Environmental Product Declaration

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

Painted and natural pine mouldings

from

Combiwood OÜ

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
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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 at www.environdec.com



General information

EPD Profile

Programme information:	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm; Sweden www.environdec.com info@environdec.com
EPD owner	Combiwood OÜ Möldre village Helme parish 68612 Valga County; Estonia http://www.combiwood.ee/en info@combiwood.ee
EPD developer	Riin Kaldma Hendrikson & Ko OÜ https://hendrikson.ee/en riin.kaldma@gmail.com
Third party verifier	Anni Oviir LCA Support https://www.lcasupport.com/ anni.oviir@lcasupport.com Approved by: The International EPD® System

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): Construction Products PCR 2019:14, version 1.11 (valid until 2024-12-20) and c-PCR-006 Wood and wood-based products for use in construction (EN 16485:2014), version 2019-12-20.
PCR review was conducted by: Claudia A. Peña. The review panel may be contacted via info@environdec.com.
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
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 from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804:2012+A2:2019. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Description of the organisation: Combiwood OÜ is an Estonian company established in 2004, whose main output is manufacturing quality wooden mouldings finished with primer and surface paint. The factory produced 51.7 million running meters of mouldings in 2020, which is mainly exported to Scandinavia (Sweden, Norway) and other European countries (Austria, Denmark, Estonia, Finland, France, Germany, the Netherlands and United Kingdom).

Product-related or management system-related certifications: Wood comes from sustainable forestry and the factory has PEFC and FSC certificates (see Appendix A). Also, an advanced method of quality control is applied and is developed by Combiwood. A thorough examination is carried out after each stage of the wood handling process.

Name and location of production site: Combiwood OÜ, Estonia – Möldre village; Helme Parish; 68612 Valga County.

Product information

Product name: Painted and natural wooden mouldings (pine).

Product identification: Painted and natural mouldings of pine is used in the LCA calculation. The dimension of the mouldings is 56 mm x 12 mm and the length is 1000 mm (1 meter). The weigh for the natural mouldings is 0.320 kg and for painted mouldings it is ~0.323 kg (including used chemicals). The density is 470 kg/m^3 and the moisture of the wood is 12%.

Product description: Mouldings are produced from finger-jointed wood. 85% of the produced mouldings are painted (also treated with chemicals) and 15% of are natural mouldings. The mouldings are used indoor for door and window frames, for interior walls and ceiling panels (see Figure 1).

UN CPC code: 311 and 312.



Figure 1. Painted mouldings in indoor use

Content information

Table 1 shows the content of the painted and natural mouldings for 1 m of declared unit.

Table 1. The content of painted and natural mouldings. The total weights may deviate from the sum of all subcomponents due to rounding errors

Product components	Painted mouldings	Natural mouldings	Painted mouldings	Natural mouldings	Painted mouldings	Natural mouldings
	Weight		Post-consumer material, weight-%		Renewable material, weight-%	
Pine	320 g (99.1%)	320 g	0%	0%	99.1%	100%
Filler	~0.14 g (~0.05%)	-	0%	-	0%	-
Primer	~0.74 g (~0.23%)	-	0%	-	0%	-
Paint	~0.74 g (~0.23%)	-	0%	-	0%	-
Varnish	~0.7 g (~0.22%)	-	0%	-	0%	-
Solvents and other chemicals	~0.53 g (~0.17%)	-	0%	-	0%	-
TOTAL	**322.8 g = ~0.323 kg**	**320 g = 0.32 kg**	0%	0%	99.1%	100%

Packaging materials for all products	Weight		Weight-%
EUR-pallets	~3.3 g		~30.5%
Wood packaging	~5.2 g		~47.5%
Plastic packaging – plastic, stretch wrap and tape	~0.6 g	Plastic TOTAL 1.6 g	~5.3%
Plastic packaging – Polyester Band	~0.1 g		~1%
Plastic packaging – thermal shrink film	~0.9 g		~8.9%
Cardboard	~0.7 g		~6.7%
TOTAL: packaging	**10.8 g = ~0.01 kg**		**100%**
TOTAL: product+ packaging	**Painted: 0.333 kg**		**Natural: 0.33 kg**

The mouldings or substances used to produce the mouldings do not contain any substances from the dangerous substances from the candidate list of SVHC for Authorisation. The limits for registration with the European Chemicals Agency are >0.1% of the weight of the product.

LCA information

Declared unit: 1 m of wooden mouldings, 12 mm x 56 mm. The weight of the natural mouldings is 0.320 kg and for painted mouldings it is 0.323 kg.

Time representativeness: The reference year for collected data was 2020. The data collection was performed by the EPD owner, Combiwood OÜ.

Databases and LCA software used:

LCA software: SimaPro 9.3.0.2

Database: Ecoinvent 3.8

Additional data sources: Combiwood OÜ and its suppliers (the reference year is 2020).

Description of system boundaries:

Cradle-to-gate with options, i.e., module A4, modules C1–C4 and module D (A1–A4 + C + D). In other words, the life cycle stages are product stage (A1-A3), construction process stage module A4, end-of-life stage (C1-C4) and benefits and loads beyond the system boundary (D). The modules declared, geographical scope and share of specific data can be seen in Table 2. A system diagram that specifies what is covered in each module can be seen in Figure 2 and Figure 3 shows flow diagram of the mouldings production processes and its system boundaries.

Construction (A5) and use stages (module B) are omitted, because they are not associated with any major energy or material use during its expected lifetime, and the environmental impact is considered negligible.

System diagram

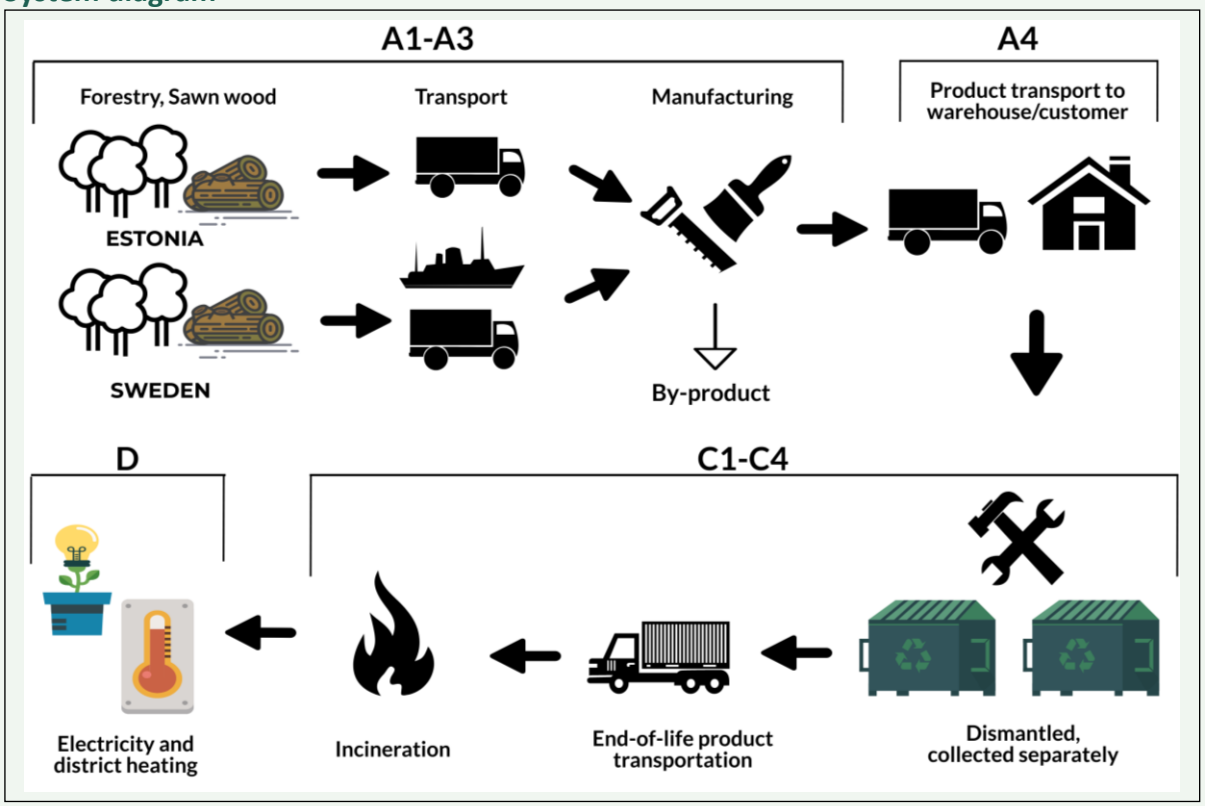


Figure 2. Flow diagram of the assessed life cycle phases of the mouldings. Beginning with raw material extraction and production, followed by transport from suppliers to Combiwood factory and manufacturing. A further description of the life cycle phases included in the assessment is provided in the “Production process” chapter

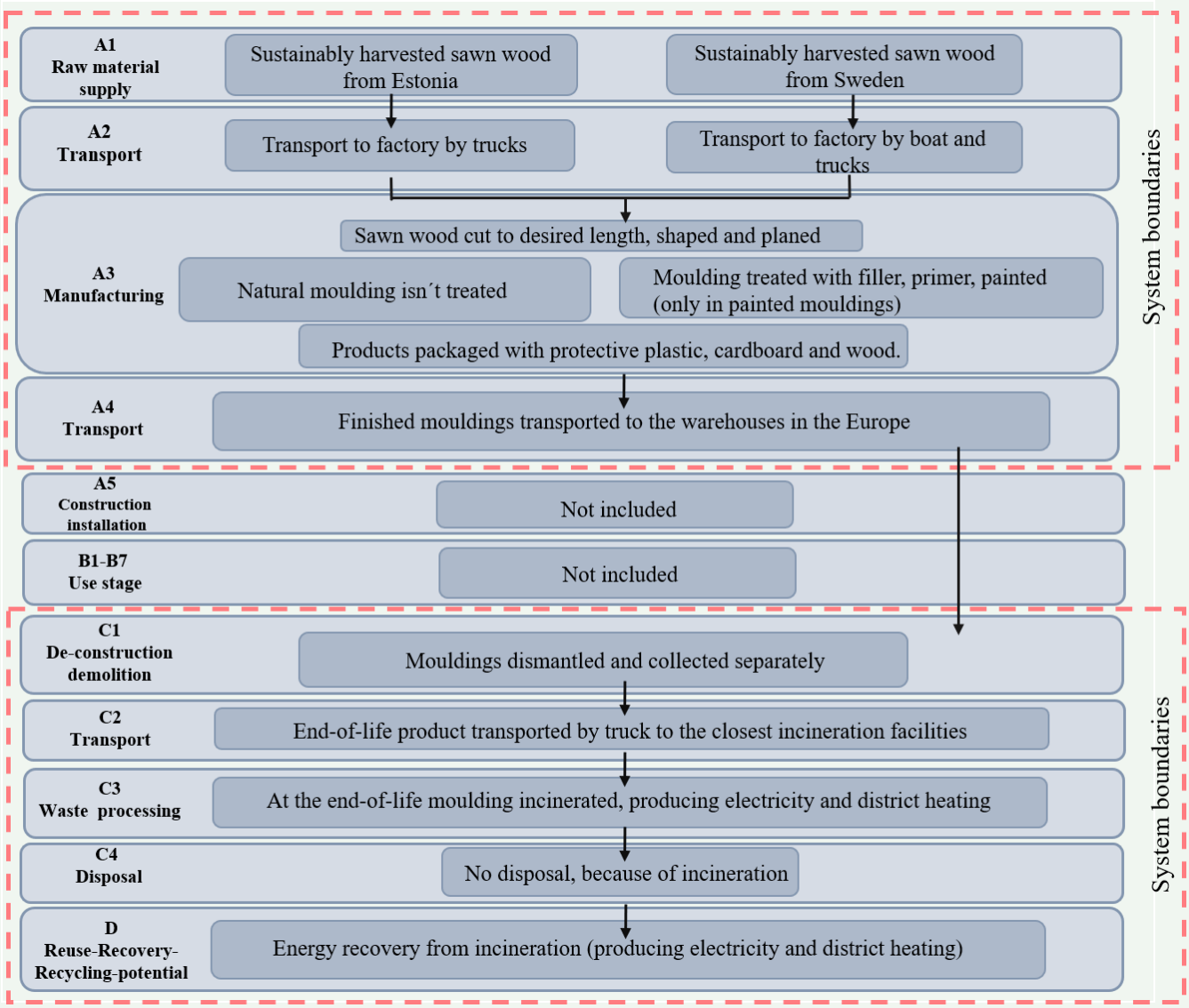


Figure 3. Flow diagram of the mouldings production and its system boundaries

More information: For more information regarding the products and the company, see EPD owner's Combiwood website: http://www.combiwood.ee/en

Additional information: For further information regarding the underlying LCA, contact LCA practitioner Riin Kaldma: riin.kaldma@hendrikson.ee

Assumptions: Assumptions that are general for this LCA are:

1. The reference year for collected data was 2020 (A1).
2. Transportation by truck is made with the Euro 5 emission standard (modelled in SimaPro with the process Transport, freight, lorry 16-32 metric ton EURO5 {RER}). There aren't losses in the transportation, because the products are packaged properly (A2).
3. Transportation by ship is modelled with the process Transport, freight, sea, ferry {GLO}| transport, freight, sea, ferry. There aren't losses in the transportation, because the products are packaged properly (A2).

4. The general electricity mix for Estonia is used (A3).
5. A4 has been calculated using an average scenario: the finished mouldings are distributed to different European countries; therefore, the transport distances are calculated as an average (arithmetic average) of the European countries (Austria, Denmark, Estonia, Finland, France, Germany, the Netherlands, Sweden, United Kingdom). The estimated distance is ~1554 km with a truck and ~119 km with a ferry (A4).
6. End-of-life the mouldings are dismantled from the walls and floors and collected separately. It is estimated that there isn't mass loss in the usage of the mouldings, so the end-of-life product is assumed to be in the same weight with the declared product (C1).
7. All of end-of-life products are assumed to be transported to the closest incineration facilities by truck and the distance is estimated as 50 km (C2).
8. There is no disposal of mouldings, because it is incinerated (C4).
9. Mouldings are assumed to be incinerated at the end-of-life, producing electricity and district heating (D).

Cut-off rules: All materials and processes, input and output data in the life cycle have been included in the assessment to the best of the LCA practitioner's knowledge. The method chosen for the allocation procedure of this LCA is the cut-off method. There is no neglected unit process more than 1% of total mass and energy flows. Some production solvents that constitute less than 1% of the product weight have been excluded (e.g., for the maintenance of the machines at the manufacturing site, e.g., oils and cleaning solvents, etc.). This cut-off rule does not apply for hazardous material and substances.

Data quality: The specific activity data for raw material, transport, manufacturing and distribution have been provided by Combiwood (i.e., material amounts, transport distances and modes of transportation, manufacturing energy consumption etc.).

Allocation methodology: The allocation is performed according to EN15804. According to EN 15804, all by-products must take their environmental responsibility upstream and inherent properties cannot be allocated away. Allocation is based on production rate in 2020 and all other processes (electricity, generated waste, etc.) are calculated as a weight average per produced kg of all products.

The co-product generated with the main product is shavings. 39% of the bought wood is sold to pellets production and allocated based on revenue. 6% of all bought wood is incinerated in the furnace for heating. Impacts from allocated co-products are not included in module D, because it leaves the system in the module A3 – incineration of the wood shavings contribute to the electricity and rest of the shavings are sold to pellet production.

Production process

The scope of this LCA is cradle-to-gate with options, i.e., module A4, modules C1–C4 and module D (A1–A4 + C + D). The present EPD is a product specific EPD.

Production A1-A3

- The sawn wood is from Estonia and Sweden and is harvested sustainably (A1). Biogenic carbon enters the product system in module A1 and leaves the product system in the end-of-life stage at incineration (i.e. mouldings are assumed to be incinerated at the end-of-life, C3). This assumption can be made as the wood is sourced from sustainably managed forest.
- The sawn wood is transported in Estonia with trucks and from Sweden with trucks and by boat. The data used in LCA represents the average transportation distances to the factory (A2).
- Manufacturing process (A3) is shown in the Figure 2 and Figure 3.
- The bought wood is already dried before arriving to the plant (wood is considered dry at moisture content of 12%.).
- The sawn wood is cut in desired length and shape and planed. Then the moulding is treated with filler, primer and paint (only painted mouldings). The natural moulding isn't treated with anything (no chemicals used).
- An average electricity mix for Estonia is used.
- The leftover shavings (6% of the bought wood) are incinerated in the furnace for heating. And 39% of the shavings are sent to pellet production.
- The generated waste is transported to the recycling center or hazardous waste to the incineration plant.
- The products are stacked and shipped with protective plastic, cardboard and wood packaging.

Transport A4

- The mouldings are then transported to the warehouses in the European countries (A4).
- The finished mouldings are distributed mostly by trucks to the warehouses (A4) of different European countries, therefore the transport distances are calculated as an average of the European countries (Austria, Denmark, Estonia, Finland, France, Germany, the Netherlands, Sweden, United Kingdom). The EPD can be used in those markets.

C1-C4 End-of-life stage

- The mouldings are dismantled from the walls and floors and collected separately. It is assumed to be associated with minimal energy consumption, and is not included in the LCA (C1).
- All of end-of-life product is assumed to be transported to the closest incineration facilities by truck, the average transport distance for waste to treatment is estimated to 50 km (C2).
- Mouldings are assumed to be incinerated at the end-of-life, producing electricity and district heating (C3). I.e. biogenic carbon enters the product system in module A1 and leaves the product system in the end-of-life stage at incineration. This assumption can be made as the wood is sourced from sustainably managed forest (see Appendix A). In

accordance with EN 16485:2014, the carbon balance over the entire life cycle of the wood should thus be zero.

- There is no disposal of mouldings, because it is incinerated (C4).

D Benefits and loads beyond the system boundary

- Module D consist of energy recovery from the end-of-life incineration (to produce electricity and district heating). Therefore, the heat produced from the incineration of the mouldings substitutes the need of using virgin wood for energy production.

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

Table 2. Table declaring the life cycle stages included in the LCA. X= included in the LCA, MND= Module Not Declared.

	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	X	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	EE/SE	EE/SE	EE	AT/DE/ EE/DK/ FI/FR/GB /NL/SE	ND	ND	ND	ND	ND	ND	ND	ND	AT/DE/ EE/DK/ FI/FR/ GB /NL/SE	AT/D E/ EE/D K/ FI/FR /GB /NL/ SE	AT/D E/ EE/D K/ FI/FR /GB /NL/ SE	AT/D E/ EE/D K/ FI/FR /GB /NL/ SE	AT/DE/ EE/DK/ FI/FR/GB /NL/SE
Specific data used	More than 50% comes from specific LCA data					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Not relevant, the two products included in this EPD are declared separately					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-

Environmental Information

Potential environmental impact – mandatory indicators according to EN 15804

Table 3. The results from the LCA showing the environmental impacts for 1 m natural wooden mouldings

NATURAL MOULDINGS											
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	7,00E-02	4,43E-02	8,55E-02	2,00E-01	8,69E-02	0,00 E+00	2,66E-03	1,05E-02	0,00 E+00	-2,74E-02
GWP-biogenic	kg CO_2 eq.	-9,01E-01	2,84E-05	3,76E-01	-5,24E-01	7,01E-05	0,00 E+00	2,27E-06	5,24E-01	0,00 E+00	-5,12E-02
GWP-luluc	kg CO_2 eq.	1,02E-03	2,01E-05	6,51E-05	1,11E-03	3,52E-05	0,00 E+00	1,04E-06	8,80E-06	0,00 E+00	-1,29E-04
GWP-total	kg CO_2 eq.	-8,29E-01	4,44E-02	4,62E-01	-3,23E-01	8,70E-02	0,00 E+00	2,66E-03	5,35E-01	0,00 E+00	-8,17E-02
ODP	kg CFC 11 eq.	2,00E-08	9,93E-09	1,57E-08	4,57E-08	2,00E-08	0,00 E+00	6,15E-10	1,18E-09	0,00 E+00	-3,04E-09
AP	mol H^+ eq.	5,82E-04	4,71E-04	9,06E-04	1,96E-03	4,74E-04	0,00 E+00	1,08E-05	8,31E-05	0,00 E+00	-1,22E-03
EP-freshwater	kg PO_4^{3-} eq.	1,98E-04	5,40E-05	1,02E-04	3,54E-04	7,04E-05	0,00 E+00	1,87E-06	6,36E-05	0,00 E+00	-2,89E-04
EP-freshwater	kg P eq.	3,42E-05	2,51E-06	8,64E-06	4,54E-05	5,45E-06	0,00 E+00	1,71E-07	4,86E-06	0,00 E+00	-1,17E-05
EP-marine	kg N eq.	2,11E-04	1,25E-04	1,81E-04	5,17E-04	1,36E-04	0,00 E+00	3,25E-06	3,73E-05	0,00 E+00	-5,77E-04
EP-terrestrial	mol N eq.	2,25E-03	1,39E-03	1,99E-03	5,62E-03	1,49E-03	0,00 E+00	3,55E-05	3,51E-04	0,00 E+00	-6,44E-03
POCP	kg NMVOC eq.	8,18E-04	3,79E-04	5,71E-04	1,77E-03	4,37E-04	0,00 E+00	1,09E-05	9,01E-05	0,00 E+00	-1,57E-03
ADP-minerals&metals*	kg Sb eq.	2,39E-07	1,32E-07	1,28E-07	4,98E-07	2,93E-07	0,00 E+00	9,25E-09	2,93E-08	0,00 E+00	-2,56E-07
ADP-fossil*	MJ	1,17E+00	6,47E-01	1,20E+00	3,02E+00	1,30E+00	0,00 E+00	4,02E-02	1,43E-01	0,00 E+00	-4,73E-01
WDP	m^3	1,70E-02	1,75E-03	7,06E-03	2,58E-02	3,83E-03	0,00 E+00	1,20E-04	-2,69E-03	0,00 E+00	-1,65E-02
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 of these results are high or as there is limited experience with the indicator.*

Table 4. The results from the LCA showing the environmental impacts for 1 m painted wooden mouldings

PAINTED MOULDINGS											
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	7,76E-02	4,46E-02	8,74E-02	2,10E-01	8,76E-02	0,00 E+00	2,68E-03	1,32E-02	0,00 E+00	-2,74E-02
GWP-biogenic	kg CO_2 eq.	-9,01E-01	2,85E-05	3,76E-01	-5,24E-01	7,07E-05	0,00 E+00	2,29E-06	5,24E-01	0,00 E+00	-5,12E-02
GWP-luluc	kg CO_2 eq.	3,16E-03	2,02E-05	6,51E-05	3,24E-03	3,55E-05	0,00 E+00	1,05E-06	8,86E-06	0,00 E+00	-1,29E-04
GWP-total	kg CO_2 eq.	-8,20E-01	4,46E-02	4,64E-01	-3,12E-01	8,78E-02	0,00 E+00	2,69E-03	5,37E-01	0,00 E+00	-8,17E-02
ODP	kg CFC 11 eq.	2,13E-08	9,99E-09	1,57E-08	4,70E-08	2,01E-08	0,00 E+00	6,21E-10	1,18E-09	0,00 E+00	-3,04E-09
AP	mol H^+ eq.	7,02E-04	4,75E-04	8,96E-04	2,07E-03	4,78E-04	0,00 E+00	1,09E-05	6,87E-05	0,00 E+00	-1,22E-03
EP-freshwater	kg PO_4^{3-} eq.	2,14E-04	5,44E-05	1,04E-04	3,72E-04	7,10E-05	0,00 E+00	1,88E-06	6,61E-05	0,00 E+00	-2,89E-04
EP-freshwater	kg P eq.	3,70E-05	2,52E-06	8,64E-06	4,81E-05	5,50E-06	0,00	1,73E-07	4,89E-06	0,00	-1,17E-05

							E+00			E+00	
EP-marine	kg N eq.	2,24E-04	1,26E-04	1,86E-04	5,37E-04	1,37E-04	0,00 E+00	3,28E-06	4,42E-05	0,00 E+00	-5,77E-04
EP-terrestrial	mol N eq.	2,33E-03	1,40E-03	2,05E-03	5,77E-03	1,50E-03	0,00 E+00	3,58E-05	4,29E-04	0,00 E+00	-6,44E-03
POCP	kg NMVOC eq.	8,53E-04	3,82E-04	5,85E-04	1,82E-03	4,41E-04	0,00 E+00	1,10E-05	1,10E-04	0,00 E+00	-1,57E-03
ADP-minerals&metals*	kg Sb eq.	3,28E-07	1,32E-07	1,28E-07	5,88E-07	2,95E-07	0,00 E+00	9,33E-09	2,95E-08	0,00 E+00	-2,56E-07
ADP-fossil*	MJ	1,31E+00	6,50E-01	1,19E+00	3,15E+00	1,32E+00	0,00 E+00	4,06E-02	1,32E-01	0,00 E+00	-4,73E-01
WDP	m^3	2,45E-02	1,76E-03	7,06E-03	3,33E-02	3,86E-03	0,00 E+00	1,21E-04	-2,68E-03	0,00 E+00	-1,65E-02
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 of these results are high or as there is limited experience with the indicator.*

Potential environmental impact – additional mandatory and voluntary indicators

Table 5. The results from the LCA showing the environmental impacts for 1 m natural wooden mouldings – additional mandatory and voluntary indicators

NATURAL MOULDINGS											
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG*	kg CO_2 eq.	6,92E-02	4,40E-02	8,48E-02	1,98E-01	8,62E-02	0,00 E+00	2,64E-03	1,05E-02	0,00 E+00	-2,73E-02
Additional voluntary indicators e.g., the voluntary indicators from EN 15804 or the global indicators according to ISO 21930:2017											

Table 6. The results from the LCA showing the environmental impacts for 1 m painted wooden – additional mandatory and voluntary indicators

PAINTED MOULDINGS											
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG	kg CO_2 eq.	7,88E-02	4,42E-02	8,67E-02	2,10E-01	8,70E-02	0,00 E+00	2,66E-03	1,32E-02	0,00 E+00	-2,73E-02
Additional voluntary indicators e.g., the voluntary indicators from EN 15804 or the global indicators according to ISO 21930:2017											

Use of resources

Table 7. The results from the LCA showing the resource use for 1 m natural wooden mouldings

NATURAL MOULDINGS											
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1,17E+01	8,14E-03	2,34E-01	1,20E+01	1,80E-02	0,00 E+00	5,68E-04	6,11E+00	0,00 E+00	-1,38E-04
PERM	MJ	5,95E+00	0,00E+00	1,49E-01	6,09E+00	0,00E+00	0,00 E+00	0,00E+00	-6,09E+00	0,00 E+00	-2,05E+00
PERT	MJ	1,77E+01	8,14E-03	3,83E-01	1,81E+01	1,80E-02	0,00 E+00	5,68E-04	1,12E-02	0,00 E+00	-2,05E+00
PENRE	MJ	1,17E+00	6,47E-01	1,15E+00	2,96E+00	1,30E+00	0,00 E+00	4,02E-02	-8,91E-06	0,00 E+00	1,38E-04
PENRM	MJ.	0,00E+00	0,00E+00	5,11E-02	5,11E-02	0,00E+00	0,00 E+00	0,00E+00	1,43E-01	0,00 E+00	-4,73E-01
PENRT	MJ	1,17E+00	6,47E-01	1,20E+00	3,01E+00	1,30E+00	0,00 E+00	4,02E-02	1,43E-01	0,00 E+00	-4,73E-01
SM	kg	1,17E+01	8,14E-03	2,34E-01	1,20E+01	1,80E-02	0,00 E+00	5,68E-04	6,11E+00	0,00 E+00	-1,38E-04
RSF	MJ	5,95E+00	0,00E+00	1,49E-01	6,09E+00	0,00E+00	0,00 E+00	0,00E+00	-6,09E+00	0,00 E+00	-2,05E+00
NRSF	MJ	1,77E+01	8,14E-03	3,83E-01	1,81E+01	1,80E-02	0,00 E+00	5,68E-04	1,12E-02	0,00 E+00	-2,05E+00
FW	m^3	1,66E-02	1,77E-03	6,90E-03	2,53E-02	3,85E-03	0,00 E+00	1,21E-04	-2,72E-03	0,00 E+00	-1,59E-02

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

Table 8. The results from the LCA showing the resource use for 1 m painted wooden mouldings

PAINTED MOULDINGS											
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1,18E+01	8,18E-03	2,34E-01	1,20E+01	1,82E-02	0,00 E+00	5,73E-04	8,92E-06	0,00 E+00	-1,38E-04
PERM	MJ	5,95E+00	0,00E+00	1,49E-01	6,09E+00	0,00E+00	0,00 E+00	0,00E+00	-6,09E+00	0,00 E+00	-2,05E+00
PERT	MJ	1,77E+01	8,18E-03	3,83E-01	1,81E+01	1,82E-02	0,00 E+00	5,73E-04	1,13E-02	0,00 E+00	-2,05E+00
PENRE	MJ	1,31E+00	6,50E-01	1,14E+00	3,10E+00	1,32E+00	0,00 E+00	4,06E-02	-8,92E-06	0,00 E+00	1,38E-04
PENRM	MJ.	0,00E+00	0,00E+00	5,11E-02	5,11E-02	0,00E+00	0,00 E+00	0,00E+00	1,32E-01	0,00 E+00	-4,73E-01
PENRT	MJ	1,31E+00	6,50E-01	1,19E+00	3,15E+00	1,32E+00	0,00 E+00	4,06E-02	1,32E-01	0,00 E+00	-4,73E-01
SM	kg	1,18E+01	8,18E-03	2,34E-01	1,20E+01	1,82E-02	0,00 E+00	5,73E-04	8,92E-06	0,00 E+00	-1,38E-04
RSF	MJ	5,95E+00	0,00E+00	1,49E-01	6,09E+00	0,00E+00	0,00 E+00	0,00E+00	-6,09E+00	0,00 E+00	-2,05E+00
NRSF	MJ	1,77E+01	8,18E-03	3,83E-01	1,81E+01	1,82E-02	0,00 E+00	5,73E-04	1,13E-02	0,00 E+00	-2,05E+00
FW	m^3	2,38E-02	1,78E-03	6,90E-03	3,25E-02	3,88E-03	0,00 E+00	1,22E-04	-2,71E-03	0,00 E+00	-1,59E-02
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										

Waste production and output flows

Waste production

Table 9. The results from the LCA showing the waste generation for 1 m natural wooden mouldings

NATURAL MOULDINGS											
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	1,92E-05	1,47E-06	7,97E-07	2,15E-05	3,31E-06	0,00 E+00	1,05E-07	2,39E-07	0,00 E+00	-8,08E-07
Non-hazardous waste disposed	kg	2,22E-02	2,69E-02	2,31E-01	2,80E-01	6,45E-02	0,00 E+00	2,07E-03	1,30E-02	0,00 E+00	-1,35E-02
Radioactive waste disposed	kg	7,15E-06	4,40E-06	8,10E-06	1,97E-05	8,83E-06	0,00 E+00	2,72E-07	7,85E-07	0,00 E+00	-3,13E-06

Table 10. The results from the LCA showing the waste generation for 1 m painted wooden mouldings

PAINTED MOULDINGS											
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	1,94E-05	1,48E-06	7,97E-07	2,17E-05	3,34E-06	0,00 E+00	1,06E-07	2,40E-07	0,00 E+00	-8,08E-07
Non-hazardous waste disposed	kg	4,63E-04	2,95E-05	2,94E-04	7,86E-04	6,50E-02	0,00 E+00	2,09E-03	1,30E-02	0,00 E+00	-1,35E-02
Radioactive waste disposed	kg	7,70E-06	4,42E-06	8,10E-06	2,02E-05	8,91E-06	0,00 E+00	2,74E-07	7,89E-07	0,00 E+00	-3,13E-06

Output flows

Table 11. The results from the LCA showing the output flows for 1 m natural wooden mouldings

NATURAL MOULDINGS											
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
Material for recycling	kg	0,00 E+00	0,00 E+00	2,28E-01	2,28E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
Materials for energy recovery	kg	0,00 E+00	0,00 E+00	2,45E-03	2,45E-03	0,00 E+00	0,00 E+00	0,00 E+00	3,20 E-01	0,00 E+00	0,00 E+00
Exported energy, electricity	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	9,38E-01	0,00 E+00	0,00 E+00
Exported energy, thermal	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	8,53E+00	0,00 E+00	0,00 E+00

Table 12. The results from the LCA showing the output flows for 1 m painted wooden mouldings

PAINTED MOULDINGS											
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
Material for recycling	kg	0,00 E+00	0,00 E+00	2,28E-01	2,28E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
Materials for energy recovery	kg	0,00 E+00	0,00 E+00	4,58E-04	4,58E-04	0,00 E+00	0,00 E+00	0,00 E+00	3,23 E-01	0,00 E+00	0,00 E+00
Exported energy, electricity	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	9,40E-01	0,00 E+00	0,00 E+00
Exported energy, thermal	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	8,54E+00	0,00 E+00	0,00 E+00

Information on biogenic carbon content

Table 13. The biogenic carbon content for 1 m wooden mouldings

BIOGENIC CARBON CONTENT	Painted mouldings	Natural mouldings
Biogenic carbon content in product	0,14 kg C (0,52 kg CO2)	0,14 kg C (0,52 kg CO2)
Biogenic carbon content in packaging	0,004 kg C (0,015 kg CO2)	

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

References

General Programme Instructions of the International EPD® System. Version 4.0. Date 2021-03-29.

PCR 2019:14 Construction products (EN 15804:A2). Version 1.11. Valid until 2024-12-20.

c-PCR-006 Wood and wood-based products for use in construction (EN 16485:2014), version 2019-12-20. Product group classification: UN CPC 031, 311, 312, 313, 314, 315, 316, 319.

ISO 14025. Environmental Labels and Declarations – Type III Environmental Declarations – Principles and Procedures (ISO 14025:2006). Estonia, Estonian Centre for Standardization.

ISO 14040. Environmental Management – Life cycle assessment – Principles and framework (EVS-EN ISO 14040:2006 + ISO 14040:2006/A1:2020). Estonia, Estonian Centre for Standardization.

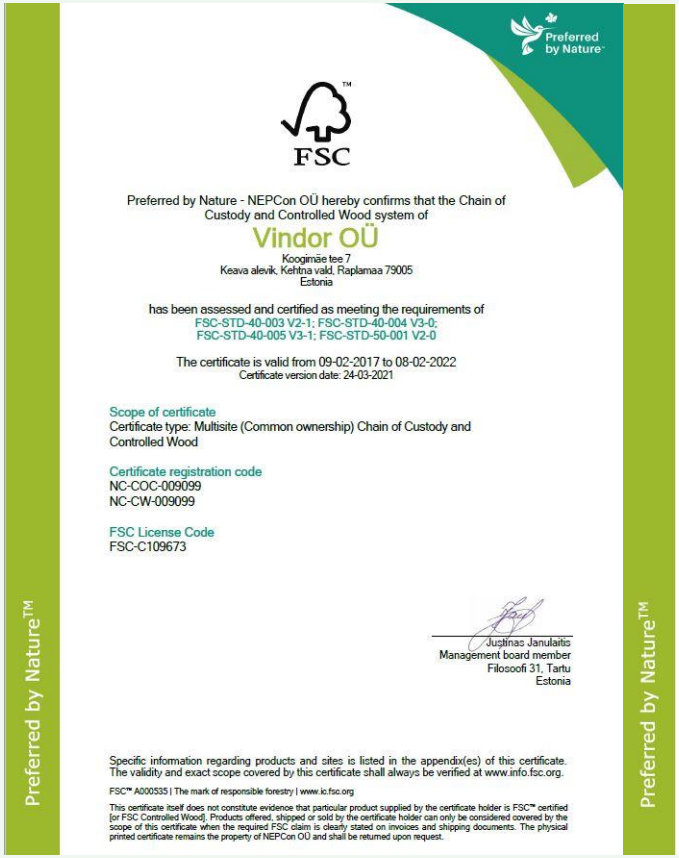
ISO 14044. Environmental Management – Life cycle assessment – Requirements and guidelines (EVS-EN ISO 14044:2006). Estonia, Estonian Centre for Standardization.

EN 15804:2012+A2:2019. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products (EVS-EN 15804:2012+A2:2019). Estonia, Estonian Centre for Standardization.

EN 16449. Wood and wood-based products – Calculation of the biogenic carbon content of wood and conversion to carbon dioxide.

Appendix A – Sustainably managed forestry certificates

FSC certificate for Vindor OÜ and Combiwood Group, e.g. Combiwood OU. FSC License Code FSC-C109673. FSC certificate registration sub-code for Combiwood: NC-COC-009099-A. The certificate is valid from 09-02-2017 to 08-02-2022. Certificate version date: 24-03-2021.



Preferred by Nature

FSC

Preferred by Nature - NEPCon OÜ hereby confirms that the Chain of Custody and Controlled Wood system of

Vindor OÜ

Koogimäe tee 7
Keava alevik, Kehtna vald, Raplamaa 79005
Estonia

has been assessed and certified as meeting the requirements of
FSC-STD-40-003 V2-1; FSC-STD-40-004 V3-0;
FSC-STD-40-005 V3-1; FSC-STD-50-001 V2-0

The certificate is valid from 09-02-2017 to 08-02-2022
Certificate version date: 24-03-2021

Scope of certificate
Certificate type: Multisite (Common ownership) Chain of Custody and Controlled Wood

Certificate registration code
NC-COC-009099
NC-CW-009099

FSC License Code
FSC-C109673

Justinas Janulaitis
Management board member
Filosoofi 31, Tartu
Estonia

Specific information regarding products and sites is listed in the appendix(es) of this certificate. The validity and exact scope covered by this certificate shall always be verified at www.info.fsc.org.

FSC™ A000535 | The mark of responsible forestry | www.ic.fsc.org

This certificate itself does not constitute evidence that particular product supplied by the certificate holder is FSC™ certified [or FSC Controlled Wood]. Products offered, shipped or sold by the certificate holder can only be considered covered by the scope of this certificate when the required FSC claim is clearly stated on invoices and shipping documents. The physical printed certificate remains the property of NEPCon OÜ and shall be returned upon request.

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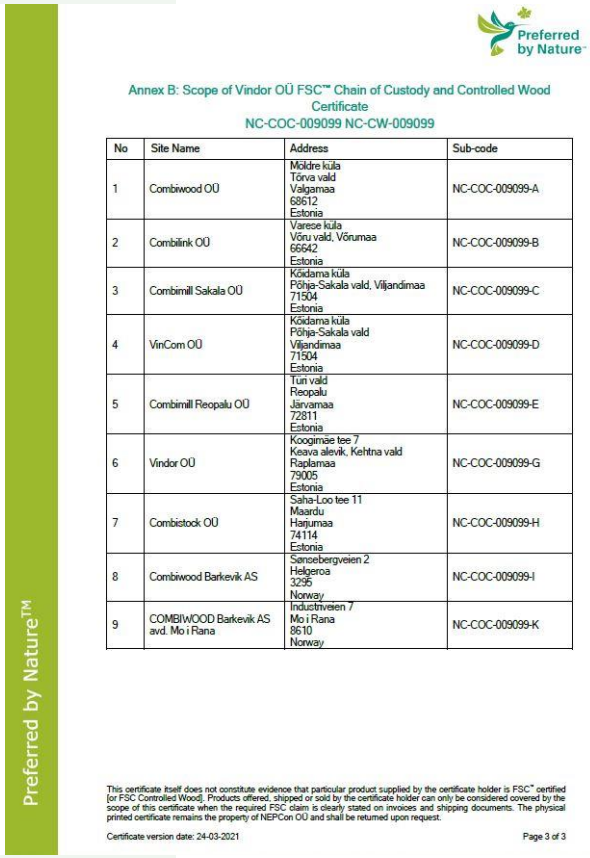
Annex A: Scope of Vindor OÜ FSC™ Chain of Custody and Controlled Wood Certificate
NC-COC-009099 NC-CW-009099
(The list below shows products handled by the network of Participating Sites)

Product Type	Trade Name	Output FSC Claims
N1	Barks	FSC Mix Credit; FSC Controlled Wood
W1.1	Roundwood (logs)	FSC Mix Credit; FSC Controlled Wood
W11.1	Threshold	FSC Mix Credit
W11.7	Wall cladding MDF	FSC Mix Credit; FSC Controlled Wood
W11.7	Wall cladding	FSC Mix Credit; FSC Controlled Wood
W11.8	Mouldings MDF	FSC Mix Credit; FSC Controlled Wood
W11.8	Mouldings	FSC Mix Credit; FSC Controlled Wood
W3.1	Wood chips	FSC Mix Credit; FSC Controlled Wood
W3.2	Sawdust	FSC Mix Credit; FSC Controlled Wood
W3.3	Wood shavings	FSC Mix Credit; FSC Controlled Wood
W5.2	Sawn material	FSC Mix Credit; FSC Controlled Wood
W9.1	Finger jointed Wood	FSC Mix x%; FSC Mix Credit; FSC Controlled Wood
W9.5	Solid wood boards	FSC Mix Credit; FSC Controlled Wood
W9.6	Glued laminated timber	FSC Mix Credit; FSC Controlled Wood

This certificate itself does not constitute evidence that particular product supplied by the certificate holder is FSC™ certified [or FSC Controlled Wood]. Products offered, shipped or sold by the certificate holder can only be considered covered by the scope of this certificate when the required FSC claim is clearly stated on invoices and shipping documents. The physical printed certificate remains the property of NEPCon OÜ and shall be returned upon request.

Certificate version date: 24-03-2021 Page 2 of 3

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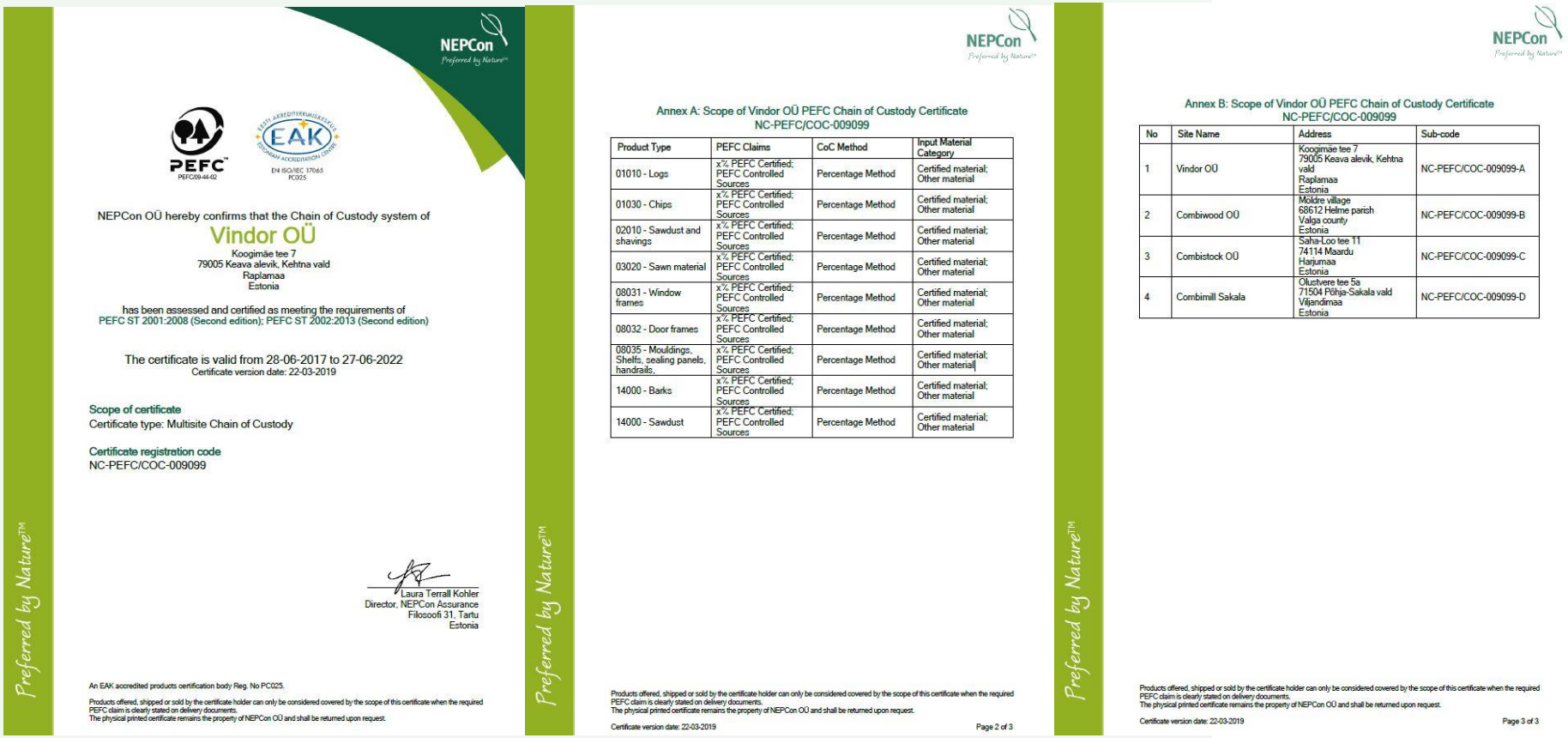
Annex B: Scope of Vindor OÜ FSC™ Chain of Custody and Controlled Wood Certificate
NC-COC-009099 NC-CW-009099

No	Site Name	Address	Sub-code
1	Combiwood OÜ	Mõldre küla Tõrva vald Valgamaa 68612 Estonia	NC-COC-009099-A
2	Combilink OÜ	Varese küla Võru vald, Võrumaa 66642 Estonia	NC-COC-009099-B
3	Combimill Sakala OÜ	Kõidama küla Põhja-Sakala vald, Viljandimaa 71504 Estonia	NC-COC-009099-C
4	VinCom OÜ	Kõidama küla Põhja-Sakala vald Viljandimaa 71504 Estonia	NC-COC-009099-D
5	Combimill Reopalu OÜ	Türi vald Reopalu Järvamaa 72811 Estonia	NC-COC-009099-E
6	Vindor OÜ	Koogimäe tee 7 Keava alevik, Kehtna vald Raplamaa 79005 Estonia	NC-COC-009099-G
7	Combistock OÜ	Saha-Loo tee 11 Maardu Harjumaa 74114 Estonia	NC-COC-009099-H
8	Combiwood Barkevik AS	Sønsebergveien 2 Helgeroa 3295 Norway	NC-COC-009099-I
9	COMBIWOOD Barkevik AS avd. Mo i Rana	Industriveien 7 Mo i Rana 8610 Norway	NC-COC-009099-K

This certificate itself does not constitute evidence that particular product supplied by the certificate holder is FSC™ certified [or FSC Controlled Wood]. Products offered, shipped or sold by the certificate holder can only be considered covered by the scope of this certificate when the required FSC claim is clearly stated on invoices and shipping documents. The physical printed certificate remains the property of NEPCon OÜ and shall be returned upon request.

Certificate version date: 24-03-2021 Page 3 of 3

PEFC certificate for Vindor OÜ and Combiwood Group, e.g. Combiwood OU. PEFC certificate registration sub-code for Combiwood: NC-PEFC/COC-009099-B. The certificate is valid from 28-06-2017 to 27-06-2022. Certificate version date: 22-03-2019.



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PEFC
PEFC/09-44-02

EAK
EN ISO/IEC 17065
PC025

NEPCon OÜ hereby confirms that the Chain of Custody system of

Vindor OÜ

Koogimäe tee 7
79005 Keava alevik, Kehtna vald
Raplamaa
Estonia

has been assessed and certified as meeting the requirements of
PEFC ST 2001:2008 (Second edition); PEFC ST 2002:2013 (Second edition)

The certificate is valid from 28-06-2017 to 27-06-2022
Certificate version date: 22-03-2019

Scope of certificate
Certificate type: Multisite Chain of Custody

Certificate registration code
NC-PEFC/COC-009099

Laura Terrall Kohler
Director, NEPCon Assurance
Filosoofi 31, Tartu
Estonia

An EAK accredited products certification body Reg. No PC025.

Products offered, shipped or sold by the certificate holder can only be considered covered by the scope of this certificate when the required PEFC claim is clearly stated on delivery documents.
The physical printed certificate remains the property of NEPCon OÜ and shall be returned upon request.

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Annex A: Scope of Vindor OÜ PEFC Chain of Custody Certificate
NC-PEFC/COC-009099

Product Type	PEFC Claims	CoC Method	Input Material Category
01010 - Logs	x% PEFC Certified; PEFC Controlled Sources	Percentage Method	Certified material; Other material
01030 - Chips	x% PEFC Certified; PEFC Controlled Sources	Percentage Method	Certified material; Other material
02010 - Sawdust and shavings	x% PEFC Certified; PEFC Controlled Sources	Percentage Method	Certified material; Other material
03020 - Sawn material	x% PEFC Certified; PEFC Controlled Sources	Percentage Method	Certified material; Other material
08031 - Window frames	x% PEFC Certified; PEFC Controlled Sources	Percentage Method	Certified material; Other material
08032 - Door frames	x% PEFC Certified; PEFC Controlled Sources	Percentage Method	Certified material; Other material
08035 - Mouldings, Shelfs, sealing panels, handrails,	x% PEFC Certified; PEFC Controlled Sources	Percentage Method	Certified material; Other material
14000 - Barks	x% PEFC Certified; PEFC Controlled Sources	Percentage Method	Certified material; Other material
14000 - Sawdust	x% PEFC Certified; PEFC Controlled Sources	Percentage Method	Certified material; Other material

Products offered, shipped or sold by the certificate holder can only be considered covered by the scope of this certificate when the required PEFC claim is clearly stated on delivery documents.
The physical printed certificate remains the property of NEPCon OÜ and shall be returned upon request.

Certificate version date: 22-03-2019 Page 2 of 3

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Annex B: Scope of Vindor OÜ PEFC Chain of Custody Certificate
NC-PEFC/COC-009099

No	Site Name	Address	Sub-code
1	Vindor OÜ	Koogimäe tee 7 79005 Keava alevik, Kehtna vald Raplamaa Estonia	NC-PEFC/COC-009099-A
2	Combiwood OÜ	Mõldre village 68612 Helme parish Valga county Estonia	NC-PEFC/COC-009099-B
3	Combistock OÜ	Saha-Loo tee 11 74114 Maardu Harjumaa Estonia	NC-PEFC/COC-009099-C
4	Combimill Sakala	Olustvere tee 5a 71504 Põhja-Sakala vald Viljandimaa Estonia	NC-PEFC/COC-009099-D

Products offered, shipped or sold by the certificate holder can only be considered covered by the scope of this certificate when the required PEFC claim is clearly stated on delivery documents.
The physical printed certificate remains the property of NEPCon OÜ and shall be returned upon request.

Certificate version date: 22-03-2019 Page 3 of 3