Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Impregnated Wood Products From Pine – NTR A

from

Fyrås Trä och Impregnering AB

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of a single product from a manufacturer
EPD registration number:	EPD-IES-0031829:001
Version date:	2026-05-11
Validity date:	2031-05-11
	An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com

GENERAL INFORMATION

Programme Information	
Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	support@environdec.com

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): *PCR 2019:14 Construction products (EN 15804+A2) (version 2.0.1)*
PCR review was conducted by: *The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Rob Rouwette (chair), Noa Meron (co-chair). The review panel may be contacted via the Secretariat www.environdec.com/contact.*
c-PCR, if applicable: *c-PCR-006 Wood and wood-based products for use in construction (version 1.0.0)*

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ **Individual EPD verification without a pre-verified LCA/EPD tool** Third-party verifier: Anni Oviir, LCA Support Approved by: International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.

For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD:
Fyrås Trä och Impregnering AB.
Fyrås 100, 833 48 Hammerdal, Sweden.
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LCA practitioner commissioned by the EPD owner:
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Description of the organisation:
Fyrås Trä & Impregnering AB is a Swedish, family-owned wood processing company founded in 1985 and based in Hammerdal, in the inland region of northern Sweden. We specialize in the processing, turning, and pressure impregnation of northern Swedish pine, delivering high-quality, durable wood products for use in for example construction, agriculture, and landscaping applications.

Our raw material is sourced from sustainably managed forests in northern Sweden. Through careful raw material selection and controlled procurement, we ensure uniform quality and long service life in our products. Our product portfolio includes poles, half-round poles, square poles, logs, and construction timber, primarily used for fencing systems, agricultural installations, and ground-contact structures. We purchase renewable electricity for all electric operations on our site.

All products are manufactured from carefully selected raw material sourced from sustainably managed forests in northern Sweden. We care about the origin of the wood we use, and apply various tools to verify it. This includes forest certification and third-party traceability systems such as the Forest Stewardship Council®'s (FSC® license nr. FSC-C123152) Chain of Custody / Controlled Wood scheme and the Chain of Custody / Due Diligence System of the Programme for the Endorsement of Forest Certification (PEFC license nr. PEFC/05-35-207). We also hold an official license for impregnation of wood products with the preservative solution Wolmanit CX-8WB issued by RISE Research Institutes of Sweden.

Product-related or management system-related certifications:

- FSC® licence nr. FSC-C123152
- PEFC license nr. PEFC/05-35-207
- RISE Certificate nr. 118-19

PRODUCT INFORMATION

Product name:
Impregnated Wood Products From Pine – NTR A.

UN CPC code:
313: Wood in the rough, treated with paint, stains, creosote or other preservatives; railway or tramway sleepers (cross ties) of wood, impregnated; hoopwood, split poles, wooden sticks and the like.

Product identification:
The wood product described in this EPD is manufactured from Swedish pine (Pinus sylvestris) in a variety of lengths, thicknesses and shapes such as poles, half round rails, cylindrical logs and profiled construction timber. The product is treated with a water-based copper solution called Wolmanit CX in accordance with durability class NTR A (both natural wood and NTR AB impregnated wood are represented in other EPD documents).

Depiction of available shapes in which the product can be delivered:

Product description:
The product can be delivered as both poles and logs in different shapes and sizes and is therefore a versatile option primarily for outdoor use in construction, agricultural, and landscaping applications. This may include both vertical and horizontal structures such as walls, stairs, fences, paddocks or even outdoor furniture constructions. The product undergoes the same processes regardless of dimensions or shapes, and can be made according to the customer's requirements, which is why the different shapes are not considered to be separate products but part of the same product offering.

A moisture content of 20% is assumed for the calculations. A dry density of 420 kg/m³ for pine, representing a Swedish average, is applied to determine the biogenic carbon content as well as the product density at delivery, in addition the contribution of moisture at the specified moisture content. The sapwood content of the products is approximately 66 %.

Manufacturing processes:
The raw material is received and sorted by to diameter in order to match the specifications of the intended products. Following sorting, the logs are processed mechanically. Depending on the product type, this includes turning in a lathe to produce cylindrical or semi-cylindrical geometries. Bark is removed as part of this process where applicable.

The mechanical processing above yields a co-product, wood-chips, which are used internally for heating purposes and sold externally for heating purposes. Allocation procedures connected to this by-product are described under LCA information.

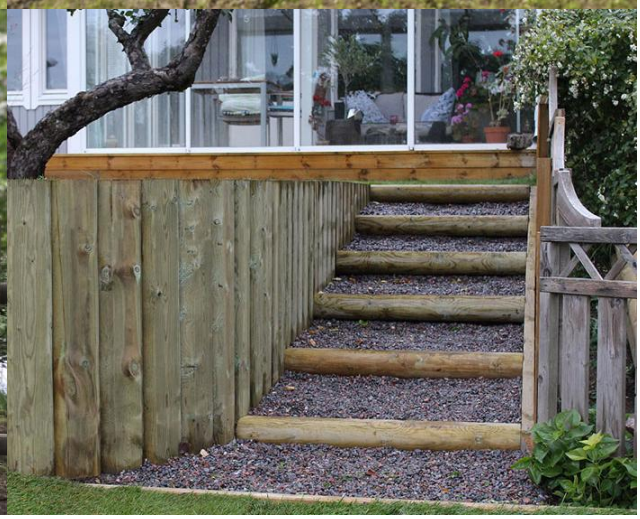
After mechanical processing, the products are dried under controlled conditions until a target moisture content of approximately 20% is reached. A proportion of the products (NTR A an AB) is subsequently treated through industrial pressure impregnation using a water-based copper solution - Wolmanit CX.

This process is carried out in closed systems, where the preservative solution is introduced under pressure to improve resistance to biological degradation.

Following impregnation, the products are stored and conditioned in warehouse facilities to allow fixation of the preservative and stabilization of moisture content prior to distribution. Untreated products (Natural) bypass the impregnation step and are stored after drying. The finished products are then prepared for delivery to customers.

Name and location of production site:
Fyrås Trä och Impregnering AB, main production site. Fyrås 100, 833 48 Hammerdal, Sweden.



CONTENT DECLARATION

The mass (weight) of one unit of a product, as purchased or per declared unit:
535 kg.

Content of the product in the form of a list of materials and substances, and their mass:

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product or declared unit
Wood (pine)	420	0,00 %	80 %	210
Water	105	0,00 %	0,00 %	0,00
Wolmanit CX	10	0,00 %	0,00 %	0,00
TOTAL	**535**	**0,00 %**	**78 %**	**210**

The mass and the content of distribution and/or consumer packaging:

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/product or declared unit
Polyester	0,3	<0,1 %	0,00
Wood (spruce)	7,9	1,5 %	3,2
Steel	0,049	<0,01%	0,00
TOTAL	**8,3**	**1,6 %**	**3,2**

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO_2.

Information on the environmental and hazardous/toxic properties of a substances contained in the product:
The product does not contain substances with a concentration superior to 0,1% (1000 ppm, of the weight of the product nor any component of the product) in the candidate list of Substances of Very High Concern (SVHC) published by the European Chemicals Agency.

The declared share of biogenic/recycled materials

Biogenic carbon content	Unit (per declared unit)
Biogenic carbon content in product:	770 kg CO_2 eq. / m³ = 210 kg C / m³
Biogenic carbon content in accompanying packaging:	12 kg CO_2 eq. / m³ = 3,2 kg C / m³
Please note: 1 kg biogenic carbon is equivalent to 44/12 kg of CO2	

LCA INFORMATION

Declared unit:
1 m^3 of impregnated wood product.

Conversion factor to mass if mass is not used as functional/declared unit (not applicable for services).
1 m^3 = 535 kg.

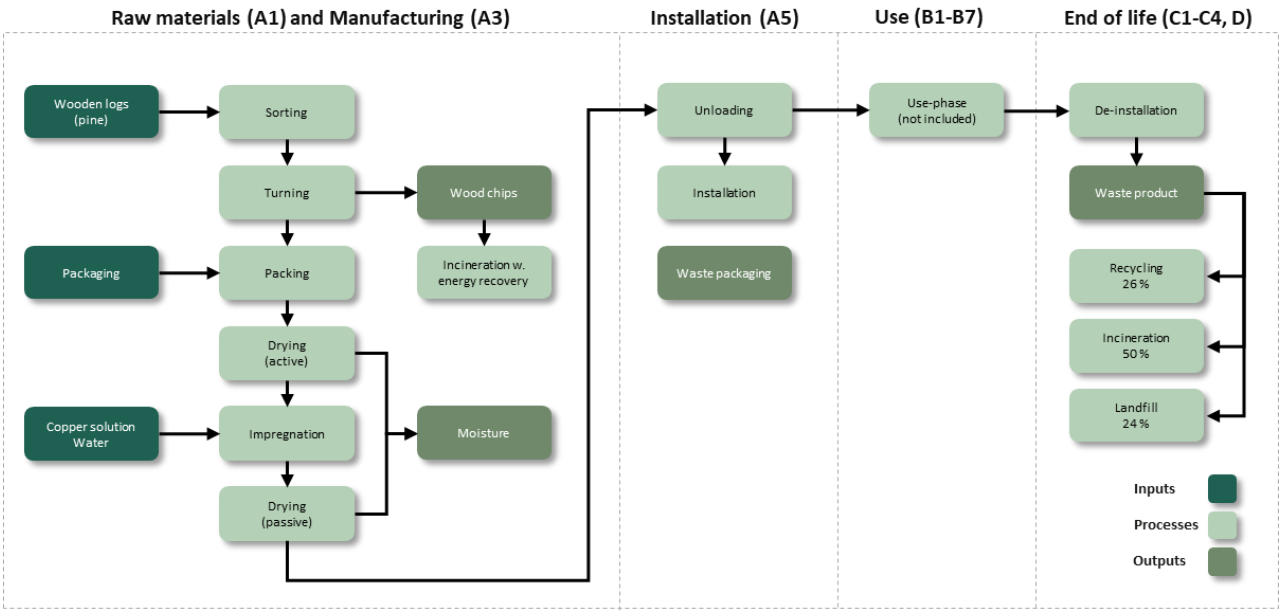
Time representativeness:
2025

Geographical scope:
The products are sold manufactured in Sweden and the main material (wood) is sourced in Sweden. The products are sold throughout Europe and downstream scenarios in modules A4, A5 and C1-C4 + D are modelled to represent this market.

Database(s) and LCA software used:
One Click LCA EPD Generator, V3, with Ecoinvent and ProBas.

Description of system boundaries:
Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + A4–A5 + C + D)

Process flow diagram:
Process flow diagram of the product system, divided into the life-cycle stages and modules, showing the main processes included and the system boundary of the LCA.



Product stage (A1-A3):
The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The data used to complete the LCA were acquired with the help of representatives from the EPD owner, suppliers as well as technical data sheets, where relevant. In cases where primary data were unavailable or unattainable, calculations, estimations and/or information from internationally recognized databases were used in their place.

A specific renewable electricity mix was assumed for Module A3. Guarantees of origin have been provided.

Transport to the building site (A4):
Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions. An average model for distances and transport modes has been developed based on common product destinations. See model below.

Vehicle type:	Distance (km):	Share of products transported (%):	Capacity utilization (incl. empty returns) (%):	Bulk density of transported goods (kg/m3):	Volume capacity utilization factor:
Lorry, >32 ton, EURO5	155	7	50	329	≤ 1
Lorry, >32 ton, EURO5	850	85			
Lorry, >32 ton, EURO5	639	5			
Lorry, >32 ton, EURO5	1 222	2			
Lorry, >32 ton, EURO5	3 619	1			
Sea, Container ship	5 556	1			
Lorry, >32 ton, EURO5	94	1			

Installation into the building (A5):

No installation losses have been assumed for the product. The waste treatment methods for waste packaging materials were based on average European treatment methods. The assumed installation resource required is diesel consumed by machinery to unload the product.

Scenario information	Value
Ancillary materials for installation (specified by material) (kg or as appropriate):	Not applicable.
Water use (m3):	0
Energy type and consumption for installation (kWh):	0,66 kWh (diesel)
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) (kg):	Plastic: 0,3 Wood: 7,9 Steel: 0,049
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):	For recycling: 2,70 For energy recovery: 2,50 For disposal: 3,10
Direct emissions to ambient air, soil and water (kg):	0

End of Life (C1-C4):

The scenarios in Modules C2, C3 and C4 were based on European averages for treatment of waste wood. Transport distances range from 50 to 250 km depending on the treatment method, which consist of a mix of recycling, incineration with energy recovery and landfill (One Click LCA, 2020). The energy efficiency assumed in the incineration scenario is relatively low (<60 %). Therefore, incineration has been modelled in Module C4 instead of C3.

In Module D, it was assumed that the recycled waste product replaces the need for production of wood chips, while the share of incineration was assumed to replace production of electricity and heat.

Scenario information	Value
Waste collected separately (kg):	535
Waste collected with mixed construction waste (kg):	0
Waste recovered for re-use (kg):	0
Waste recovered for recycling (kg):	139
Waste recovered for energy recovery (kg):	267
Waste collected for final disposal (kg):	129
Transport assumptions:	Lorry, >32 ton, EURO 5 (50 to 250 km)

Electricity mix:
The energy source behind the electricity use in manufacturing process in A3 is based on renewable sources with an emission factor of 0,041 kg CO2 eq / kWh. Guarantees of origin have been provided.

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.

One element has been excluded from the assessment. The element in question is an impregnation agent which is only used in some cases. When it is used it comprises only 0,04 % of the finished product's mass. The preservative does not contain any SVHCs. The expected effects of the selection of cut-offs on the results are very low based on the material contents of the preservative.

Allocation procedures:
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, allocation was required in the following ways:

Data type	No allocation	By physical properties	By revenue	Both
Raw Materials	-	-	✓	-
Packaging	✓	-	-	-
Ancillary Materials	✓	-	-	-
Energy and Waste	✓	-	-	-

Environmental impacts from forestry operations are allocated to the finished product or co-product only and nothing to forestry residues such as branches and tops. The manufacturing processes result in a valuable co-product - wood chips. As per PCR 2019:14, the environmental impact caused by the raw material extraction and transport have been allocated between the main product and co-product based on economic values of the product and co-products when they leave the unit process.

The environmental impacts caused by the manufacturing processes have conservatively been allocated to the main product only.

Waste was allocated in accordance with the polluter-pays principal described in PCR 2019:14, section 4.5.2. The system boundary to the subsequent product system is set where the waste reaches the end of-waste state.

Data quality assessment:
The data quality was assessed in accordance with EN 15941:2024 and follows certain methodologies provided in the ILCD Handbook (European Commission, 2010). The following aspects have been assessed:

- Representativeness (Geographical, technical, time)
- Precision
- Completeness
- Consistency
- Sources of the data
- Sensitivity

The data quality assessment was performed by individually rating included datasets in terms of representativeness, precision and individual impact on overall sensitivity. Additionally, the completeness and consistency of the total LCI was assessed. Each of the abovementioned parameters were scored from 1 (high quality) to 5 (low quality). These scores were used to calculate an overall DQR (data quality rating) in accordance with the methodology described in the ILCD Handbook (ibid.)

Overall, the study was based on a large share of primary data with an overall DQR of 2,15. The completeness of this study is generally seen as very good, based on judgements of the datasets used and LCI data gathered. The consistency of this study is generally seen as good. The primary data was collected in 2026 and represents data from 2025.

DATA SOURCES					
Process	**Source type**	**Source**	**Reference year**	**Data category**	**Share of primary data, of GWP-GHG results for A1-A3**
Transport of raw material	Collected data, Database	EPD Owner, Ecoinvent 3.10.1	2025	Primary data	35,2 %
Electricity for manufacturing	Collected data, Database	EPD Owner, Ecoinvent 3.12	2025	Primary data	3,5 %
Manufacturing of product	Collected data, Database	EPD Owner, Ecoinvent 3.12, ProBas	2025	Primary data, Secondary data	5,8 %
Production of preservative	Collected data, EPD	EPD: S-P-05468	2025	Primary data	22,1 %
Production of wood	Collected data, Database	EPD Owner, Ecoinvent 3.12	2025	Primary data	0 %
Total share of primary data, of GWP-GHG results for A1-A3					66,5 %

In addition to the data sources above, the below data sources for processes in modules A4-C that contribute with more than 10% to the GWP-GHG results over all included life-cycle stages can be reported:

- Transport of product to customers (A4). Database: Ecoinvent 3.10.1

Modules declared, geographical scope, share of primary data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Distribution/ installation stage		Use stage							End-of-life stage				Beyond product life cycle
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	EU	EU	SE	EU	EU	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Share of primary data	66,5 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories. No variation between neither sites nor products can be reported.

ENVIRONMENTAL PERFORMANCE

Mandatory impact category indicators according to EN 15804 (based on EF 3.1)

Results per functional or declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	-7,03E+02	4,76E+01	1,26E+01	0,00E+00	8,76E+00	2,01E+02	5,76E+02	-2,82E+02
GWP-fossil	kg CO_2 eq.	7,57E+01	4,76E+01	8,75E-01	0,00E+00	8,76E+00	9,62E-01	5,61E+00	-5,10E+01
GWP-biogenic	kg CO_2 eq.	-7,82E+02	1,08E-02	1,17E+01	0,00E+00	0,00E+00	2,00E+02	5,70E+02	-2,31E+02
GWP-luluc	kg CO_2 eq.	3,06E+00	2,13E-02	4,55E-04	0,00E+00	3,92E-03	2,84E-03	2,07E-03	-1,90E-01
ODP	kg CFC 11 eq.	2,55E-06	7,03E-07	8,21E-09	0,00E+00	1,29E-07	1,60E-08	8,38E-08	-1,44E-06
AP	mol H^+ eq.	9,41E-01	1,67E-01	3,76E-03	0,00E+00	2,99E-02	4,84E-03	5,33E-02	-3,24E-01
EP-freshwater	kg P eq.	1,04E-02	3,70E-03	8,75E-05	0,00E+00	6,82E-04	8,23E-04	2,91E-03	-4,44E-02
EP-marine	kg N eq.	2,04E-01	5,44E-02	2,66E-03	0,00E+00	9,81E-03	8,58E-04	7,01E-02	-7,86E-02
EP-terrestrial	mol N eq.	1,96E+00	5,92E-01	1,76E-02	0,00E+00	1,07E-01	7,57E-03	2,62E-01	-7,76E-01
POCP	kg NMVOC eq.	7,49E-01	2,42E-01	5,45E-03	0,00E+00	4,40E-02	2,52E-03	7,24E-02	-2,34E-01
ADP-minerals&metals*	kg Sb eq.	2,20E-02	1,33E-04	9,25E-07	0,00E+00	2,44E-05	2,36E-06	1,17E-05	-1,24E-04
ADP-fossil*	MJ	1,20E+03	6,91E+02	7,15E+00	0,00E+00	1,27E+02	2,19E+01	6,87E+01	-1,18E+03
WDP*	m^3	1,20E+02	3,41E+00	1,55E-01	0,00E+00	6,28E-01	5,73E-01	8,88E+00	-3,20E+01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

**Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).*

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	7,88E+01	4,76E+01	8,75E-01	0,00E+00	8,76E+00	9,65E-01	5,61E+00	-5,12E+01

Resource use indicators

Results per functional or declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1,35E+04	9,45E+00	-1,17E+02	0,00E+00	1,74E+00	5,03E+00	-6,71E+03	5,02E+02
PERM	MJ	4,49E+03	0,00E+00	-1,15E+02	0,00E+00	0,00E+00	-1,14E+03	-3,24E+03	0,00E+00
PERT	MJ	1,80E+04	9,45E+00	-2,32E+02	0,00E+00	1,74E+00	-1,13E+03	-9,95E+03	5,02E+02
PENRE	MJ	1,14E+03	6,91E+02	-4,96E+00	0,00E+00	1,27E+02	2,19E+01	6,87E+01	-1,18E+03
PENRM	MJ	6,00E+01	0,00E+00	-5,33E+00	0,00E+00	0,00E+00	-1,42E+01	-4,04E+01	0,00E+00
PENRT	MJ	1,20E+03	6,91E+02	-1,03E+01	0,00E+00	1,27E+02	7,71E+00	2,82E+01	-1,18E+03
SM	kg	9,88E-01	2,94E-01	4,30E-03	0,00E+00	5,41E-02	9,51E-03	9,78E-02	-1,73E-01
RSF	MJ	1,37E-02	3,73E-03	3,50E-05	0,00E+00	6,87E-04	1,48E-05	4,20E-04	-1,04E-03
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	4,65E+00	1,02E-01	-1,01E-02	0,00E+00	1,88E-02	1,81E-02	-4,22E-01	-9,68E-01
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

[1] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Waste indicators

Results per functional or declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	7,32E+00	1,17E+00	3,93E-02	0,00E+00	2,15E-01	6,55E-02	1,79E+00	-2,77E+00
Non-hazardous waste disposed	kg	3,16E+02	2,16E+01	1,11E+01	0,00E+00	3,99E+00	4,16E+00	9,13E+02	-2,24E+02
Radioactive waste disposed	kg	1,11E-03	1,47E-04	2,88E-06	0,00E+00	2,71E-05	1,53E-04	1,81E-05	-8,27E-03

Output flow indicators

Results per functional or declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**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	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	2,70E+00	0,00E+00	0,00E+00	1,39E+02	0,00E+00	0,00E+00
Materials for energy recovery	kg	5,69E+02	0,00E+00	0,00E+00	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	6,08E+00	0,00E+00	0,00E+00	0,00E+00	5,30E+02	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	8,35E+00	0,00E+00	0,00E+00	0,00E+00	7,28E+02	0,00E+00

Additional LCA results

Below tables are describing the environmental indicator results of 1m³ product from alternative end-of-life scenarios: Recycling, Energy recovery, and Landfill.

Mandatory impact category indicators according to EN 15804 (based on EF 3.1)

Results per functional or declared unit																
		Recycling					Incineration with energy recovery					Landfill				
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**	**C1**	**C2**	**C3**	**C4**	**D**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	0,00E+00	1,44E+01	7,74E+02	0,00E+00	-8,93E+02	0,00E+00	8,64E+00	0,00E+00	7,78E+02	-1,00E+02	0,00E+00	2,88E+00	0,00E+00	7,76E+02	0,00E+00
GWP-fossil	kg CO_2 eq.	0,00E+00	1,44E+01	3,70E+00	0,00E+00	-4,24E+00	0,00E+00	8,64E+00	0,00E+00	8,31E+00	-9,98E+01	0,00E+00	2,88E+00	0,00E+00	6,07E+00	0,00E+00
GWP-biogenic	kg CO_2 eq.	0,00E+00	0,00E+00	7,70E+02	0,00E+00	-8,89E+02	0,00E+00	0,00E+00	0,00E+00	7,70E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,70E+02	0,00E+00
GWP-luluc	kg CO_2 eq.	0,00E+00	6,45E-03	1,09E-02	0,00E+00	-1,42E-02	0,00E+00	3,87E-03	0,00E+00	2,30E-03	-3,73E-01	0,00E+00	1,29E-03	0,00E+00	3,85E-03	0,00E+00
ODP	kg CFC 11 eq.	0,00E+00	2,13E-07	6,15E-08	0,00E+00	-1,21E-07	0,00E+00	1,28E-07	0,00E+00	9,34E-08	-2,82E-06	0,00E+00	4,25E-08	0,00E+00	1,54E-07	0,00E+00
AP	mol H^+ eq.	0,00E+00	4,91E-02	1,86E-02	0,00E+00	2,68E-02	0,00E+00	2,95E-02	0,00E+00	8,63E-02	-6,61E-01	0,00E+00	9,82E-03	0,00E+00	4,24E-02	0,00E+00
EP-freshwater	kg P eq.	0,00E+00	1,12E-03	3,17E-03	0,00E+00	-3,71E-03	0,00E+00	6,73E-04	0,00E+00	3,60E-03	-8,69E-02	0,00E+00	2,24E-04	0,00E+00	4,64E-03	0,00E+00
EP-marine	kg N eq.	0,00E+00	1,61E-02	3,30E-03	0,00E+00	2,16E-02	0,00E+00	9,68E-03	0,00E+00	4,58E-02	-1,68E-01	0,00E+00	3,23E-03	0,00E+00	1,97E-01	0,00E+00
EP-terrestrial	mol N eq.	0,00E+00	1,76E-01	2,91E-02	0,00E+00	2,44E-01	0,00E+00	1,05E-01	0,00E+00	4,40E-01	-1,68E+00	0,00E+00	3,51E-02	0,00E+00	1,74E-01	0,00E+00
POCP	kg NMVOC eq.	0,00E+00	7,24E-02	9,69E-03	0,00E+00	5,91E-02	0,00E+00	4,34E-02	0,00E+00	1,11E-01	-4,99E-01	0,00E+00	1,45E-02	0,00E+00	7,09E-02	0,00E+00
ADP-minerals&metals*	kg Sb eq.	0,00E+00	4,02E-05	9,06E-06	0,00E+00	-4,17E-05	0,00E+00	2,41E-05	0,00E+00	1,70E-05	-2,26E-04	0,00E+00	8,04E-06	0,00E+00	1,34E-05	0,00E+00
ADP-fossil*	MJ	0,00E+00	2,09E+02	8,43E+01	0,00E+00	-1,05E+02	0,00E+00	1,25E+02	0,00E+00	7,36E+01	-2,31E+03	0,00E+00	4,18E+01	0,00E+00	1,33E+02	0,00E+00
WDP*	m^3	0,00E+00	1,03E+00	2,20E+00	0,00E+00	-2,77E+00	0,00E+00	6,20E-01	0,00E+00	1,75E+01	-6,26E+01	0,00E+00	2,07E-01	0,00E+00	6,35E-01	0,00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption															

**Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).*

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit																
		Recycling					Incineration with energy recovery					Landfill				
Indicator	Unit	C1	C2	C3	C4	D	C1	C2	C3	C4	D	C1	C2	C3	C4	D
GWP-GHG[2]	kg CO_2 eq.	0,00E+00	1,44E+01	3,71E+00	0,00E+00	-4,25E+00	0,00E+00	8,64E+00	0,00E+00	8,31E+00	-1,00E+02	0,00E+00	2,88E+00	0,00E+00	6,07E+00	0,00E+00

Resource use indicators

Results per functional or declared unit																
		Recycling					Incineration with energy recovery					Landfill				
Indicator	Unit	C1	C2	C3	C4	D	C1	C2	C3	C4	D	C1	C2	C3	C4	D
PERE	MJ	0,00E+00	2,87E+00	1,93E+01	0,00E+00	5,33E+03	0,00E+00	1,72E+00	0,00E+00	-9,07E+03	-1,77E+03	0,00E+00	5,73E-01	0,00E+00	-9,07E+03	0,00E+00
PERM	MJ	0,00E+00	0,00E+00	-4,38E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-4,38E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-4,38E+03	0,00E+00
PERT	MJ	0,00E+00	2,87E+00	-4,36E+03	0,00E+00	5,33E+03	0,00E+00	1,72E+00	0,00E+00	-1,34E+04	-1,77E+03	0,00E+00	5,73E-01	0,00E+00	-1,34E+04	0,00E+00
PENRE	MJ	0,00E+00	2,09E+02	8,43E+01	0,00E+00	-1,05E+02	0,00E+00	1,25E+02	0,00E+00	7,36E+01	-2,31E+03	0,00E+00	4,18E+01	0,00E+00	1,33E+02	0,00E+00
PENRM	MJ	0,00E+00	0,00E+00	-5,46E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-5,46E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-5,46E+01	0,00E+00
PENRT	MJ	0,00E+00	2,09E+02	2,96E+01	0,00E+00	-1,05E+02	0,00E+00	1,25E+02	0,00E+00	1,90E+01	-2,31E+03	0,00E+00	4,18E+01	0,00E+00	7,80E+01	0,00E+00
SM	kg	0,00E+00	8,90E-02	3,66E-02	0,00E+00	-6,81E-02	0,00E+00	5,34E-02	0,00E+00	1,72E-01	-3,10E-01	0,00E+00	1,78E-02	0,00E+00	4,80E-02	0,00E+00
RSF	MJ	0,00E+00	1,13E-03	5,68E-05	0,00E+00	-1,59E-03	0,00E+00	6,78E-04	0,00E+00	4,08E-04	-1,26E-03	0,00E+00	2,26E-04	0,00E+00	9,01E-04	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	0,00E+00	3,09E-02	6,97E-02	0,00E+00	-8,52E-02	0,00E+00	1,85E-02	0,00E+00	1,07E-01	-1,89E+00	0,00E+00	6,18E-03	0,00E+00	-1,98E+00	0,00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water															

[2] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Waste indicators

Results per functional or declared unit																
		Recycling					Incineration with energy recovery					Landfill				
Indicator	Unit	C1	C2	C3	C4	D	C1	C2	C3	C4	D	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0,00E+00	3,54E-01	2,52E-01	0,00E+00	-3,69E-01	0,00E+00	2,13E-01	0,00E+00	3,46E+00	-5,35E+00	0,00E+00	7,08E-02	0,00E+00	2,31E-01	0,00E+00
Non-hazardous waste disposed	kg	0,00E+00	6,55E+00	1,60E+01	0,00E+00	-4,09E+01	0,00E+00	3,93E+00	0,00E+00	5,49E+02	-4,26E+02	0,00E+00	1,31E+00	0,00E+00	2,66E+03	0,00E+00
Radioactive waste disposed	kg	0,00E+00	4,46E-05	5,90E-04	0,00E+00	-6,35E-04	0,00E+00	2,67E-05	0,00E+00	2,09E-05	-1,62E-02	0,00E+00	8,91E-06	0,00E+00	3,18E-05	0,00E+00

Output flow indicators

Results per functional or declared unit																
		Recycling					Incineration with energy recovery					Landfill				
Indicator	Unit	C1	C2	C3	C4	D	C1	C2	C3	C4	D	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	5,35E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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	0,00E+00	0,00E+00	1,06E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,46E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ABBREVIATIONS

All abbreviations used in the EPD are explained in the table below.

Abbreviation	Definition
	General Abbreviations
ADP	Abiotic Depletion Potential
ADP-fossil	Abiotic depletion potential for fossil resources (MJ)
ADP-minerals & metals	Abiotic depletion potential for non-fossil resources (kg Sb eq.)
AP	Acidification Potential (mol H^+ eq.)
CEN	European Committee for Standardization
CFR	Components for Reuse (kg)
CPC	Central product classification
c-PCR	Complementary product category rules
DU	Declared unit
EEE	Exported Energy, Electricity (MJ)
EET	Exported Energy, Thermal (MJ)
EF	Environmental Footprint
EN	European Norm (Standard)
EoL	End-of-life
EP	Eutrophication Potential
EPD	Environmental Product Declaration
EP-freshwater	Freshwater eutrophication potential (kg P eq.)
EP-marine	Marine eutrophication potential (kg N eq.)
EP-terrestrial	Terrestrial eutrophication potential (mol N eq.)
EU	European Union
FU	Functional unit
FW	Use of net fresh water (m^3)
GHG	Greenhouse gas
GPI	General Programme Instructions
GWP	Global Warming Potential (kg CO_2 eq.)
GWP-biogenic	Global Warming Potential from biogenic sources (kg CO_2 eq.)
GWP-fossil	Global Warming Potential from fossil sources (kg CO_2 eq.)
GWP-GHG	Global Warming Potential for greenhouse gases (kg CO_2 eq.)
GWP-luluc	Global Warming Potential from land use and land use change (kg CO_2 eq.)
GWP-total	Total Global Warming Potential (kg CO_2 eq.)
ISO	International Organization for Standardization
LCA	Life Cycle Assessment

Abbreviation	Definition
LCI	Life Cycle Inventory
LCIA	Life Cycle Impact Assessment
NRSF	Use of non-renewable secondary fuels (MJ)
ODP	Ozone Depletion Potential (kg CFC-11 eq.)
PCR	Product Category Rules
PENRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ)
PENRM	Use of non-renewable primary energy resources used as raw materials (MJ)
PENRT	Total use of non-renewable primary energy resources (MJ)
PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ)
PERM	Use of renewable primary energy resources used as raw materials (MJ)
PERT	Total use of renewable primary energy resources (MJ)
POCP	Photochemical Ozone Creation Potential (kg NMVOC eq.)
PPM	Parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RSD	Relative standard deviation
RSF	Use of renewable secondary fuels (MJ)
RSL	Reference Service Life
RW	Radioactive Waste (disposed) (kg)
SM	Use of secondary material (kg)
VOC	Volatile Organic Compounds
WDP	Water Deprivation Potential (m^3)
Life Cycle Stages / Modules	
A1	Raw material supply
A2	Transport
A3	Manufacturing
A4	Transport to site
A5	Construction/Installation
B1	Use
B2	Maintenance
B3	Repair
B4	Replacement
B5	Refurbishment
B6	Operational energy use
B7	Operational water use
C1	Deconstruction/Demolition
C2	Transport to waste processing

Abbreviation	Definition
C3	Waste processing
C4	Disposal
D	Reuse-Recovery-Recycling potential
Other Relevant Terms	
CAS No.	Chemical Abstracts Service Number
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO_2 eq.	Carbon Dioxide Equivalents
EC No.	European Community Number
kg	Kilogram
kg C	Kilograms of Carbon
kg CO_2 eq.	Kilograms of Carbon Dioxide Equivalent
m^3	Cubic Meter
MJ	Megajoule
N eq.	Nitrogen Equivalents
ND	Not Declared
NMVOC	Non-Methane Volatile Organic Compounds
P eq.	Phosphorus Equivalents
Sb eq.	Antimony Equivalents
SVHC	Substances of Very High Concern

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