ⁺ e	2,68E-02	3,16E-04	9,14E-04	2,80E-02	4,69E-03	6,20E-05	ND	ND	ND	ND	ND	ND	ND	4,66E-05	2,64E-05	0,00E+00	1,14E-04	-1,59E-04
EP-freshwater ²⁾	kg Pe	2,73E-04	7,50E-06	3,85E-05	3,19E-04	1,02E-05	4,53E-06	ND	ND	ND	ND	ND	ND	ND	1,68E-07	6,03E-07	0,00E+00	1,67E-06	-1,14E-05
EP-marine	kg Ne	5,15E-03	1,05E-04	1,29E-04	5,38E-03	1,18E-03	1,64E-05	ND	ND	ND	ND	ND	ND	ND	2,17E-05	8,68E-06	0,00E+00	2,96E-03	-3,20E-05
EP-terrestrial	mol Ne	5,54E-02	1,15E-03	1,29E-03	5,78E-02	1,31E-02	1,24E-04	ND	ND	ND	ND	ND	ND	ND	2,38E-04	9,45E-05	0,00E+00	4,66E-04	-3,33E-04
POCP (“smog”) ³⁾	kg NMVOCe	2,12E-02	4,24E-04	5,33E-04	2,22E-02	3,66E-03	4,32E-05	ND	ND	ND	ND	ND	ND	ND	7,11E-05	3,89E-05	0,00E+00	1,92E-04	-2,56E-04
ADP-minerals & metals ⁴⁾	kg Sbe	4,78E-06	3,41E-07	2,70E-07	5,39E-06	3,19E-07	6,92E-08	ND	ND	ND	ND	ND	ND	ND	1,88E-09	2,16E-08	0,00E+00	3,00E-08	-1,87E-07
ADP-fossil resources	MJ	1,35E+02	1,17E+00	2,70E+00	1,39E+02	2,74E+00	2,48E-01	ND	ND	ND	ND	ND	ND	ND	6,79E-02	1,12E-01	0,00E+00	3,51E-01	-1,33E+00
Water use ⁵⁾	m ³ e depr.	4,53E+00	5,98E-03	1,04E+00	5,58E+00	9,85E-03	8,94E-03	ND	ND	ND	ND	ND	ND	ND	1,75E-04	5,56E-04	0,00E+00	1,54E-02	-2,80E-02

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and 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 experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1,60E-07	5,92E-09	3,05E-09	1,69E-07	1,05E-08	3,26E-10	ND	ND	ND	ND	ND	ND	ND	1,33E-09	7,76E-10	0,00E+00	2,55E-09	-1,54E-09
Ionizing radiation ⁶⁾	kBq U235e	4,69E-04	1,10E-03	5,90E-03	7,47E-03	1,60E-03	2,78E-03	ND	ND	ND	ND	ND	ND	ND	2,89E-05	9,79E-05	0,00E+00	2,97E-04	-2,98E-03
Ecotoxicity (freshwater)	CTUe	2,22E+01	2,26E-01	2,03E+00	2,44E+01	5,81E-01	2,05E-01	ND	ND	ND	ND	ND	ND	ND	3,88E-02	1,59E-02	0,00E+00	5,66E+00	-1,49E+00
Human toxicity, cancer	CTUh	3,09E-10	1,51E-11	1,92E-11	3,43E-10	4,23E-11	3,38E-12	ND	ND	ND	ND	ND	ND	ND	5,32E-13	1,28E-12	0,00E+00	8,88E-12	-9,04E-12
Human tox. non-cancer	CTUh	3,95E-09	7,23E-10	9,78E-10	5,65E-09	1,02E-09	1,09E-10	ND	ND	ND	ND	ND	ND	ND	8,36E-12	7,28E-11	0,00E+00	1,54E-09	-2,52E-10
SQP ⁷⁾	-	8,60E-02	6,47E-01	2,97E-01	1,03E+00	1,02E+00	3,18E-02	ND	ND	ND	ND	ND	ND	ND	4,49E-03	1,13E-01	0,00E+00	8,29E-01	-1,65E-01

6) 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; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	2,44E+01	1,96E-02	8,56E-02	2,45E+01	2,63E-02	5,18E-02	ND	ND	ND	ND	ND	ND	ND	4,26E-04	1,54E-03	0,00E+00	4,84E-03	-5,06E-02
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	2,45E+01	1,96E-02	8,56E-02	2,46E+01	2,63E-02	5,18E-02	ND	ND	ND	ND	ND	ND	ND	4,26E-04	1,54E-03	0,00E+00	4,84E-03	-5,06E-02
Non-re. PER as energy	MJ	9,26E+01	1,17E+00	1,93E+00	9,57E+01	2,74E+00	-3,17E-01	ND	ND	ND	ND	ND	ND	ND	6,79E-02	1,12E-01	0,00E+00	-5,20E+01	-1,33E+00
Non-re. PER as material	MJ	4,26E+01	0,00E+00	6,85E-01	4,33E+01	0,00E+00	-6,85E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	-4,26E+01	0,00E+00
Total use of non-re. PER	MJ	1,35E+02	1,17E+00	2,62E+00	1,39E+02	2,74E+00	-1,00E+00	ND	ND	ND	ND	ND	ND	ND	6,79E-02	1,12E-01	0,00E+00	-9,46E+01	-1,33E+00
Secondary materials	kg	1,35E-03	5,98E-04	3,74E-04	2,32E-03	1,26E-03	2,53E-05	ND	ND	ND	ND	ND	ND	ND	2,81E-05	4,79E-05	0,00E+00	0,00E+00	0,00E+00
Renew. secondary fuels	MJ	2,87E-03	7,67E-06	4,91E-04	3,37E-03	6,68E-06	3,70E-06	ND	ND	ND	ND	ND	ND	ND	7,37E-08	6,08E-07	0,00E+00	2,42E-06	-5,73E-04
Non-ren. secondary fuels	MJ	2,30E-04	0,00E+00	0,00E+00	2,30E-04	0,00E+00	2,30E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	1,60E-01	1,69E-04	2,47E-03	1,63E-01	2,56E-04	2,31E-04	ND	ND	ND	ND	ND	ND	ND	4,35E-06	1,66E-05	0,00E+00	-5,33E-03	-6,61E-04

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	4,99E-02	2,31E-03	3,62E-03	5,59E-02	4,11E-03	4,20E-04	ND	ND	ND	ND	ND	ND	ND	7,62E-05	1,91E-04	0,00E+00	5,86E-04	-2,80E-03
Non-hazardous waste	kg	1,40E+00	4,44E-02	3,73E-01	1,82E+00	6,42E-02	3,28E-02	ND	ND	ND	ND	ND	ND	ND	1,11E-03	3,53E-03	0,00E+00	3,81E+00	-3,41E-01
Radioactive waste	kg	2,38E-03	2,70E-07	1,30E-06	2,38E-03	3,91E-07	3,09E-06	ND	ND	ND	ND	ND	ND	ND	7,10E-09	2,40E-08	0,00E+00	7,26E-08	-7,41E-07

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	5,20E-04	0,00E+00	6,15E-03	6,67E-03	0,00E+00	1,61E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity, consumption mix w/o renewables, China, 2023 (One Click LCA)
Electricity CO _{2e} / kWh	1.15

Transport scenario documentation A4

Scenario parameter	Value
Specific transport CO _{2e} emissions, kg CO _{2e} / tkm	0.11 (lorry), 0.0102 (ship), 0.12 (ferry)
Average transport distance / km	3759
Capacity utilization (including empty return) %	100%
Bulk density of transported products	-
Volume capacity utilization factor	1

Installation scenario documentation A5

Scenario information	Value
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	Panel installation loss 1.04E-03 kg (UHP05) Panel installation loss 8.06E-04 kg (UHP16) Panel installation loss 6.94E-04 kg (UHP20) Packaging film 0.02297 kg (UHP05) Packaging film 0.01653 kg (UHP16) Packaging film 0.01613 kg (UHP20)
Output materials (specified by type) as result of waste processing at the building site e.g. collection for recycling, for energy recovery, disposal (specified by route) / kg	Materials for disposal: Treatment of waste plastic (installation loss) 1.04E-03 kg (UHP05) 8.06E-04 kg (UHP16) 6.94E-04 kg (UHP20)
Direct emissions to ambient air, soil and water / kg	-

End of life scenario documentation

Scenario information	Value
Collection process specified by type / kg	9.59E-01 kg (UHP05) 1.24E-00 kg (UHP16) 1.44E-00 kg (UHP20)
Recovery process – kg for recycling	-
Recovery process – kg for energy recovery	-
Disposal specified by type / kg	9.59E-01 kg (UHP05) 1.24E-00 kg (UHP16) 1.44E-00 kg (UHP20)
Scenario assumptions e.g. transportation	50 km