Environmental Product Declaration

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

Single product

Rationel AURAPLUS / FORMAPLUS

– Top-guided window, 3-layer ECOLINE glazing

From

rationel®

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	IES-0024526:003
Version date:	2025-06-20
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Validity date:	2030-06-20

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

Accountabilities for PCR, LCA and independent, third-party verification
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)(2.0.1)* *PCR 2019:14-c-PCR-007 c-PCR-007 Windows and doors (EN 17213) (2020-04-09)*
PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com 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.
Life Cycle Assessment (LCA)
LCA accountability: *Tyréns Sverige AB, Folkungagatan 44, 118 26, Stockholm* Contact: *support.epdgenerator@tyrens.se*
Verification
External and independent ('third-party') verification of the declaration and data, according to ISO 14025:2006, via EPD verification through: ☒ Fully pre-verified EPD tool Third-party verifier: Accountable for the tool and EPD verification: Daniel Böckin, Miljögiraff AB, Fully pre-verified tool: Tyréns EPD-generator 3.1.0 – Dovista. Approved by: The 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 registered in different EPD programs, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same 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 equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterization factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD:
Rationel, Dalgas Allé 7, 7400 Herning, Denmark

Contact:
Manoli Ly Pedersen,
Global Product Sustainability Specialist, Dovista
Tel. direct +45 6025 1653
E-mail maly@dovista.com

Description of the organisation:
Rationel creates windows and doors that frame our everyday life. To provide the best setting for daily life and the best conditions for a safe, bright and vibrant home. A home with new possibilities and functions.
We take pride in being present for our customers. Having built a solid, long-lasting community with our business partners we can provide strong local roots. Meaning, we are always near when you need us. With 70 years of experience, we operate on a solid foundation which means that we will be here both today and going forward.

Rationel is a Danish based company with sales activities in Denmark, United Kingdom and Ireland. Rationel is a part of DOVISTA, that is one of the leading manufacturers of facade windows and doors in Europe.

DOVISTA is a part of the VKR Group.
Rationel is a trademark used under license by DOVISTA A/S, CVR-no. 21147583.

Product-related or management system-related certifications:
Rationel window and door systems are third party Q-Mark certified. BM TRADA operates the Q-Mark product certification for construction products, which is based on ISO 17065. Rationel is registered in the BM Trada database under our parent company DOVISTA A/S.

In the UK Rationel windows and doors are compliant with Part Q of the Building Regulations.

Name and location of production site(s): DOVISTA Polska Sp. z o.o, Wedkowy, PL-83-115 Swarozyn

Product information

Product name: Rationel AURAPLUS / FORMAPLUS - top-guided window, 3-layer ECOLINE glazing
Product identification: 3-layer ECOLINE glazing, with aluminium cladding
Product description:
The Rationel top-guided outward opening triple-glazed windows with aluminium cladding can be made as Rationel AURAPLUS or Rationel FORMAPLUS. The environmental impact corresponds to Rationel AURAPLUS, which has been selected as the representative product since it accounts for over 80 % of the total sales volume of the two products.

Special for this EPD is the use of ECOLINE glazing.

The results in this LCA study will reflect both products as the materials in the windows are the same, with a small difference in material weight.
The life cycle inventory includes weights for the Rationel AURAPLUS model. There are the following differences between the products:
Rationel AURAPLUS contains about 270 grams more wood than Rationel FORMAPLUS.
Rationel AURAPLUS contains about 200 grams less aluminium than Rationel FORMAPLUS.

The Rationel AURAPLUS wood/aluminium windows are constructed using the same solid timber structure as our all-timber windows, with the addition of external aluminium cladding.

Rationel AURAPLUS personifies clean lines. The sleek, flat frame gives your window a flush finish for a truly modern, Scandinavian feel. Windows are made to measure and come in a large range of opening functions. Glazing can be triple-glazed or double-glazed as per requirement. Optional glazing bars can increase the architectural elegance of this style. The external cladding comes in hundreds of colours and gives you the flexibility to have one colour inside your home and another on the outside.

Made from sustainably sourced timber, your windows and doors will last for decades if looked after. And with the external aluminium cladding, maintenance becomes minimal and life expectancy rises. Suitable for both new build and replacement windows in domestic projects, multi-plot housing and commercial buildings.

The Rationel FORMAPLUS wood/aluminium windows are constructed using the same solid timber structure as our all-timber windows, with the addition of external aluminium cladding.

Rationel FORMAPLUS is designed to complement traditional architecture and the FORMAPLUS window range comes with angled glazing bead and ovolo moulded profile making it an ideal choice for country-style and traditional designs.
Windows are made to measure and come in a large range of opening functions. Rationel FORMAPLUS is available with or without glazing bars which particularly suits this style of windows. Glazing can be triple-glazed or double-glazed as per requirement and an extensive range of colour choices are available. Made from sustainably sourced timber, your windows and doors will last for decades if looked after.
And with the external aluminium cladding, maintenance becomes minimal and life expectancy rises. All window and door units are made to measure, drained, and ventilated, and factory finished. They are manufactured in accordance with EN 14351-1:2006 + A2:2016.

Opening functions are tested to and third-party verified for a wide range of conditions including resistance to windload, water tightness, air permeability, load-bearing capacity of safety devices. Please refer to the Declaration ofPerformance document (DoP) for the product system and see the performance tested for each specific opening function. For frames, sashes, mullions, and transoms we use FSC-certified pine from North European forests, licence code FSC(R)-C101947.

We use a water-based diffusion open timber surface treatment, system 2OKO from Teknos A/S, which is certified by VinduesIndustrien (the Danish Window Industry), and our windows and doors are Danish Indoor Climate certified.
We seek to protect the environment and therefore demand our suppliers to secure, that their products comply with relevant law concerning hazardous substances.
Suppliers are required to sign our Code of Conduct and Hazardous Substances Restriction. Please see https://dovista.com/interesseret/leverandoer/

Approach to chemicals (hazardous substances)
Our Hazardous Substances Restrictions Appendix A list does not allow neither products that contain restricted substances in concentrations that exceed the maximum concentration values listed in applicable Relevant Laws, nor products that exceed the maximum concentration values restricted due to DOVISTAs internal requirements.

Please see https://dovista.com/interesseret/leverandoer/hazardous-substances-restriction/

Our Appendix A list, which is regularly updated according to Relevant Laws, contains Material / Chemical substances related to the following regulations and directives:

- REACH Registration, Evaluation and Authorisation of Chemicals (REACH) European Union (1907/2006/EC) (annex XIV, annex XVII and candidate list). The candidate list may be found at (Candidate List of substances of very high concern for Authorisation), please see https://echa.europa.eu/candidate-list-table
- Restrictions of Hazardous Substances (RoHS) European Union (65/2011/EU)
- Battery Directive (2006/66/EC)
- Packaging and Packaging Waste Directive (EU) 2018/852 + (94/62/EC)
- CLP Regulation (EC) No 1272/2008 (Regulation on classification, labelling and packaging of substances and mixtures (EC) No 1272/2008)
- Biocidal Product Regulation (528/2012/EU)
- Substances that deplete the ozone layer Regulation (1005/2009/EC)
- Persistent Organic Pollutants Regulation (2019/1021/EU) + (2020/1021/EU)
- Conflict Minerals (EU) 2017/821) + (EU) 2019/821

EPD used for background data in EPD:
EPD Laminated Pine Scantling Kurikka Timber Oy HUB-1671
EPD Hydro REDUXA. S-P-06710
EPD Barrus, Finger-jointed laminated wood profile, EPD HUB, EPD number 0100 (updated version 09.09.2024)
EPD Low-Carbon Planibel Clearlite 4 mm. EPD Inies, EPD nr 20240437786
TEKNOS EPD, Water-borne varnishes and furniture paints and coatings

UN CPC code: 54

Geographical scope:
Module A1 and A2 Material suppliers are Global
Module A3 production is located in Poland
Module A5, B, C and D scenarios are for Europe

LCA information

Functional unit / declared unit: 1 m2

Conversion factor for the product is 36.8 kg per m2

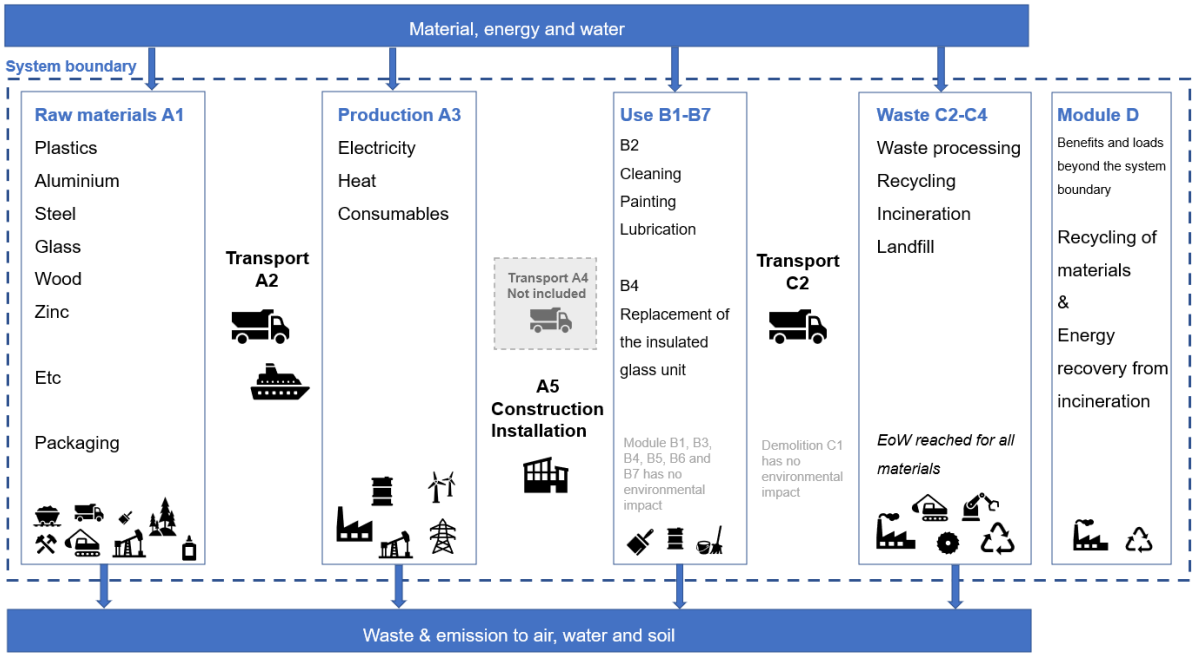
Reference service life: 50 years

Time representativeness: The LCA is based on production data from 2022 but is deemed to be representative of an average year of production.

Database(s) and LCA software used: The LCA software is SimaPro Flow version 2.47 and the database is Ecoinvent 3.10. When modelling in Simapro, Ecoinvent data (updated November 2023) has been used for secondary data.

Description of system boundaries: This is a Cradle to Grave with modules A+B+C+D.

System diagram:



Production

Main materials used for production:

- Wood: main raw material used is finger joined and glued pine scantlings supplied by FSC labelled suppliers only.
- Aluminum: extruded profiles are produced in EU; later profiles are either powder coated in Poland or anodized in Denmark or Germany.
- Glass: double or triple glazed units supplied by suppliers in EU.
- Paint: water-based paint that can be tinted to more than 200 colors, incl. clear lacquer.

Around 7% of wood and 15% aluminum becomes waste during the production process. Wood waste is utilized internally in own bio boilers that supply heat for both process and heating needs; Aluminum waste is sent for recycling.

All raw materials are processed in one production facility. Production process consists of 3 main flows:

- Wood production. Wood material is cut to length, profiled, milled, impregnated, painted, and assembled into window+doors frames and sashes.
- Alu production. Aluminum profiles are cut to length, drilled/milled and assembled for mounting to the wood sash and frame.
- Final assembly. Frames and sashes are assembled and glass and alu cladding is mounted into complete windows that are adjusted in a way that prevents the need for further adjustments during installation. Windows are then protected with cardboard corners and packed on wooden pallets, secured by wooden planks.

Pallets are wrapped in plastic foil to protect the goods from environmental elements.

Produced windows are transported by trucks to distribution centers in Poland and Germany, where they are bundled and sent to final customers

More information:
This EPD is generated with a fully pre-verified EPD tool. All processes are fixed and variable input data for each window and door i.e constituent material/components (Items) is governed by a menu. The results of the EPD are checked for plausibility. The review of the EPD-generator its constituent processes and the fixed content of the EPD is accepted based on the verification of the tool and the first EPD verification by the tool. Identification name and version number of the EPD-generator: Dovista EPD-generator 3.1.0.
Results for the additional impact categories particulate matter, ionising radiation, ecotoxicity (freshwater), human toxicity (cancer), human toxicity (non-cancer) and land use is not declared.

EN 15804 reference package based on EF 3.1 has been used.

Electricity data
Electricity consumption in A3 module (DOVISTA Polska Sp. z o.o. Wedkowy,PL-83-115 Swarozyn) comes from 100% renewable energy according to Certificate RGP STXSERV 2022-08-25 1716 from RGP. RGP declares a renewable energy mix of 99 % wind power and 1% solar. Climate impact for the renewable energy mix is 0,025 kg CO2eq. per kWh (GWP-GHG).

Estimates and assumptions
All transport in A2, B4 and C2 is with EURO 5 trucks.

In the module B2, during maintenance:

- The window is assumed to require 60 ml detergent and 540 ml water per m2 window and year. Density of detergent, 1 kg/l.
- Lubrication of moving parts in openable windows and patio doors during maintenance is assumed to 10 ml per m2 window/patio door and year. Density of lubrication, 0,82 kg/l.
- Interior repainting is carried out on all products once every 20 years.
- Exterior repainting is carried out on products without aluminium cladding once every 5 years.

In the B4 module, the glass cassette is replaced one time during the reference service life, 50 years according to EN 17213 (SIS, 2020) and transport distance for the new cassette is assumed to be 500 km.

Each B module includes the waste processing of waste generated (including, e.g., replaced components/parts) in the module up to end-of-waste state and final disposal.

In the C1 module, the demolition and deconstruction of the window is assumed to be 1,1 kWh/tonne.

In module C2 the used window is transported to a waste treatment site. The transport is assumed to be 80 km for landfill and recycling and 130 km for incineration. For calculations in module C2, C3 and C4 the following assumptions have been made:

- 70% of the glass cassette is transported to a facility for landfill and disposed. 30% is transported 80 km to the facility for recycling (SIS (2020)).
- 95% of the aluminum, steel and zinc is transported to a facility where its treated (fragmentized and sorted). 5% is transported to the facility for landfill and disposed.

- 95% of the wood frame is transported to a facility where its treated (chipped) and incinerated. 5% is transported to facility for landfill and disposed. The uptake of biogenic carbon in A1 is released during the incineration.
- 95% of plastic and EPDM is transported to a facility and incinerated. 5% is transported to facility for landfill and disposed.

For calculations in Module D the following assumptions have been made:

- The recycled steel and aluminium are replacing production of primary steel and aluminium.
- Module D also contains benefits from exported energy from waste incineration declared in module C.
- Exported energy is assumed to be 77% heat and 23% electricity from incineration.

Background data

The data quality of the background data is considered good. The assessment considers all available data from the production process, including all raw materials and auxiliary materials used as well as the energy consumption in relation to available Ecoinvent datasets and EPD's.

The infrastructure or capital goods used in the product system for underlying processes are included for upstream and downstream processes, as infrastructure or capital goods can NOT be excluded in SimaPro FLOW. Therefore results of the impact categories abiotic depletion of minerals and metals, land use, human toxicity (cancer), human toxicity, noncancer and ecotoxicity (freshwater) may be highly uncertain in LCAs that include capital goods/infrastructure in secondary datasets, in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available secondary datasets sometimes lack temporal, technological and geographical representativeness. Caution should be exercised when using the results of these indicators for decision-making purposes. For core module infrastructure or capital goods are excluded.

Data quality

When modeling in Simapro, Ecoinvent data (updated November 2023) has been used for generic data. The database is considered to be of high quality. For the majority of material supplier's product specific and third party verified EPD's has been used. The EPD's used is of high quality.

Input data are gathered from the actual manufacturing plant with product-specific processes, specific amounts, specific waste, and spillage %, specific energy mix, specific transportation distances and transportation type and EPD's from some of the suppliers are primary data. Primary data are collected directly from supplier and production site.

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

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	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	ND	X	ND	X	ND	X	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	PL	ND	EU	ND	EU	ND	EU	ND	ND	ND	EU	EU	EU	EU	EU
Primary data used	49% *			-	-	-	-	-	-	-	-	-	-	-	-	-	-
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. See also data quality for more information*

Process	***Source type and Source***	***Reference year***	***Data category***	***Share of primary data, of GWP-GHG results for A1- A3***
Manufacturing of product, inclusive generation of electricity used in manufacturing of product	*Collected production data (EPD owner) & Electricity data from Ecoinvent v 3.10*	*2022*	*Primary data*	7%
Transport of materials & packaging to manufacturing site	*Databases Ecoinvent v3.10*	*2022*	*Primary data*	11%
Production of ingoing materials and packaging	*EPDs (Confidential) & Databases Ecoinvent v3.10*	*< 5 years old*	*Primary data, secondary data*	31%
Total share of primary data, of GWP-GHG results for A1-A3				49%

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight % and kg C/declared unit
Plastic	0.36	0.00 %	0.00 %
Wood	10.13	0.00 %	100.00 % and 5.07
Sealant and Glue	0.08	0.00 %	0.00 %
Insulated Glass unit	22.08	0.00 %	0.00 %
Steel	1.22	19.64 %	0.00 %
EPDM	0.32	0.00 %	0.00 %
Zinc	0.21	0.00 %	0.00 %
Aluminium	1.52	0.00 %	0.00 %
Paint	0.85	0.00 %	0.00 %
TOTAL	36.78	0.65 %	27.56 % and 5.07

Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/declared unit
Plastic	0.08	0.22 %	0.00
Wood	2.31	6.28 %	1.15
Steel	0.01	0.04 %	0.00
Cardboard & Paper	0.15	0.40 %	0.07
TOTAL	2.55	6.93 %	1.23

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
-	-	-	0.00

Environmental Information

LCA results of the product- main environmental performance results

Mandatory impact category indicators according to EN 15804

Results per 1 m2										
Indicator	**Unit**	**A1-A3**	**A5**	**B2**	**B4**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	3.08E+01	3.77E+00	1.62E+00	1.95E+01	5.59E-06	6.47E-01	1.71E+01	8.25E-01	-2.03E+01
GWP-biogenic	kg CO_2 eq.	-1.97E+01	3.73E+00	-8.44E-01	1.22E-01	6.11E-10	4.34E-04	1.51E+01	7.80E-01	0.00E+00
GWP-luluc	kg CO_2 eq.	1.82E+00	9.55E-06	9.88E-01	4.41E-02	4.85E-10	2.11E-04	3.93E-04	4.68E-06	-2.34E-01
GWP-fossil	kg CO_2 eq.	4.84E+01	3.50E-02	1.48E+00	1.91E+01	5.59E-06	6.46E-01	2.05E+00	4.49E-02	-2.00E+01
ODP	kg CFC 11 eq.	2.08E-06	8.60E-10	9.58E-08	1.70E-07	8.55E-14	1.28E-08	1.35E-08	6.93E-10	-3.41E-07
AP	mol H^+ eq.	3.74E-01	7.47E-04	1.87E-02	1.14E-01	5.04E-08	2.02E-03	1.99E-02	3.98E-04	-1.18E-01
EP-freshwater	kg P eq.	1.17E-02	2.47E-06	9.24E-03	1.80E-03	1.63E-10	4.33E-05	1.61E-04	1.33E-06	-1.03E-02
EP-marine	kg N eq.	7.28E-02	3.46E-04	8.55E-03	2.68E-02	2.34E-08	6.81E-04	9.02E-03	1.84E-04	-1.89E-02
EP-terrestrial	mol N eq.	7.29E-01	4.02E-03	3.34E-02	2.93E-01	2.56E-07	7.41E-03	1.03E-01	2.01E-03	-1.86E-01
POCP	kg NMVOC eq.	2.48E-01	1.11E-03	1.92E-02	8.43E-02	7.64E-08	3.16E-03	3.28E-02	6.03E-04	-6.88E-02
ADP-minerals&metals*	kg Sb eq.	9.71E-04	9.51E-08	2.75E-05	5.61E-05	1.99E-12	2.06E-06	9.61E-06	1.84E-08	-2.22E-05
ADP-fossil*	MJ	4.37E+02	3.56E-02	9.02E+00	1.91E+02	2.96E-06	7.43E-01	4.61E+00	2.45E-02	-1.70E+02
WDP*	m^3	2.45E+01	4.83E-02	4.39E+00	3.29E+00	2.14E-07	5.05E-02	4.56E-01	1.86E-03	-1.88E+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 modules A1-A3 should not be used without considering the results of module C. 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.

**Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Additional mandatory and voluntary impact category indicators

Results per 1 m2										
Indicator	**Unit**	**A1-A3**	**A5**	**B2**	**B4**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	5.05E+01	4.03E-02	2.52E+00	1.92E+01	5.59E-06	6.46E-01	2.25E+00	4.58E-02	-2.03E+01

Disclaimer: The results of modules A1-A3 should not be used without considering the results of module C. 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.

Resource use indicators

Results per 1 m2										
Indicator	**Unit**	**A1-A3**	**A5**	**B2**	**B4**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	5.16E+02	7.91E-03	2.61E+01	5.13E+01	4.49E-07	1.54E-01	2.76E+00	1.75E-02	-1.30E+02
PERM*	MJ	1.46E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.44E+02	-9.62E+00	0.00E+00
PERT	MJ	6.63E+02	7.91E-03	2.61E+01	5.13E+01	4.49E-07	1.54E-01	-1.41E+02	-9.60E+00	-1.30E+02
PENRE	MJ	4.46E+02	3.71E-02	1.05E+01	1.92E+02	3.10E-06	7.75E-01	4.75E+00	2.56E-02	-1.77E+02
PENRM*	MJ.	2.20E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.52E+01	-7.98E-01	0.00E+00
PENRT	MJ	4.68E+02	3.71E-02	1.05E+01	1.92E+02	3.10E-06	7.75E-01	-1.04E+01	-7.73E-01	-1.77E+02
SM	kg	6.49E-01	0.00E+00	0.00E+00	3.95E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	1.78E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	8.68E-01	1.51E-03	1.93E-01	1.41E-01	8.74E-09	1.82E-03	1.61E-02	7.42E-05	-5.18E-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								

Disclaimer: The results of modules A1-A3 should not be used without considering the results of module C.

**For the PERM and PENRM the new "GUIDANCE TO CALCULATING THE PRIMARY ENERGY USE INDICATORS" in Annex 3 of the PCR is followed and calculated according to option A.*

[1] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Waste indicators

Results per 1 m2										
Indicator	**Unit**	**A1-A3**	**A5**	**B2**	**B4**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	9.47E-02	0.00E+00	3.91E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-hazardous waste disposed	kg	5.82E+00	0.00E+00	3.01E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Radioactive waste disposed	kg	5.71E-04	0.00E+00	1.17E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Disclaimer: The results of modules A1-A3 should not be used without considering the results of module C

Output flow indicators

Results per 1 m2										
Indicator	**Unit**	**A1-A3**	**A5**	**B2**	**B4**	**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
Material for recycling	kg	1.17E+00	0.00E+00	0.00E+00	1.32E+01	0.00E+00	0.00E+00	9.43E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	7.97E-03	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	1.19E+02	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	7.02E+01	0.00E+00	0.00E+00

Disclaimer: The results of modules A1-A3 should not be used without considering the results of module C

Additional information

ID: EPD Calculation 2.0.0 WV1 Wedkowy PL Dovista with B module 07-11-2025 15:33

Scenario: 100% of product go to energy or material recycling						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	5.59E-06	6.68E-01	2.37E+00	0.00E+00	-4.20E+01
GWP-biogenic	kg CO_2 eq.	6.11E-10	-2.61E-04	1.60E+01	0.00E+00	0.00E+00
GWP-luluc	kg CO_2 eq.	4.85E-10	2.23E-04	6.58E-04	0.00E+00	-2.55E-01
GWP-total	kg CO_2 eq.	5.59E-06	6.68E-01	1.83E+01	0.00E+00	-4.29E+01
ODP	kg CFC 11 eq.	8.55E-14	1.34E-08	1.62E-08	0.00E+00	-7.98E-07
AP	mol H^+ eq.	5.04E-08	1.95E-03	2.16E-02	0.00E+00	-3.36E-01
EP-freshwater	kg P eq.	1.63E-10	6.30E-05	1.98E-04	0.00E+00	-1.38E-02
EP-marine	kg N eq.	2.34E-08	6.94E-04	9.80E-03	0.00E+00	-5.35E-02
EP-terrestrial	mol N eq.	2.56E-07	7.54E-03	1.10E-01	0.00E+00	-6.07E-01
POCP	kg NMVOC eq.	7.64E-08	3.22E-03	3.53E-02	0.00E+00	-1.86E-01
ADP-minerals&metals*	kg Sb eq.	1.99E-12	1.32E-06	1.06E-05	0.00E+00	-2.20E-04
ADP-fossil*	MJ	2.96E-06	6.70E-01	5.36E+00	0.00E+00	-2.18E+02
WDP*	m^3	2.14E-07	5.43E-02	5.53E-01	0.00E+00	-2.60E+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				

Scenario: 100% of product go to landfill						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	5.59E-06	5.63E-01	0.00E+00	9.97E-02	0.00E+00
GWP-biogenic	kg CO_2 eq.	6.11E-10	-2.20E-04	0.00E+00	1.56E+01	0.00E+00
GWP-luluc	kg CO_2 eq.	4.85E-10	1.88E-04	0.00E+00	1.04E-05	0.00E+00
GWP-total	kg CO_2 eq.	5.59E-06	5.63E-01	0.00E+00	1.57E+01	0.00E+00
ODP	kg CFC 11 eq.	8.55E-14	1.13E-08	0.00E+00	1.54E-09	0.00E+00
AP	mol H^+ eq.	5.04E-08	1.64E-03	0.00E+00	8.83E-04	0.00E+00
EP-freshwater	kg P eq.	1.63E-10	5.32E-05	0.00E+00	2.95E-06	0.00E+00
EP-marine	kg N eq.	2.34E-08	5.86E-04	0.00E+00	4.08E-04	0.00E+00
EP-terrestrial	mol N eq.	2.56E-07	6.37E-03	0.00E+00	4.47E-03	0.00E+00
POCP	kg NMVOC eq.	7.64E-08	2.72E-03	0.00E+00	1.34E-03	0.00E+00
ADP-minerals&metals*	kg Sb eq.	1.99E-12	1.11E-06	0.00E+00	4.08E-08	0.00E+00
ADP-fossil*	MJ	2.96E-06	5.65E-01	0.00E+00	5.44E-02	0.00E+00
WDP*	m^3	2.14E-07	4.59E-02	0.00E+00	4.14E-03	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				

Version history

Original Version of the EPD, 2025-06-20

Update to PCR 2.0.0
Updated of EPD includes:
EPD Laminated Pine Scantling Kurikka Timber Oy HUB-1671
Update to Ecoinvent 3.10

ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
PCR	Product Category Rules
c-PCR	Complementary Product Category Rules
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
Environmental Impact Indicators (EN 15804)	
GHG	Greenhouse gas
GWP	Global Warming Potential (kg CO_2 eq.)
GWP-fossil	Global Warming Potential from fossil sources (kg CO_2 eq.)
GWP-biogenic	Global Warming Potential from biogenic sources (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.)
GWP-GHG	Global Warming Potential for greenhouse gases (kg CO_2 eq.)
ODP	Ozone Depletion Potential (kg CFC-11 eq.)
AP	Acidification Potential (mol H^+ eq.)
EP	Eutrophication Potential
EP-freshwater	Freshwater eutrophication potential (kg P eq.)
EP-marine	Marine eutrophication potential (kg N eq.)
EP-terrestrial	Terrestrial eutrophication potential (mol N eq.)
POCP	Photochemical Ozone Creation Potential (kg NMVOC eq.)
ADP	Abiotic Depletion Potential
ADP-minerals&metals	Abiotic depletion potential for non-fossil resources (kg Sb eq.)
ADP-fossil	Abiotic depletion potential for fossil resources (MJ)
WDP	Water Deprivation Potential (m^3)
Resource Use Indicators	
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)
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)
SM	Use of secondary material (kg)
RSF	Use of renewable secondary fuels (MJ)
NRSF	Use of non-renewable secondary fuels (MJ)

FW	Use of net fresh water (m^3)
Waste Indicators	
HW	Hazardous Waste (disposed) (kg)
NHW	Non-Hazardous Waste (disposed) (kg)
RW	Radioactive Waste (disposed) (kg)
Output Flow Indicators	
CFR	Components for Reuse (kg)
MR	Material for Recycling (kg)
MER	Materials for Energy Recovery (kg)
EEE	Exported Energy, Electricity (MJ)
EET	Exported Energy, Thermal (MJ)
Lifecycle 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
C3	Waste processing
C4	Disposal
D	Reuse-Recovery-Recycling potential
Other Relevant Terms	
SVHC	Substances of Very High Concern
EC No.	European Community Number
CAS No.	Chemical Abstracts Service Number
MJ	Megajoule
kg	Kilogram
m^3	Cubic Meter
NMVOC	Non-Methane Volatile Organic Compounds
Sb eq.	Antimony Equivalents
P eq.	Phosphorus Equivalents
N eq.	Nitrogen Equivalents
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO_2 eq.	Carbon Dioxide Equivalents
kg C	Kilograms of Carbon
kg CO_2 eq.	Kilograms of Carbon Dioxide Equivalent
ND	Not Declared

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