



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2, EN 16485:2014
& ISO 14025

**Natural, impregnated and painted softwood
profiled boards**

Puidukoda OÜ



Programme operator: Rakennustieto
Oy Malminkatu 16 A, 00100 Helsinki
<https://ymparisto.rakennustieto.fi/>
EPD registration number: RTS_469_26
Publication date: 02.04.2026
Valid until: 02.04.2031

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.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Puidukoda OÜ
Address	Kivi tn 25 Karksi village Estonia
Contact details	info@puidukoda.eu
Website	https://www.puidukoda.eu/

PRODUCT IDENTIFICATION

Product name	Natural, impregnated and painted softwood profiled boards
Place of production	Karksi village Estonia
Period for data	01.03.2024-28.02.2025

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 Malminkatu 16 A, 00100 Helsinki https://ymparisto.rakennustieto.fi/
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. Also EN 16485:2014 and the RTS EPD PCR 2024 (12.11.2024) are 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)
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Jukka Seppänen
RTS EPD Committee Secretary



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Managing Director

PRODUCT INFORMATION

PRODUCT DESCRIPTION

Natural, impregnated and painted planed softwood profiled boards are produced from spruce (*Picea abies*) and pine (*Pinus sylvestris*), mainly originates from Finland, Estonia and Sweden, but also being bought from Latvia and Norway. All the softwood that is used in manufacturing comes from sustainable forestry (e.g. FSC; PEFC). Bought wood moisture content is 16% and density 455 kg/m³. Finished products are widely used in construction and interior design manufacturing. Softwood profiled timber provides long-lasting and aesthetically pleasing solutions for building facades.

Properties	Planed softwood timber products	Painted softwood timber products	Impregnated timber products
Wood species	Spruce (<i>Picea abies</i>), Pine (<i>Pinus sylvestris</i>)	Spruce (<i>Picea abies</i>), Pine (<i>Pinus sylvestris</i>)	Spruce (<i>Picea abies</i>), Pine (<i>Pinus sylvestris</i>)
Density of wood (kg/m ³)	455	455	455
Moisture content	Average 16 ± 2%	Average 16 ± 2%	Average 16 ± 2%
Width (mm)	45 - 245	45 - 245	45 - 245
Thickness (mm)	8 - 90	8 - 90	8 - 90
Lengths (m)	1,5 - 6,0	1,5 - 6,0	1,5 - 6,0
Purpose	Interior and exterior cladding panels, structural and garden timber	Painted interior and exterior cladding panels, structural and garden timber	Impregnated exterior cladding panels, structural and garden timber

Further information can be found at: <https://www.puidukoda.eu/>

PRODUCT STANDARDS

DoP for strength graded construction products 14081-1:2005+A1:2011, for planed timber, decking planks, exterior cladding and internal panelling EN 14915:2013, for flooring EN 14342:2013.

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 packaging, kg C	0.7	
Biogenic carbon content in product, kg C		
Natural 196.1	Painted 188.3	Impregnated 194.2



PRODUCT RAW MATERIAL COMPOSITION

All products are mainly from bio-based materials. Packaging materials cardboard and PET straps are made from recycled materials. The packaging weight per declared unit is for natural product 3.84 kg, painted product 5.15 kg and impregnated product 2.34 kg.

Material	Amount, mass %			Usability									Origin
				Renewable			Non-renewable			Recycled			
	N	P	I	N	P	I	N	P	I	N	P	I	
Softwood	100 %	96 %	99 %	x	x	x							EU
Chemicals	n/a	4%	1%					x	x				EU
Packaging raw material composition													
Plastic packaging	44%	58 %	7%				x	x	x	98 %	98 %	98 %	EU
Sawnwood	47%	35 %	77 %	x	x	x							EU
Board	10%	7%	16 %							95 %	95 %	95 %	EU

N- natural product, P-painted product, I-impregnated product

PRODUCT LIFE-CYCLE

MANUFACTURING AND PACKAGING (A1-A3)

Manufacturing begins with the procurement of raw materials (A1) and their successful quality control. Once these prerequisites are met and materials are transported to the factory (A2), planing and profiling are carried out using planing machines. This is followed by grading and cutting the timber to required lengths. Depending on the final product specifications, the process then continues either with surface treatment (A3) or proceeds directly to packaging and warehousing.

TRANSPORT AND INSTALLATION (A4-A5)

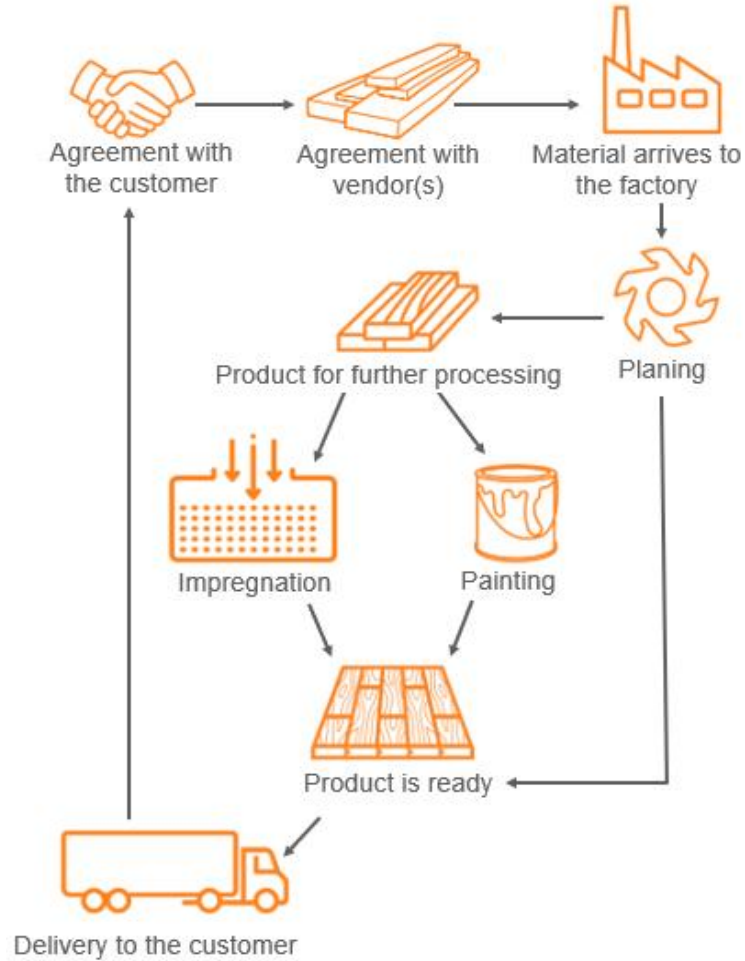
Transportation impacts occurred from Puidukoda factory to construction site (A4) covering fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions. According to the manufacturer, transportation does not cause losses as products are correctly packaged. The main clients are mainly in Estonia, Poland and the Netherlands, with average truck transport distances of 750 km. The vehicle capacity utilization volume factor is assumed to be 1. Environmental impacts from installation (A5) include biogenic carbon dioxide from wood and cardboard packaging. Waste treatment of packaging is included in the model: wood packaging is treated by municipal incineration, while cardboard packaging and plastic straps are directed to recycling. Installation losses and materials, including energy, have not been assessed.

PRODUCT END OF LIFE (C1-C4, D)

The products are dismantled (C1), collected and transported (C2) to the waste treatment centre. It is assumed that 75% of the products are incinerated at the end-of-life, producing electricity and district heating (C3) and 5% of the product is reused and 20% recycled (C3). Since most of the products are exported to Poland, the end-of-life is modelled according to that region.

The benefits beyond the system boundaries (D) include heat and electricity generated during the incineration of the product waste. Also, the avoided production of virgin materials recycled during the end-of-life of both the main product and its packaging.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

DATA PERIOD

The period for data represents 01.03.2024-28.02.2025.

DECLARED UNIT

Declared unit	1 m ³	
Mass per declared unit, kg		
Natural 455	Painted 473.8	Impregnated 461.8

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

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.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation.

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 products specific, allocated by production volumes. Energy usage is measured directly from production equipment. In addition to the main product, saw dust is created as a co-product as it is valorized separately. Part of the saw dust is sold directly; part is used on-site for heating (included separately in A3) and part of the sawdust is used to create pellets/briquettes and then sold. However, the latter is outside of the system boundaries and not included in the calculations. According to EN 15804, the allocation must be based on economic values, if the difference in revenues from co-products is large – in this case 87-91%. Revenue shares between product and co-product: natural product 98%, co-product 2%; painted product 99%, co-product 1%; impregnated product 98%, co-product 2%. Material flows with specific properties, such as energy content or biogenic carbon content, are allocated in a way that reflects the physical flows.

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. Biogenic carbon content of wood is calculated in line with EN 16449:2014 standard. The EPD Generator uses Ecoinvent v3.10.1 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1 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/>
- Bozdag, Ö. & Secer, M. 2007. Accessed on: www.irbnet.de/daten/iconda/CIB_DC24603.pdf
- Ecoinvent 3.10.1/3.11 database
- JRC, Background data collection and life cycle assessment for construction and demolition waste (CDW) management, 2022. Accessed on: <https://op.europa.eu/en/publication-detail/-/publication/623326e6-8274-11ed-9887-01aa75ed71a1/language-en>
- Banaś, M., Energy Efficiency Analysis of Waste-to-Energy Plants in Poland, 2024. Accessed on: <https://www.mdpi.com/1996-1073/17/10/2390>
- Waste-to-Energy Bulletin: Developments in Poland, 2025. Accessed on: <https://www.linkedin.com/pulse/waste-to-energy-bulletin-developments-poland-julaug-2025-trzpil-6gdqf>
- Planed sawn timber (EPD nr: S-P-07697)
- EPD Standard and special sawn timber from UPM Timber (EPD nr: S-P-07215)
- EPD Classic Sawn by Stora Enso (EPD nr: EPD-IES-0024511:001)
- EPD Teknol 1830 Opaque (EPD nr: EPD-IES-0014560:004)

- EPD Pinja Color Plus, Pinja Wood Stain, Villa Lasur Akva, Ultra Primer, Ultra pro Tikkurila Group (EPD nr: HUB-0247)
- EPD Vinha, Pika-teho, Valtti Opaque, Pinja Protect Top 25, Pinja Protect M 20, Pinja Protect GM, Pinja Mid Pro, Ultra Pro 10, Ultra Pro H10 CP, Ultra pro 30, Ultra Classic, Ultra pro plus 30, Bestå Accent, Perfekt Helmatt FönsterSnickeri Plus, Modern Oljefärg, Perfect Oljefärg, Bestå Utsikt, Perfekt FönsterSnickeri Plus Bestå Arkitekt, Perfekt Helmatt Fasad Plus, Grundfärg, Primex Trägrund plus, Villa Ultima, Villa Akva (EPD nr: HUB-0248)
- EPD Nordica EKO 3330-03 base 1 18 L (EPD nr: NEPD-3352-1986-EN)
- EPD Teknol 3881-00 BASE 1 (EPD nr: NEPD-3354-1986-EN)
- EPD Teknol Aqua 1412-01 (EPD nr: S-P-03898)
- FDES (EPD nr: INIES_CPRO20200625_141557, 37282)
- EPD Teknos Group Oy Teknosafe 2407-00 white (EPD nr: NEPD-3806-2769-EN)
- EPD EPD-IES-0015612:001 Aquaprimer 2900-XX Translucent (EPD nr: EPD-IES-0015612:001)
- EPD Teknol 2881 Opaque (EPD nr: EPD-IES-0013793:003)



ENVIRONMENTAL IMPACT DATA (NATURAL)

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	-6.73E+02	2.30E+01	1.99E+01	-6.30E+02	4.58E+01	7.28E+00	ND	ND	ND	ND	ND	ND	ND	1.64E+00	2.45E+00	7.54E+02	0.00E+00	-7,06E+02
GWP – fossil	kg CO ₂ e	6,87E+01	2,30E+01	1,60E+01	1,08E+02	4,46E+01	3,19E-01	ND	ND	ND	ND	ND	ND	ND	1,64E+00	2,45E+00	1,10E+01	0,00E+00	-5,42E+02
GWP – biogenic	kg CO ₂ e	-7,43E+02	7,96E-06	3,11E+00	-7,40E+02	1,04E-02	7,00E+00	ND	ND	ND	ND	ND	ND	ND	1,67E-04	1,39E-04	7,43E+02	0,00E+00	-1,64E+02
GWP – LULUC	kg CO ₂ e	9,41E-01	1,00E-02	2,33E-02	9,74E-01	1,99E-02	1,76E-04	ND	ND	ND	ND	ND	ND	ND	1,68E-04	1,10E-03	1,76E-02	0,00E+00	-1,72E-01
Ozone depletion pot.	kg CFC-11e	1,93E-06	3,61E-07	5,96E-07	2,88E-06	6,58E-07	1,40E-09	ND	ND	ND	ND	ND	ND	ND	2,51E-08	3,62E-08	1,32E-07	0,00E+00	-3,32E-06
Acidification potential	mol H ⁺ e	4,47E-01	1,01E-01	8,35E-02	6,32E-01	1,52E-01	8,28E-04	ND	ND	ND	ND	ND	ND	ND	1,48E-02	8,35E-03	8,48E-02	0,00E+00	-3,96E+00
EP-freshwater ²⁾	kg Pe	3,26E-02	1,71E-03	3,10E-03	3,74E-02	3,47E-03	4,60E-05	ND	ND	ND	ND	ND	ND	ND	4,74E-05	1,91E-04	3,62E-03	0,00E+00	-4,71E-01
EP-marine	kg Ne	1,61E-01	3,14E-02	1,37E-02	2,06E-01	4,99E-02	4,60E-04	ND	ND	ND	ND	ND	ND	ND	6,87E-03	2,74E-03	3,90E-02	0,00E+00	-5,41E-01
EP-terrestrial	mol Ne	1,76E+00	3,43E-01	1,32E-01	2,23E+00	5,43E-01	3,17E-03	ND	ND	ND	ND	ND	ND	ND	7,52E-02	2,99E-02	3,85E-01	0,00E+00	-5,13E+00
POCP (“smog”) ³⁾	kg NMVOCe	7,43E-01	1,32E-01	5,96E-02	9,35E-01	2,24E-01	9,10E-04	ND	ND	ND	ND	ND	ND	ND	2,24E-02	1,23E-02	1,05E-01	0,00E+00	-1,54E+00
ADP-minerals & metals ⁴⁾	kg Sbe	2,31E-04	6,24E-05	5,55E-05	3,49E-04	1,24E-04	1,20E-06	ND	ND	ND	ND	ND	ND	ND	5,88E-07	6,83E-06	2,70E-05	0,00E+00	-3,23E-04
ADP-fossil resources	MJ	1,10E+03	3,32E+02	2,95E+02	1,73E+03	6,47E+02	1,45E+00	ND	ND	ND	ND	ND	ND	ND	2,15E+01	3,55E+01	1,25E+02	0,00E+00	-5,91E+03
Water use ⁵⁾	m ³ e depr.	2,90E+01	1,63E+00	8,18E+01	1,12E+02	3,20E+00	1,03E-01	ND	ND	ND	ND	ND	ND	ND	5,36E-02	1,76E-01	1,20E+01	0,00E+00	-8,23E+01

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	1,84E-05	2,24E-06	6,56E-07	2,13E-05	4,46E-06	1,30E-08	ND	ND	ND	ND	ND	ND	ND	4,21E-07	2,45E-07	1,12E-06	0,00E+00	-2,12E-05
Ionizing radiation ⁶⁾	kBq U235e	1,25E+01	3,04E-01	2,10E+00	1,49E+01	5,63E-01	8,69E-03	ND	ND	ND	ND	ND	ND	ND	9,50E-03	3,09E-02	3,94E-01	0,00E+00	-1,41E+01
Ecotoxicity (freshwater)	CTUe	3,15E+02	4,48E+01	5,96E+01	4,20E+02	9,15E+01	2,18E+00	ND	ND	ND	ND	ND	ND	ND	1,18E+00	5,03E+00	2,66E+02	0,00E+00	-1,11E+03
Human toxicity, cancer	CTUh	5,52E-08	3,84E-09	2,40E-09	6,14E-08	7,36E-09	1,90E-10	ND	ND	ND	ND	ND	ND	ND	1,69E-10	4,04E-10	9,68E-07	0,00E+00	-9,36E-08
Human tox. non-cancer	CTUh	8,37E-07	2,11E-07	1,02E-07	1,15E-06	4,19E-07	6,13E-09	ND	ND	ND	ND	ND	ND	ND	2,67E-09	2,30E-08	7,16E-07	0,00E+00	-6,26E-06
SQP ⁷⁾	-	1,07E+05	3,24E+02	4,54E+02	1,08E+05	6,51E+02	2,02E+00	ND	ND	ND	ND	ND	ND	ND	1,50E+00	3,58E+01	6,47E+01	0,00E+00	-3,68E+03

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	1,31E+04	4,63E+00	6,50E+01	1,31E+04	8,87E+00	-3,62E+01	ND	ND	ND	ND	ND	ND	ND	1,36E-01	4,87E-01	-6,91E+03	0,00E+00	-5,26E+03
Renew. PER as material	MJ	7,74E+03	0,00E+00	3,46E+01	7,77E+03	0,00E+00	-3,46E+01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-7,74E+03	0,00E+00	2,26E+02
Total use of renew. PER	MJ	2,08E+04	4,63E+00	9,96E+01	2,09E+04	8,87E+00	-7,07E+01	ND	ND	ND	ND	ND	ND	ND	1,36E-01	4,87E-01	-1,46E+04	0,00E+00	-5,04E+03
Non-re. PER as energy	MJ	1,26E+03	3,32E+02	2,01E+02	1,80E+03	6,47E+02	-6,64E+01	ND	ND	ND	ND	ND	ND	ND	2,15E+01	3,55E+01	1,25E+02	0,00E+00	-6,73E+03
Non-re. PER as material	MJ	6,03E+00	0,00E+00	6,81E+01	7,41E+01	0,00E+00	-6,81E+01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-6,03E+00	0,00E+00	-2,27E+02
Total use of non-re. PER	MJ	1,27E+03	3,32E+02	2,69E+02	1,87E+03	6,47E+02	-1,35E+02	ND	ND	ND	ND	ND	ND	ND	2,15E+01	3,55E+01	1,19E+02	0,00E+00	-6,96E+03
Secondary materials	kg	9,13E-01	1,42E-01	6,44E-01	1,70E+00	2,75E-01	6,50E-03	ND	ND	ND	ND	ND	ND	ND	8,91E-03	1,51E-02	1,57E-01	0,00E+00	6,57E-01
Renew. secondary fuels	MJ	7,29E-02	1,75E-03	9,33E-02	1,68E-01	3,50E-03	4,96E-05	ND	ND	ND	ND	ND	ND	ND	2,33E-05	1,92E-04	8,53E-04	0,00E+00	-6,81E-02
Non-ren. secondary fuels	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
Use of net fresh water	m ³	7,15E-01	4,82E-02	1,64E-01	9,27E-01	9,56E-02	1,03E-03	ND	ND	ND	ND	ND	ND	ND	1,42E-03	5,25E-03	8,93E-02	0,00E+00	-1,17E+01

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	3,36E+00	5,43E-01	4,08E-01	4,31E+00	1,10E+00	3,09E-02	ND	ND	ND	ND	ND	ND	ND	2,39E-02	6,02E-02	3,23E+00	0,00E+00	-5,93E+01
Non-hazardous waste	kg	1,24E+02	1,01E+01	3,73E+01	1,71E+02	2,03E+01	2,43E+00	ND	ND	ND	ND	ND	ND	ND	3,26E-01	1,11E+00	3,60E+02	0,00E+00	-2,32E+03
Radioactive waste	kg	3,85E-03	7,45E-05	3,12E-04	4,23E-03	1,38E-04	2,22E-06	ND	ND	ND	ND	ND	ND	ND	2,33E-06	7,58E-06	9,83E-05	0,00E+00	-3,45E-03

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	2,28E+01	0,00E+00	0,00E+00
Materials for recycling	kg	2,76E-03	0,00E+00	6,82E-01	6,85E-01	0,00E+00	2,05E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	9,10E+01	0,00E+00	0,00E+00
Materials for energy rec	kg	3,97E+00	0,00E+00	0,00E+00	3,97E+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	1,29E+03	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	3,01E+03	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	6,11E+01	2,29E+01	1,60E+01	1,00E+02	4,43E+01	3,27E-01	ND	ND	ND	ND	ND	ND	ND	1,63E+00	2,44E+00	1,09E+01	0,00E+00	-5,40E+02
Ozone depletion Pot.	kg CFC-11e	8,36E-07	2,88E-07	5,49E-07	1,67E-06	5,25E-07	1,17E-09	ND	ND	ND	ND	ND	ND	ND	1,99E-08	2,88E-08	1,09E-07	0,00E+00	-2,80E-06
Acidification	kg SO ₂ e	2,97E-01	7,81E-02	7,08E-02	4,46E-01	1,16E-01	6,19E-04	ND	ND	ND	ND	ND	ND	ND	1,04E-02	6,38E-03	6,13E-02	0,00E+00	-3,40E+00
Eutrophication	kg PO ₄ ³ e	1,32E-01	1,63E-02	7,17E-02	2,21E-01	2,83E-02	1,89E-04	ND	ND	ND	ND	ND	ND	ND	2,43E-03	1,55E-03	2,02E-02	0,00E+00	-2,36E-01
POCP (“smog”)	kg C ₂ H ₄ e	6,26E-02	6,17E-03	5,61E-03	7,44E-02	1,03E-02	6,06E-05	ND	ND	ND	ND	ND	ND	ND	7,80E-04	5,68E-04	4,73E-03	0,00E+00	-1,73E-01
ADP-elements	kg Sbe	2,11E-04	6,09E-05	5,49E-05	3,27E-04	1,21E-04	1,18E-06	ND	ND	ND	ND	ND	ND	ND	5,72E-07	6,66E-06	2,44E-05	0,00E+00	-3,18E-04
ADP-fossil	MJ	7,62E+02	3,27E+02	2,85E+02	1,37E+03	6,38E+02	1,30E+00	ND	ND	ND	ND	ND	ND	ND	2,13E+01	3,50E+01	1,19E+02	0,00E+00	-5,68E+03

KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

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	-1.48E+00	5.06E-02	4.38E-02	-1.38E+00	1.01E-01	1.60E-02	ND	ND	ND	ND	ND	ND	ND	7.46E+02	1.12E+03	3.43E+05	0.00E+00	-3.21E+05
GWP – fossil	kg CO ₂ e	1.52E-01	5.05E-02	3.69E-02	2.40E-01	1.01E-01	6.20E-04	ND	ND	ND	ND	ND	ND	ND	7.46E+02	1.11E+03	5.01E+03	0.00E+00	-2.47E+05
GWP – biogenic	kg CO ₂ e	-1.63E+00	1.75E-08	6.84E-03	-1.63E+00	2.29E-05	1.54E-02	ND	ND	ND	ND	ND	ND	ND	7.60E-02	6.32E-02	3.38E+05	0.00E+00	-7.46E+04
GWP – LULUC	kg CO ₂ e	2.09E-03	2.20E-05	5.60E-05	2.17E-03	4.51E-05	3.60E-07	ND	ND	ND	ND	ND	ND	ND	7.64E-02	5.01E-01	8.01E+00	0.00E+00	-7.83E+01
ADP-minerals & metals ⁴⁾	kg Sbe	5.08E-07	1.37E-07	1.00E-07	7.45E-07	2.70E-07	2.46E-09	ND	ND	ND	ND	ND	ND	ND	2.68E-04	3.11E-03	1.23E-02	0.00E+00	-1.47E-01
ADP-fossil resources	MJ	5.08E-07	1.37E-07	1.00E-07	7.45E-07	2.81E-07	2.46E-09	ND	ND	ND	ND	ND	ND	ND	2.68E-04	3.11E-03	1.23E-02	0.00E+00	-2.69E+06
Water use ⁵⁾	m ³ e depr.	2.42E+00	7.30E-01	6.70E-01	3.82E+00	1.46E+00	2.35E-03	ND	ND	ND	ND	ND	ND	ND	9.78E+03	1.62E+04	5.69E+04	0.00E+00	-3.74E+04
Secondary materials	kg	6.35E-02	3.58E-03	1.81E-01	2.48E-01	7.21E-03	9.21E-05	ND	ND	ND	ND	ND	ND	ND	2.44E+01	8.01E+01	5.46E+03	0.00E+00	4.41E+02
Biog. C in product	kg C	4.31E-01	n/a	0.00E+00	4.31E-01	n/a	n/a	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
Biog. C in packaging	kg C	0.00E+00	n/a	1.64E-03	1.64E-03	n/a	n/a	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a

9) Biog. C in product = Biogenic carbon content in product

ENVIRONMENTAL IMPACT DATA (IMPREGNATED)

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	-6.64E+02	2.32E+01	1.62E+01	-6.25E+02	4.50E+01	3.80E+00	ND	ND	ND	ND	ND	ND	ND	1.66E+00	2.48E+00	7.54E+02	0.00E+00	-7,11E+02
GWP – fossil	kg CO ₂ e	7,60E+01	2,32E+01	1,39E+01	1,13E+02	4,50E+01	6,03E-02	ND	ND	ND	ND	ND	ND	ND	1,66E+00	2,48E+00	1,11E+01	0,00E+00	-5,45E+02
GWP – biogenic	kg CO ₂ e	-7,43E+02	4,69E-05	2,31E+00	-7,41E+02	9,99E-03	3,74E+00	ND	ND	ND	ND	ND	ND	ND	1,70E-04	0,00E+00	7,43E+02	0,00E+00	-1,66E+02
GWP – LULUC	kg CO ₂ e	2,58E+00	1,01E-02	1,79E-02	2,61E+00	1,92E-02	3,52E-05	ND	ND	ND	ND	ND	ND	ND	1,71E-04	1,11E-03	1,79E-02	0,00E+00	-1,70E-01
Ozone depletion pot.	kg CFC-11E	2,67E-06	3,65E-07	5,87E-07	3,62E-06	7,35E-07	6,14E-10	ND	ND	ND	ND	ND	ND	ND	2,55E-08	3,67E-08	1,34E-07	0,00E+00	-3,22E-06
Acidification potential	mol H ⁺ e	4,88E-01	1,04E-01	8,27E-02	6,75E-01	1,51E-01	4,07E-04	ND	ND	ND	ND	ND	ND	ND	1,50E-02	8,47E-03	8,61E-02	0,00E+00	-4,00E+00
EP-freshwater ²⁾	kg Pe	3,57E-02	1,72E-03	2,04E-03	3,95E-02	3,37E-03	1,99E-05	ND	ND	ND	ND	ND	ND	ND	4,81E-05	1,93E-04	3,68E-03	0,00E+00	-4,77E-01
EP-marine	kg Ne	1,78E-01	3,20E-02	1,20E-02	2,22E-01	5,01E-02	2,01E-04	ND	ND	ND	ND	ND	ND	ND	6,97E-03	2,78E-03	3,96E-02	0,00E+00	-5,45E-01
EP-terrestrial	mol Ne	1,83E+00	3,50E-01	1,15E-01	2,30E+00	5,46E-01	1,84E-03	ND	ND	ND	ND	ND	ND	ND	7,63E-02	3,03E-02	3,91E-01	0,00E+00	-5,17E+00
POCP (“smog”) ³⁾	kg NMVOCe	7,75E-01	1,34E-01	4,01E-02	9,49E-01	2,29E-01	4,98E-04	ND	ND	ND	ND	ND	ND	ND	2,28E-02	1,25E-02	1,06E-01	0,00E+00	-1,54E+00
ADP-minerals & metals ⁴⁾	kg Sbe	3,56E-04	6,29E-05	2,03E-05	4,40E-04	1,25E-04	2,84E-07	ND	ND	ND	ND	ND	ND	ND	5,97E-07	6,93E-06	2,74E-05	0,00E+00	-2,95E-04
ADP-fossil resources	MJ	1,22E+03	3,35E+02	2,02E+02	1,76E+03	6,53E+02	5,77E-01	ND	ND	ND	ND	ND	ND	ND	2,18E+01	3,61E+01	1,27E+02	0,00E+00	-5,87E+03
Water use ⁵⁾	m ³ e depr.	3,31E+01	1,64E+00	1,09E+02	1,43E+02	3,26E+00	6,64E-02	ND	ND	ND	ND	ND	ND	ND	5,44E-02	1,78E-01	1,22E+01	0,00E+00	-8,06E+01

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	1,88E-05	2,26E-06	5,46E-07	2,16E-05	4,50E-06	5,82E-09	ND	ND	ND	ND	ND	ND	ND	4,27E-07	2,49E-07	1,13E-06	0,00E+00	-2,13E-05
Ionizing radiation ⁶⁾	kBq U235e	1,30E+01	3,07E-01	2,19E+00	1,55E+01	6,32E-01	2,06E-03	ND	ND	ND	ND	ND	ND	ND	9,65E-03	3,14E-02	4,00E-01	0,00E+00	-1,39E+01
Ecotoxicity (freshwater)	CTUe	7,06E+02	4,51E+01	3,20E+01	7,83E+02	8,79E+01	1,33E+00	ND	ND	ND	ND	ND	ND	ND	1,20E+00	5,10E+00	2,70E+02	0,00E+00	-1,09E+03
Human toxicity, cancer	CTUh	6,72E-08	3,87E-09	1,34E-09	7,24E-08	7,43E-09	7,25E-11	ND	ND	ND	ND	ND	ND	ND	1,71E-10	4,10E-10	9,82E-07	0,00E+00	-9,39E-08
Human tox. non-cancer	CTUh	9,57E-07	2,12E-07	7,41E-08	1,24E-06	4,23E-07	4,04E-09	ND	ND	ND	ND	ND	ND	ND	2,71E-09	2,33E-08	7,26E-07	0,00E+00	-6,32E-06
SQP ⁷⁾	-	1,08E+05	3,26E+02	4,33E+02	1,08E+05	6,58E+02	4,63E-01	ND	ND	ND	ND	ND	ND	ND	1,53E+00	3,63E+01	6,57E+01	0,00E+00	-3,71E+03

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	1,31E+04	4,67E+00	5,93E+01	1,32E+04	9,44E+00	-3,63E+01	ND	ND	ND	ND	ND	ND	ND	1,38E-01	4,94E-01	-7,01E+03	0,00E+00	-2,02E+03
Renew. PER as material	MJ	7,74E+03	0,00E+00	3,46E+01	7,77E+03	0,00E+00	-3,46E+01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-7,74E+03	0,00E+00	9,99E+02
Total use of renew. PER	MJ	2,08E+04	4,67E+00	9,38E+01	2,09E+04	9,44E+00	-7,09E+01	ND	ND	ND	ND	ND	ND	ND	1,38E-01	4,94E-01	-1,48E+04	0,00E+00	-1,02E+03
Non-re. PER as energy	MJ	1,39E+03	3,35E+02	1,76E+02	1,90E+03	6,53E+02	-3,45E+00	ND	ND	ND	ND	ND	ND	ND	2,18E+01	3,61E+01	1,27E+02	0,00E+00	-5,87E+03
Non-re. PER as material	MJ	6,03E+00	0,00E+00	4,20E+00	1,02E+01	0,00E+00	-4,20E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-6,03E+00	0,00E+00	-7,57E-04
Total use of non-re. PER	MJ	1,39E+03	3,35E+02	1,80E+02	1,91E+03	6,53E+02	-7,65E+00	ND	ND	ND	ND	ND	ND	ND	2,18E+01	3,61E+01	1,21E+02	0,00E+00	-5,87E+03
Secondary materials	kg	9,54E-01	1,43E-01	6,05E-01	1,70E+00	2,79E-01	1,44E-03	ND	ND	ND	ND	ND	ND	ND	9,05E-03	1,54E-02	1,59E-01	0,00E+00	-5,95E-01
Renew. secondary fuels	MJ	7,37E-02	1,76E-03	3,98E-02	1,15E-01	3,54E-03	8,36E-06	ND	ND	ND	ND	ND	ND	ND	2,36E-05	1,95E-04	8,66E-04	0,00E+00	1,66E+00
Non-ren. secondary fuels	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
Use of net fresh water	m ³	7,10E-01	4,85E-02	1,17E-01	8,75E-01	9,65E-02	4,65E-04	ND	ND	ND	ND	ND	ND	ND	1,44E-03	5,33E-03	9,06E-02	0,00E+00	-1,12E+01

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	4,03E+00	5,47E-01	8,43E-02	4,66E+00	1,06E+00	1,48E-02	ND	ND	ND	ND	ND	ND	ND	2,42E-02	6,11E-02	3,28E+00	0,00E+00	-5,99E+01
Non-hazardous waste	kg	1,37E+02	1,02E+01	3,49E+00	1,51E+02	2,00E+01	1,94E+00	ND	ND	ND	ND	ND	ND	ND	3,30E-01	1,13E+00	3,65E+02	0,00E+00	-2,32E+03
Radioactive waste	kg	3,98E-03	7,53E-05	2,51E-04	4,31E-03	1,55E-04	5,22E-07	ND	ND	ND	ND	ND	ND	ND	2,37E-06	7,69E-06	9,98E-05	0,00E+00	-3,42E-03

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	2,31E+01	0,00E+00	0,00E+00
Materials for recycling	kg	2,76E-03	0,00E+00	6,62E-01	6,64E-01	0,00E+00	5,45E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	9,23E+01	0,00E+00	0,00E+00
Materials for energy rec	kg	3,97E+00	0,00E+00	0,00E+00	3,97E+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	1,31E+03	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	3,05E+03	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	7,01E+01	2,31E+01	1,39E+01	1,07E+02	4,48E+01	6,83E-02	ND	ND	ND	ND	ND	ND	ND	1,66E+00	2,47E+00	1,11E+01	0,00E+00	-5,43E+02
Ozone depletion Pot.	kg CFC-11e	1,74E-06	2,91E-07	5,65E-07	2,60E-06	5,86E-07	5,06E-10	ND	ND	ND	ND	ND	ND	ND	2,02E-08	2,93E-08	1,10E-07	0,00E+00	-2,72E-06
Acidification	kg SO ₂ e	3,31E-01	8,00E-02	7,08E-02	4,82E-01	1,15E-01	2,93E-04	ND	ND	ND	ND	ND	ND	ND	1,06E-02	6,47E-03	6,22E-02	0,00E+00	-3,43E+00
Eutrophication	kg PO ₄ ³ e	2,97E-01	1,66E-02	1,06E-02	3,24E-01	2,84E-02	1,09E-04	ND	ND	ND	ND	ND	ND	ND	2,47E-03	1,58E-03	2,05E-02	0,00E+00	-1,76E-01
POCP (“smog”)	kg C ₂ H ₄ e	6,68E-02	6,28E-03	3,40E-03	7,65E-02	1,04E-02	2,72E-05	ND	ND	ND	ND	ND	ND	ND	7,92E-04	5,77E-04	4,80E-03	0,00E+00	-1,73E-01
ADP-elements	kg Sbe	1,33E-03	6,13E-05	2,02E-05	1,41E-03	1,22E-04	2,71E-07	ND	ND	ND	ND	ND	ND	ND	5,80E-07	6,76E-06	2,48E-05	0,00E+00	-2,91E-04
ADP-fossil	MJ	8,73E+02	3,30E+02	2,00E+02	1,40E+03	6,43E+02	5,41E-01	ND	ND	ND	ND	ND	ND	ND	2,16E+01	3,56E+01	1,20E+02	0,00E+00	-5,64E+03

KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

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	-1.44E+00	5.03E-02	3.51E-02	-1.35E+00	9.75E-02	8.23E-03	ND	ND	ND	ND	ND	ND	ND	7.67E+02	1.15E+03	3.48E+05	0.00E+00	-3.28E+05
GWP – fossil	kg CO ₂ e	1.65E-01	5.02E-02	3.01E-02	2.45E-01	9.74E-02	1.31E-04	ND	ND	ND	ND	ND	ND	ND	7.67E+02	1.15E+03	5.13E+03	0.00E+00	-2.52E+05
GWP – biogenic	kg CO ₂ e	-1.61E+00	1.02E-07	5.00E-03	-1.60E+00	2.16E-05	8.10E-03	ND	ND	ND	ND	ND	ND	ND	7.85E-02	0.00E+00	3.43E+05	0.00E+00	-7.67E+04
GWP – LULUC	kg CO ₂ e	5.59E-03	2.19E-05	3.88E-05	5.65E-03	4.16E-05	7.62E-08	ND	ND	ND	ND	ND	ND	ND	7.90E-02	5.13E-01	8.27E+00	0.00E+00	-7.85E+01
ADP-minerals & metals ⁴⁾	kg Sbe	7.67E-07	1.35E-07	2.27E-08	9.25E-07	2.71E-07	4.33E-10	ND	ND	ND	ND	ND	ND	ND	2.76E-04	3.20E-03	1.27E-02	0.00E+00	-1.36E-01
ADP-fossil resources	MJ	2.62E+00	7.17E-01	4.59E-01	3.79E+00	1.42E+00	4.09E-04	ND	ND	ND	ND	ND	ND	ND	1.01E+04	1.67E+04	5.86E+04	0.00E+00	-2.71E+06
Water use ⁵⁾	m ³ e depr.	7.06E-02	3.51E-03	2.36E-01	3.12E-01	7.08E-03	1.22E-05	ND	ND	ND	ND	ND	ND	ND	2.51E+01	8.22E+01	5.63E+03	0.00E+00	-3.72E+04
Secondary materials	kg	2.05E-03	3.07E-04	1.32E-03	3.66E-03	6.06E-04	1.73E-06	ND	ND	ND	ND	ND	ND	ND	4.18E+00	7.11E+00	7.34E+01	0.00E+00	-2.75E+02
Biog. C in product	kg C	4.20E-01	n/a	0.00E+00	4.20E-01	n/a	n/a	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
Biog. C in packaging	kg C	0.00E+00	n/a	1.62E-03	1.62E-03	n/a	n/a	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a

9) Biog. C in product = Biogenic carbon content in product

ENVIRONMENTAL IMPACT DATA (PAINTED)

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	-6.47E+02	2.36E+01	6.18E+01	-5.61E+02	4.65E+01	4.28E+00	ND	ND	ND	ND	ND	ND	ND	1.71E+00	2.55E+00	7.54E+02	0.00E+00	-7,39E+02
GWP – fossil	kg CO ₂ e	9,62E+01	2,36E+01	5,94E+01	1,79E+02	4,65E+01	5,44E-01	ND	ND	ND	ND	ND	ND	ND	1,71E+00	2,55E+00	1,14E+01	0,00E+00	-5,69E+02
GWP – biogenic	kg CO ₂ e	-7,45E+02	7,16E-05	2,32E+00	-7,42E+02	1,05E-02	3,74E+00	ND	ND	ND	ND	ND	ND	ND	1,74E-04	0,00E+00	7,43E+02	0,00E+00	-1,70E+02
GWP – LULUC	kg CO ₂ e	1,86E+00	1,03E-02	2,90E-02	1,89E+00	2,08E-02	2,98E-04	ND	ND	ND	ND	ND	ND	ND	1,75E-04	1,14E-03	1,83E-02	0,00E+00	-1,83E-01
Ozone depletion pot.	kg CFC-11e	5,54E-06	3,70E-07	2,14E-06	8,05E-06	6,87E-07	2,08E-09	ND	ND	ND	ND	ND	ND	ND	2,62E-08	3,76E-08	1,38E-07	0,00E+00	-3,56E-06
Acidification potential	mol H ⁺ e	6,49E-01	1,03E-01	2,97E-01	1,05E+00	1,59E-01	1,19E-03	ND	ND	ND	ND	ND	ND	ND	1,54E-02	8,69E-03	8,83E-02	0,00E+00	-4,14E+00
EP-freshwater ²⁾	kg Pe	4,35E-02	1,75E-03	8,24E-03	5,35E-02	3,62E-03	6,86E-05	ND	ND	ND	ND	ND	ND	ND	4,93E-05	1,99E-04	3,77E-03	0,00E+00	-4,92E-01
EP-marine	kg Ne	2,07E-01	3,21E-02	4,26E-02	2,82E-01	5,21E-02	6,84E-04	ND	ND	ND	ND	ND	ND	ND	7,15E-03	2,86E-03	4,07E-02	0,00E+00	-5,66E-01
EP-terrestrial	mol Ne	2,05E+00	3,50E-01	4,34E-01	2,84E+00	5,67E-01	4,32E-03	ND	ND	ND	ND	ND	ND	ND	7,83E-02	3,11E-02	4,01E-01	0,00E+00	-5,37E+00
POCP (“smog”) ³⁾	kg NMVOCe	9,05E-01	1,35E-01	1,67E-01	1,21E+00	2,34E-01	1,27E-03	ND	ND	ND	ND	ND	ND	ND	2,34E-02	1,28E-02	1,09E-01	0,00E+00	-1,63E+00
ADP-minerals & metals ⁴⁾	kg Sbe	6,87E-04	6,39E-05	9,48E-05	8,46E-04	1,30E-04	2,00E-06	ND	ND	ND	ND	ND	ND	ND	6,12E-07	7,11E-06	2,81E-05	0,00E+00	-3,62E-04
ADP-fossil resources	MJ	1,65E+03	3,40E+02	8,68E+02	2,86E+03	6,75E+02	2,21E+00	ND	ND	ND	ND	ND	ND	ND	2,23E+01	3,70E+01	1,30E+02	0,00E+00	-6,26E+03
Water use ⁵⁾	m ³ e depr.	2,54E+02	1,66E+00	3,77E+02	6,33E+02	3,34E+00	1,34E-01	ND	ND	ND	ND	ND	ND	ND	5,58E-02	1,83E-01	1,25E+01	0,00E+00	-8,80E+01

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	2,09E-05	2,29E-06	1,81E-06	2,50E-05	4,66E-06	1,92E-08	ND	ND	ND	ND	ND	ND	ND	4,38E-07	2,55E-07	1,16E-06	0,00E+00	-2,22E-05
Ionizing radiation ⁶⁾	kBq U235e	1,47E+01	3,11E-01	8,12E+00	2,32E+01	5,88E-01	1,44E-02	ND	ND	ND	ND	ND	ND	ND	9,90E-03	3,22E-02	4,11E-01	0,00E+00	-1,49E+01
Ecotoxicity (freshwater)	CTUe	1,36E+03	4,59E+01	1,32E+02	1,54E+03	9,55E+01	2,91E+00	ND	ND	ND	ND	ND	ND	ND	1,23E+00	5,23E+00	2,77E+02	0,00E+00	-1,18E+03
Human toxicity, cancer	CTUh	1,95E-07	3,93E-09	1,61E-08	2,15E-07	7,68E-09	2,92E-10	ND	ND	ND	ND	ND	ND	ND	1,76E-10	4,21E-10	1,01E-06	0,00E+00	-9,83E-08
Human tox. non-cancer	CTUh	2,46E-06	2,16E-07	2,99E-07	2,98E-06	4,37E-07	7,94E-09	ND	ND	ND	ND	ND	ND	ND	2,78E-09	2,40E-08	7,45E-07	0,00E+00	-6,55E-06
SQP ⁷⁾	-	1,09E+05	3,32E+02	5,04E+02	1,10E+05	6,80E+02	3,37E+00	ND	ND	ND	ND	ND	ND	ND	1,57E+00	3,73E+01	6,74E+01	0,00E+00	-3,85E+03

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	1,33E+04	4,74E+00	8,55E+01	1,34E+04	9,26E+00	-3,60E+01	ND	ND	ND	ND	ND	ND	ND	1,41E-01	5,07E-01	-7,19E+03	0,00E+00	-2,09E+03
Renew. PER as material	MJ	7,83E+03	0,00E+00	3,46E+01	7,87E+03	0,00E+00	-3,46E+01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-7,83E+03	0,00E+00	1,03E+03
Total use of renew. PER	MJ	2,11E+04	4,74E+00	1,20E+02	2,12E+04	9,26E+00	-7,06E+01	ND	ND	ND	ND	ND	ND	ND	1,41E-01	5,07E-01	-1,50E+04	0,00E+00	-1,06E+03
Non-re. PER as energy	MJ	1,78E+03	3,40E+02	7,13E+02	2,83E+03	6,75E+02	-1,21E+02	ND	ND	ND	ND	ND	ND	ND	2,23E+01	3,70E+01	1,31E+02	0,00E+00	-6,26E+03
Non-re. PER as material	MJ	9,86E+01	0,00E+00	1,23E+02	2,22E+02	0,00E+00	-1,23E+02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-9,86E+01	0,00E+00	-7,57E-04
Total use of non-re. PER	MJ	1,88E+03	3,40E+02	8,37E+02	3,05E+03	6,75E+02	-2,45E+02	ND	ND	ND	ND	ND	ND	ND	2,23E+01	3,70E+01	3,19E+01	0,00E+00	-6,26E+03
Secondary materials	kg	1,11E+00	1,45E-01	6,89E-01	1,95E+00	2,87E-01	1,09E-02	ND	ND	ND	ND	ND	ND	ND	9,28E-03	1,58E-02	1,63E-01	0,00E+00	2,30E+00
Renew. secondary fuels	MJ	7,43E-02	1,79E-03	1,40E-01	2,16E-01	3,65E-03	8,54E-05	ND	ND	ND	ND	ND	ND	ND	2,43E-05	2,00E-04	8,89E-04	0,00E+00	1,60E+00
Non-ren. secondary fuels	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
Use of net fresh water	m ³	5,98E+00	4,93E-02	5,06E-01	6,54E+00	9,98E-02	1,51E-03	ND	ND	ND	ND	ND	ND	ND	1,48E-03	5,47E-03	9,30E-02	0,00E+00	-1,16E+01

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	6,64E+00	5,56E-01	8,04E-01	8,00E+00	1,14E+00	4,48E-02	ND	ND	ND	ND	ND	ND	ND	2,49E-02	6,27E-02	3,37E+00	0,00E+00	-6,20E+01
Non-hazardous waste	kg	1,58E+02	1,04E+01	6,84E+01	2,37E+02	2,12E+01	2,86E+00	ND	ND	ND	ND	ND	ND	ND	3,39E-01	1,16E+00	3,75E+02	0,00E+00	-2,44E+03
Radioactive waste	kg	5,83E-03	7,63E-05	1,01E-03	6,92E-03	1,44E-04	3,69E-06	ND	ND	ND	ND	ND	ND	ND	2,43E-06	7,89E-06	1,02E-04	0,00E+00	-3,66E-03

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	6,16E-04	0,00E+00	0,00E+00	6,16E-04	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	2,37E+01	0,00E+00	0,00E+00
Materials for recycling	kg	8,22E-02	0,00E+00	1,07E+00	1,15E+00	0,00E+00	3,35E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	9,48E+01	0,00E+00	0,00E+00
Materials for energy rec	kg	4,18E+00	0,00E+00	1,58E+00	5,76E+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	1,34E+03	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	3,13E+03	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	7,58E+01	2,34E+01	5,92E+01	1,58E+02	4,63E+01	5,51E-01	ND	ND	ND	ND	ND	ND	ND	1,70E+00	2,54E+00	1,14E+01	0,00E+00	-5,66E+02
Ozone depletion Pot.	kg CFC-11e	3,78E-06	2,95E-07	2,03E-06	6,11E-06	5,48E-07	1,74E-09	ND	ND	ND	ND	ND	ND	ND	2,07E-08	3,00E-08	1,13E-07	0,00E+00	-3,00E-06
Acidification	kg SO ₂ e	4,03E-01	7,97E-02	2,54E-01	7,37E-01	1,21E-01	9,02E-04	ND	ND	ND	ND	ND	ND	ND	1,08E-02	6,64E-03	6,38E-02	0,00E+00	-3,55E+00
Eutrophication	kg PO ₄ ³ e	6,87E-01	1,67E-02	1,48E-01	8,52E-01	2,95E-02	2,59E-04	ND	ND	ND	ND	ND	ND	ND	2,53E-03	1,62E-03	2,10E-02	0,00E+00	-2,98E-01
POCP (“smog”)	kg C ₂ H ₄ e	7,43E-02	6,31E-03	1,52E-02	9,58E-02	1,08E-02	8,96E-05	ND	ND	ND	ND	ND	ND	ND	8,12E-04	5,92E-04	4,92E-03	0,00E+00	-1,82E-01
ADP-elements	kg Sbe	7,44E-04	6,24E-05	9,37E-05	9,00E-04	1,27E-04	1,97E-06	ND	ND	ND	ND	ND	ND	ND	5,95E-07	6,94E-06	2,54E-05	0,00E+00	-3,57E-04
ADP-fossil	MJ	9,57E+02	3,35E+02	8,50E+02	2,14E+03	6,66E+02	1,96E+00	ND	ND	ND	ND	ND	ND	ND	2,22E+01	3,65E+01	1,24E+02	0,00E+00	-6,01E+03

KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

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	-1.37E+00	4.98E-02	1.30E-01	-1.18E+00	9.82E-02	9.04E-03	ND	ND	ND	ND	ND	ND	ND	8.10E+02	1.21E+03	3.57E+05	0.00E+00	-3.50E+05
GWP – fossil	kg CO ₂ e	2.03E-01	4.98E-02	1.25E-01	3.78E-01	9.81E-02	1.15E-03	ND	ND	ND	ND	ND	ND	ND	8.10E+02	1.21E+03	5.40E+03	0.00E+00	-2.70E+05
GWP – biogenic	kg CO ₂ e	-1.57E+00	1.51E-07	4.90E-03	-1.57E+00	2.22E-05	7.89E-03	ND	ND	ND	ND	ND	ND	ND	8.24E-02	0.00E+00	3.52E+05	0.00E+00	-8.05E+04
GWP – LULUC	kg CO ₂ e	3.93E-03	2.15E-05	6.59E-05	4.01E-03	4.37E-05	6.04E-07	ND	ND	ND	ND	ND	ND	ND	8.29E-02	5.40E-01	8.67E+00	0.00E+00	-8.67E+01
ADP-minerals & metals ⁴⁾	kg Sbe	1.45E-06	1.34E-07	1.79E-07	1.76E-06	2.72E-07	4.05E-09	ND	ND	ND	ND	ND	ND	ND	2.90E-04	3.37E-03	1.33E-02	0.00E+00	-1.72E-01
ADP-fossil resources	MJ	3.46E+00	7.11E-01	1.85E+00	6.02E+00	1.42E+00	3.86E-03	ND	ND	ND	ND	ND	ND	ND	1.06E+04	1.75E+04	6.16E+04	0.00E+00	-2.97E+06
Water use ⁵⁾	m ³ e depr.	5.34E-01	3.48E-03	7.98E-01	1.34E+00	7.01E-03	1.55E-04	ND	ND	ND	ND	ND	ND	ND	2.64E+01	8.67E+01	5.92E+03	0.00E+00	-4.17E+04
Secondary materials	kg	2.34E-03	3.04E-04	1.46E-03	4.09E-03	6.04E-04	2.15E-05	ND	ND	ND	ND	ND	ND	ND	4.40E+00	7.49E+00	7.72E+01	0.00E+00	1.09E+03
Biog. C in product	kg C	3.97E-01	n/a	0.00E+00	3.97E-01	n/a	n/a	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a
Biog. C in packaging	kg C	0.00E+00	n/a	1.57E-03	1.57E-03	n/a	n/a	ND	ND	ND	ND	ND	ND	ND	n/a	n/a	n/a	n/a	n/a

9) Biog. C in product = Biogenic carbon content in product

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity, Estonia, residual mix, 2023 (One Click LCA), Electricity production, photovoltaic, 3kWp slanted-roof installation, multi-Si, panel, mounted
Electricity CO _{2e} / kWh	0.379
Heat data source and quality	Heavy fuel oil, burned in refinery furnace
Heat CO _{2e} / MJ	0.0935

Transport scenario documentation A4

Scenario parameter	Value
Specific transport CO _{2e} emissions, kg CO _{2e}	0.11
Average transport distance, km	750 km
Capacity utilization (including empty)	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	Plastic packaging 1.6793 kg (natural), 0.1756 kg (impregnated), 2.9846 kg (painted) Cardboard packaging 0.3698 kg (natural), 0.3699 kg (impregnated), 0.3699 kg (painted) Wood packaging 1.795 kg (natural), 1.798 kg (impregnated), 1.791 kg (painted)
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 recycling, 2,0491 kg (natural), 0,5455 kg (impregnated), 3,3545 kg(painted)
Direct emissions to ambient air, soil and water / kg	-

End of life scenario documentation

Scenario information	Value
Recovery process – kg for recycling	113.8 kg (natural) 115.4 kg (impregnated) 118.5 kg (painted)
Recovery process – kg for energy recovery	341.3 kg (natural) 346.3 kg (impregnated) 355.4 kg (painted)
Scenario assumptions e.g. transportation	50 km