Environmental Product Declaration

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

Medium Density Fiberboard (MDF) based coated moldings

from

Vindor OÜ

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-12354
Publication date:	2024-01-26
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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:	info@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): *Construction Products, PCR 2019:14 Version 1.3.2 and c-PCR-006 "Wood and wood-based products for use in construction (EN 16485)"*
PCR review was conducted by: *The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members.* *The review panel may be contacted via the Secretariat info@environdec.com*
Life Cycle Assessment (LCA)
LCA accountability: *Bureau Veritas Latvia SIA, riga@bureauveritas.com*
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: *Elisabet Amat Guasch, GREENIZE* 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 programmes, 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 characterisation 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

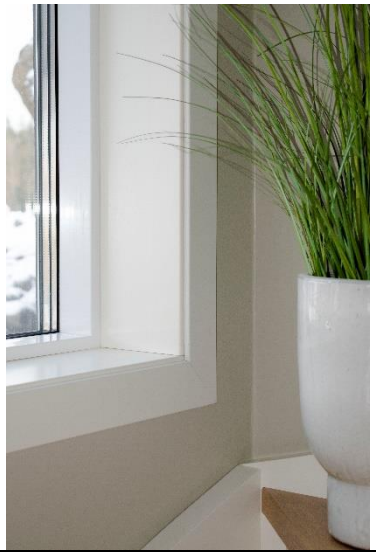
Owner of the EPD: Vindor OÜ
Contact: Marten Jõgi, Sales Manager, marten@vindor.ee, +372 53648060
Description of the organisation: Vindor OÜ specializes in manufacturing and finishing a diverse range of products to serve both industrial and DIY clients. Company's offerings include a variety of options, such as natural wood, primed, painted, and ready-to-install solutions. From door frames and windowsills to stair components and more, 13.000 square meter production area and modern equipment enable Vindor OÜ to effectively handle large-scale projects with precision and efficiency. With a strong dedication to quality and careful attention to detail, Vindor OÜ takes pride in delivering high-quality products that precisely meet clients' requirements, ensuring satisfaction from concept to completion.
Product-related or management system-related certifications:
FSC-C109673 (NC-COC-009099)
Standards assessed:
FSC-STD-40-003 V2-1
FSC-STD-40-005 V3-1
FSC-STD-40-004 V3-1
Name and location of production site(s): Koogimäe 7, Keava, Kehtna, 79005 Rapla maakond, Estonia

Product information

Product name:
Medium Density Fiberboard (MDF)-based coated moulding

Product identification:
Profiled Medium Density Fiberboard (MDF) products with a water-based paint surface treatment.

Product illustrations:



Product description:
MDF-based coated moulding is a versatile and stylish architectural element designed to enhance the aesthetic appeal of various interior spaces. With durable construction and refined finish, moulding is suitable for a wide range of applications, providing both functional and decorative benefits.
There are various options for application of the product:

- **interior trim and crown moulding** to enhance the visual impact of the room;
- **door and window casings** to elevate the appearance of doors and windows;
- **baseboards and wainscoting** to transform the lower portion of your walls;
- **furniture accents** to create decorative accents on furniture pieces, such as cabinets, bookshelves, or built-in units;
- **architectural highlights** for such architectural features as arches, columns, or niches.

The technical parameters of the **MDF-based coated moulding** considered as a declared unit are:

Parameter	Value	Unit
Length	1000	mm
Width	200	mm
Thickness	16	mm
Moisture content	9-10	%
Density	650	kg/m^3

UN CPC code: 312 - Wood continuously shaped along any of its edges or faces; wood wool; wood flour; wood in chips or particles.

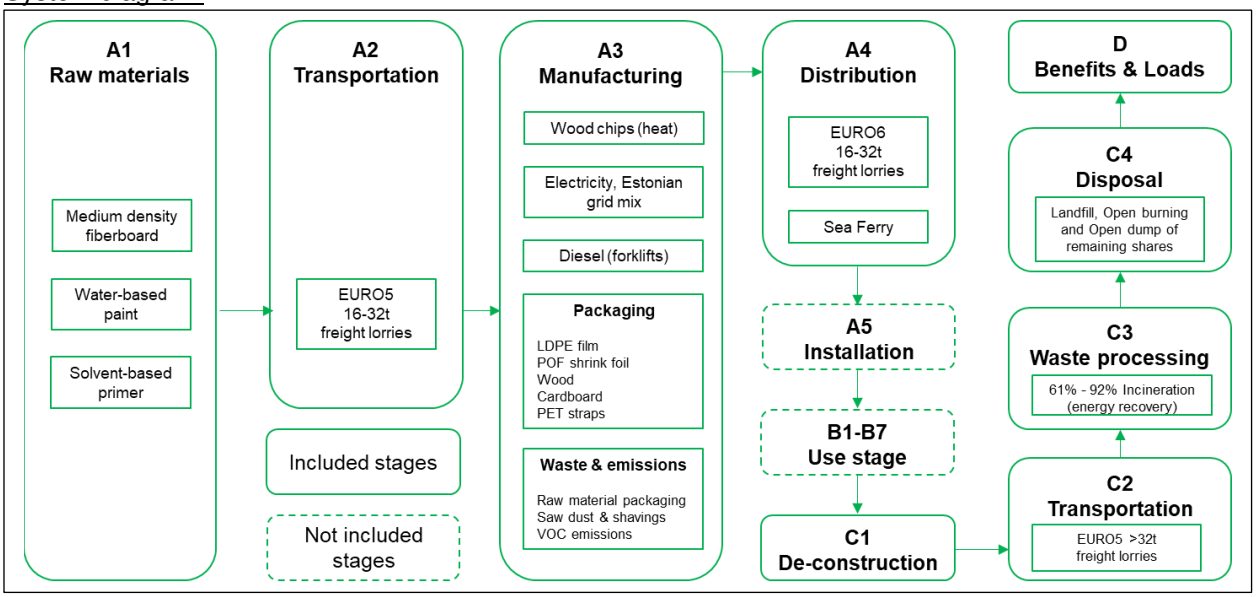
Geographical scope: This EPD has a European Scope. Nonetheless, it must be clarified that transport distances to Construction sites (module A4) in the model under study correspond to several construction sites in different parts of Europe – Scandinavian and Baltic countries.

LCA information

Functional unit / declared unit: 1 m of 200 mm wide and 16 mm thick coated MDF-based moulding
Conversion factor for declared unit - 2,1124 kg/DU.
Reference service life: It has been assumed that the reference service life of the moulding is generally the same as the technical life for the buildings this product is intended for. Therefore, reference service life has been declared as equal to the building service life.
Time representativeness: Data represents the manufacturing of the products in year 2022. The database used for proxy data is Ecoinvent v3.8. This database data is compiled in November 2021, i.e., no data is older than ten years.
Database(s) and LCA software used: Ecoinvent v3.8 has been used to conduct the quantitative evaluation in this study. This database provided the background system's life cycle inventory data for raw and processed materials. The LCA software used to obtain results of impact assessment - SimaPro 9.5.
Description of system boundaries: LCA study has been performed in the “Cradle-to-gate with options, modules C1 – C4 and module D” form with optional module A4 included as well. All major materials, production energy use, and waste are included for phases A1-A3, A4, C1-C4 and D. Use stage (B1-B7) has not been considered for this study as it is not mandatory. Since there are various applications of the product, Installation module A5 has not been declared.

The processes related to infrastructure, construction, and production of equipment, as well as tools that are not directly consumed in the production process, have been excluded. Personnel-related activities, such as transportation to and from work, have been excluded.

System diagram:



Data quality: The foreground data has been collected internally, considering the latest available average production amounts and measurements during 2022. Data regarding waste processing has been taken from waste scenarios for closest locations in Ecoinvent v3.8. The quality level in this study is qualified as Very good according to the UN Environment Global Guidance criteria on LCA database development. Data is geographically representative as it comes from the area of study. It is technically representative as it comes from processes and products under study using the same state of technology defined in goal and scope. According to the provided data, it is also time representative. Data quality rating procedure has been performed using a rating system where “1” means Excellent quality, and “5” means Poor quality. An average for each criterion is presented as follows:

Technological Representativeness, TeR	Geographic representativeness, GeR	Time Representativeness, TiR	Precision, P	**Average DQR**
1,49	**2,11**	**1,98**	**2,02**	**1,90**

Stages and Production description

Product Stage

Module A1 includes Raw material supply, i.e., production of raw materials. In module A1, extraction and processing of raw materials and generation of electricity and heat from primary energy resources to produce these raw materials are included. Raw materials considered in this study are medium density fiberboard (MDF), solvent-based primer and water-based paint for coating purposes.

For **module A2**, the transportation of raw materials, ancillary materials and packaging materials to the production plant, the following assumptions have been made (see following Table). According to manufacturer provided data, only EURO5 emission standards have been applied as standard values for all Freight lorries used for supply of raw materials, leaving the results of assessment on a conservative side. Materials, distances and means of transportation are listed in the Table below:

Material	Type of vehicle	kgkm	Distance, km	Fuel consumption, l/tkm	Value, l/t
MDF	Lorry 16-32t, EURO5	4,83E+03	2287	0,0441	100,81
Primer	Lorry 16-32t, EURO5	9,60E-02	8	0,0441	0,35
Paint	Lorry 16-32t, EURO5	8,98E-01	44	0,0441	1,94
LDPE film	Lorry 16-32t, EURO5	1,36E-02	47	0,0441	2,07
POF shrink film	Lorry 16-32t, EURO5	3,90E-01	47	0,0441	2,07
Wooden spacers	Lorry 16-32t, EURO5	2,88E-02	36	0,0441	1,59
Wooden bearers	Lorry 16-32t, EURO5	2,79E-01	57	0,0441	2,51
Wooden sides	Lorry 16-32t, EURO5	1,34E-01	56	0,0441	2,47
Cardboard	Lorry 16-32t, EURO5	8,36E-02	76	0,0441	3,35
Corner protection (cardboard)	Lorry 16-32t, EURO5	6,18E-02	229	0,0441	10,09
PET straps	Lorry 16-32t, EURO5	7,79E-02	229	0,0441	10,09

The manufacturing process (**module A3**) of MDF-based coated mouldings includes several stages of wood-based material processing such as cutting to desired dimensions, profiling, getting layers of primer, drying, sanding, coating with paint and packing. Packaging required for the product is wood for protection (spacers, bearers, sides), LDPE packaging film and POF (polyolefin) shrinkage film, containerboard and PET straps.

Product is manufactured within the limits of one manufacturing plant. National, i.e., Estonian, grid mix of Electricity is one of the two sources of energy consumed by manufacturing purposes. Another is Wood chips, consumed for the production of Heat for drying process. Wood chips are sourced from Vindor manufacturing plant as a waste of raw material packaging (chipped prior to combustion) and other wood-based products.

Not all materials are used to their full potential, therefore, some waste flows are produced during the manufacturing phase. Waste flows considered for waste treatment are packaging from supplied raw materials – metal, cardboard, wood, POF and containers of paint & primer. Only transportation and sorting activities without loads representing activities of recycling and final disposal has been considered

for the Metal. Wood-based waste is represented by saw dust & shavings and packaging of raw materials – both have been considered as a co-products with former considered for sale and the latter – for Heat generation. In order to use wood-based packaging materials for Heating, chipping activity has been considered in manufacturing module.

Since manufacturing process involves the use of paint and primer, Volatile organic compounds have been considered as emissions to air. According to data provided in Safety Data Sheets of both raw materials, VOC specific values are as follows:

- Paint – 7 g of VOC per 1 litre of consumed paint;
- Primer – 578 g of VOC per 1 litre of consumed primer.

Greenhouse gas emissions from the use of Electricity in the manufacturing phase are represented by the National production mix that consists of import, medium voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3). No additional data has been provided on consumed electricity, therefore, emission factor acquired from Ecoinvent v3.8, of Estonian electricity mix is 0.846 $kgCO_2$ eq/kWh.

Construction process Stage

Table below describes the scenarios for **module A4** transportation of the final product and its packaging from Vindor manufacturing plant in Estonia to Construction sites in Estonia and Norway. The distance to customers has been provided by the manufacturer. Market shares are declared as follows: 2.09% for Norway and 97.91% for Estonia.

Country	Vehicle	kg*km	Distance, km	Fuel consumption, l/tkm	Value, l/t
Norway	Lorry 16-32t, EURO6	3,56E+01	800	0,0431	34,49
	Sea Ferry	2,49E+01	559	0,0298	16,65
Estonia	Lorry 16-32t, EURO6	1,42E+02	68	0,0431	2,93

Since there are various applications of the product, Installation **module A5** has not been declared.

Use Stage:

Modules B1-B7, that define use stage of the product, are not declared for this study – those are not mandatory for LCA “Cradle-to-gate with options” form.

End of Life Stage:

In de-construction module C1, the mouldings are dismantled from the walls and floors and collected separately. It has been assumed that there is no product mass loss and the process itself is not associated with any energy consumption and, therefore, is burden free.

For **module C2** an average 50km distance has been assumed as distance between de-construction site and waste processing facility in Estonia, while for Norwegian market a conservative value of 85km has been considered. Both scenarios are based on the use of EURO5 >32t Freight lorry.

Per Waste wood datasets of each respective country of intended market, as a waste processing activity in **module C3**, municipal incineration with energy recovery has been considered. Only difference in approach of both countries is the share, that has been considered for this waste processing, i.e., 61% for Estonian market and 91.77% for Norwegian market. The remaining share of the product has been

considered for disposal in module C4, involving such treatments as Open burning, Open dump and Landfill.

Module C4 represents three different approaches for disposal of the remaining shares of the product. Scenarios are described in the following Table:

Type of Waste treatment	Share of the considered waste treatment, %	
	Estonia	Norway
Incineration	61,00*	91,77*
Open burning	2,80	0,10
Open dump	23,63	0,95
Landfill	12,57	7,18

*Already considered in module C3

Benefits and loads beyond the system boundaries:
In case of MDF-based mouldings, only energy (electric and thermal) recovered from Incineration of the product in module C3 has been considered in module D. Specific values of recovered electricity per 1 kg of the product have been associated with respective national grid mix, i.e., Estonian and Norwegian, and for the thermal energy recovery, substitution of heat from fossil fuels, e.g., Natural gas, has been considered, as per EN 16485:2014. GWP-GHG values, as calculated with IPCC 2013 100a assessment method for each respective country are reported in the Table below.

National grid mix of medium voltage Electricity	Value	Unit
Estonia	0.8460	$kgCO_2eq$ per 1 kWh
Norway	0.0144	$kgCO_2eq$ per 1 kWh

Modules declared, geographical scope, share of specific 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	X	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X
Geography	EU	EU	EE	EE, NO	MND	MND	MND	MND	MND	MND	MND	MND	EE, NO	EE, NO	EE, NO	EE, NO	EE, NO
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	NOT RELEVANT			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	NOT RELEVANT			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Dry wood	1,6639	0%	100% and 0,3939
Glue	0,1872	0%	0% and 0.0
Water moisture content	0,2081	0%	0% and 0.0
Paraffin wax	0,0207	0%	0% and 0.0
Primer	0,0120	0%	0% and 0.0
Paint	0,0205	0%	0% and 0.0
TOTAL	**2,1124**	0%	**78,77% and 0.3939**
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/kg**
LDPE packaging film	0,0003	0,0136%	0,000
POF shrink film	0,0083	0,3939%	0,000
Wood (spacers, bearers, sides)	0,0081	0,3833%	0,220
Cardboard (incl. Corner protection)	0,0013	0,0636%	0,037
PET straps	0,0003	0,0159%	0,000
TOTAL	**0,0021**	**0,8703%**	**0,257**

During the life cycle of the product any hazardous substance listed in the “Candidate List of Substances of Very High Concern (SVHC) for authorization” has not been used in a percentage higher than 0,1% of the weight of the product.

Environmental Information

Potential environmental impact – mandatory indicators according to EN 15804

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	1,5E+00	2,7E-02	0,0E+00	7,7E-03	1,4E-02	3,5E-03	-7,5E-01
GWP-biogenic	kg CO_2 eq.	-6,0E-03	-1,1E-05	0,0E+00	-3,1E-06	1,5E-06	8,4E-02	3,5E-02
GWP-luluc	kg CO_2 eq.	2,9E-02	2,4E-07	0,0E+00	6,1E-08	1,7E-06	6,2E-07	-3,0E-04
GWP-total	kg CO_2 eq.	1,6E+00	2,6E-02	0,0E+00	7,7E-03	1,5E-02	9,7E-02	-7,2E-01
ODP	kg CFC 11 eq.	3,3E-07	6,2E-09	0,0E+00	1,8E-09	8,6E-10	2,5E-10	-1,3E-07
AP	mol H^+ eq.	8,5E-03	1,4E-04	0,0E+00	2,6E-05	1,9E-04	1,0E-04	-5,0E-03
EP-freshwater	kg P eq.	4,6E-05	1,4E-08	0,0E+00	3,9E-09	1,1E-07	3,9E-07	-5,5E-06
EP-marine	kg N eq.	1,7E-03	3,0E-05	0,0E+00	8,2E-06	9,5E-05	6,4E-05	-7,4E-04
EP-terrestrial	mol N eq.	2,1E-02	3,3E-04	0,0E+00	9,0E-05	1,0E-03	5,6E-04	-8,2E-03
POCP	kg NMVOC eq.	7,5E-03	9,3E-05	0,0E+00	2,5E-05	2,4E-04	2,8E-04	-2,6E-03
ADP-minerals&metals*	kg Sb eq.	5,2E-06	1,1E-09	0,0E+00	3,3E-10	7,6E-09	6,6E-11	-7,0E-09
ADP-fossil*	MJ	2,9E+01	3,7E-01	0,0E+00	1,1E-01	1,1E-01	1,9E-02	-1,1E+01
WDP*	m^3	6,1E-01	-6,3E-05	0,0E+00	-1,8E-05	-1,7E-02	5,4E-05	-3,4E-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.*
*** The GWP-biogenic results have been balanced out in accordance with following approach – characterization factors for uptake and release of biogenic Carbon dioxide have been set to zero.*

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	1,5E+00	2,6E-02	0,0E+00	7,6E-03	1,4E-02	7,1E-02	-7,5E-01
EP-freshwater	kg PO_4 eq.	1,4E-04	4,2E-08	0,0E+00	1,2E-08	3,3E-07	1,2E-06	-1,7E-05
Additional voluntary indicators e.g., the voluntary indicators from EN 15804 or the global indicators according to ISO 21930:2017								

Use of resources

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	4,2E+01	4,2E-04	0,0E+00	1,2E-04	7,8E-04	4,4E-04	-3,7E-01
PERM	MJ	2,8E+01	1,4E-04	0,0E+00	4,1E-05	4,5E-04	7,5E-05	-5,6E-01
PERT	MJ	4,3E+01	5,6E-04	0,0E+00	1,6E-04	1,2E-03	5,1E-04	-9,3E-01
PENRE	MJ	2,9E+01	3,7E-01	0,0E+00	1,1E-01	1,1E-01	1,9E-02	-1,1E+01
PENRM	MJ	1,1E+00	2,6E-07	0,0E+00	4,5E-08	5,9E-06	2,1E-07	-4,0E-05
PENRT	MJ	2,9E+01	3,7E-01	0,0E+00	1,1E-01	1,1E-01	1,9E-02	-1,1E+01
SM	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
RSF	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
NRSF	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
FW	m^3	1,6E-02	9,8E-07	0,0E+00	2,8E-07	-3,3E-04	2,1E-06	-2,6E-03
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 production and output flows

Waste production

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	4,7E-05	9,1E-07	0,0E+00	2,8E-07	1,5E-07	4,1E-08	-8,5E-06
Non-hazardous waste disposed	kg	1,1E-01	1,6E-05	0,0E+00	4,4E-06	6,5E-03	2,6E-01	-1,8E-03
Radioactive waste disposed	kg	1,9E-04	2,7E-06	0,0E+00	7,7E-07	7,8E-08	1,2E-07	-5,2E-05

Output flows

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	3,1E-02	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Material for recycling	kg	5,9E-04	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Materials for energy recovery	kg	1,1E-02	0,0E+00	0,0E+00	0,0E+00	1,3E+00	0,0E+00	0,0E+00
Exported energy, electricity	MJ	1,3E-02	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	2,3E+00
Exported energy, thermal	MJ	2,3E-02	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	4,5E+00

Other environmental performance indicators

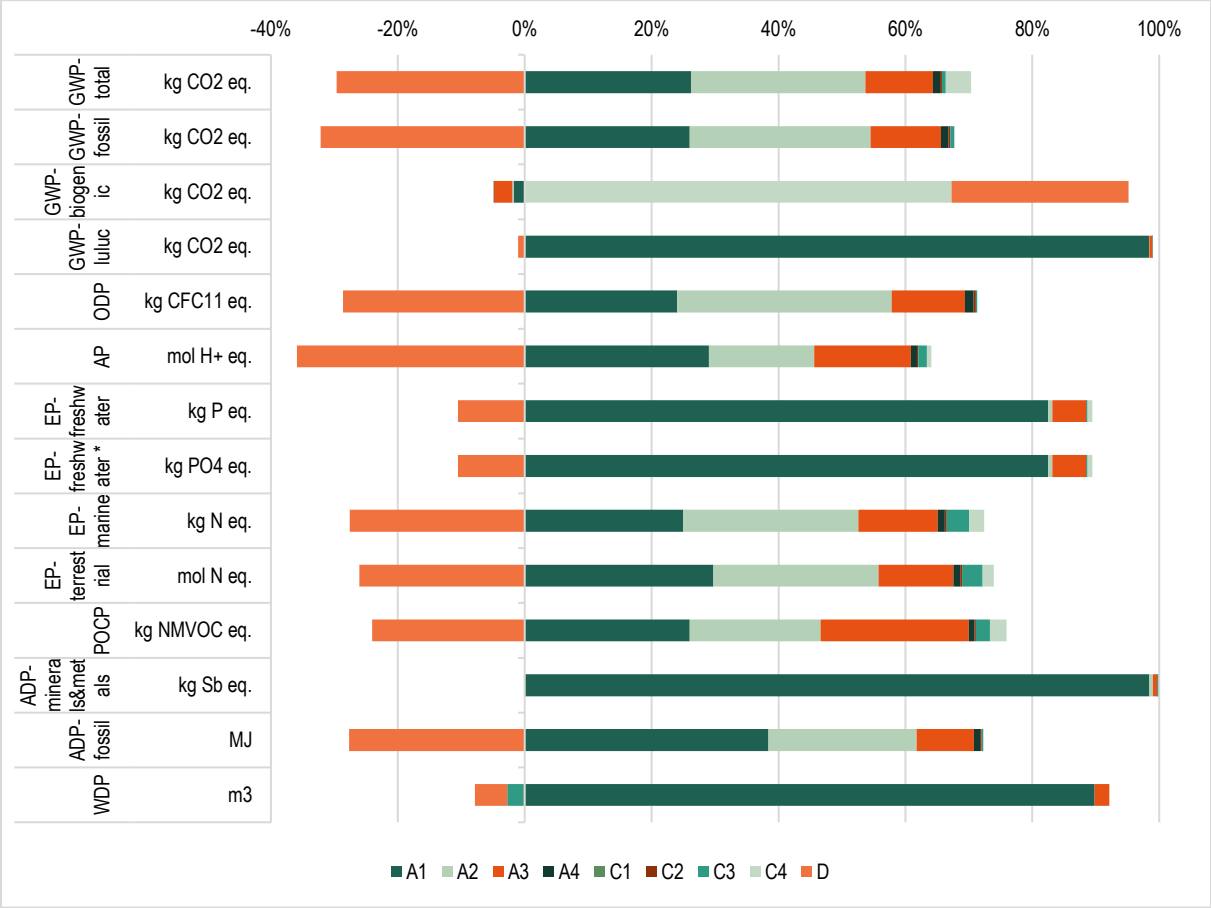
Biogenic carbon content

Results per functional or declared unit	
Biogenic carbon content	**Quantity**
Carbon content in product, kg C	8,32E-01
Carbon content in accompanying packaging, kg C	4,72E-03

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

LCA Interpretation

The estimated impact assessment results are only relative statements that do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins, or risks.
Contribution to environmental impact per each module for declared unit of **MDF-based coated moulding** from Vindor OÜ is displayed in following Figure:

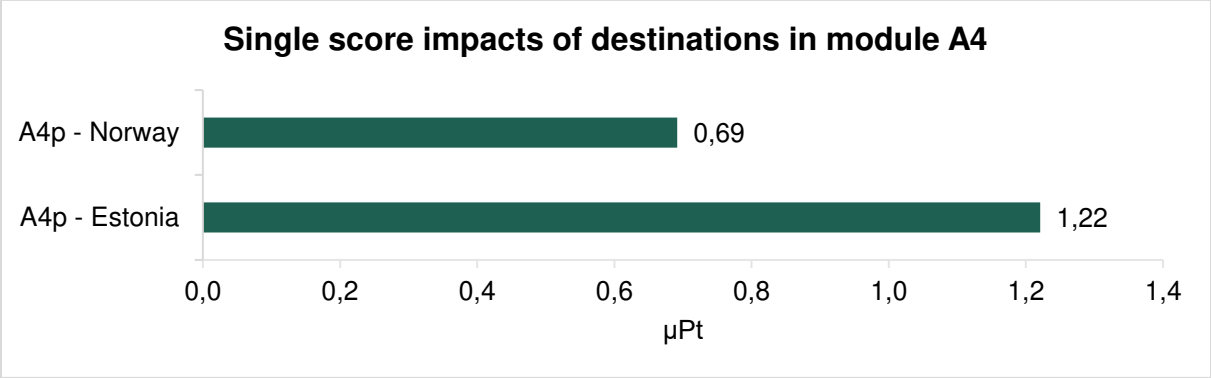


Contribution to environmental impact per each module for DU of MDF-based coated moulding

Without exclusions, Raw material module A1 is resulting in at least 20-30% of total impact in each respective impact category, with supply of raw materials and packaging (module A2) coming in as second biggest contributor to major part of Core impact categories. Manufacturing module A3 itself is contributing less than two other modules of the Product stage (A1-A3), generating more significant impact only in Photochemical ozone formation (POCP) and Acidification potential (AP) indicators. Results of impact assessment are mainly based on energy dense raw material production processes. This also matches the life cycle inventory data, where the biggest input is the MDF panel used for manufacturing purposes of the moulding.

Impact of transportation scenarios for product's distribution module A4 is displayed in following Figure as a Single score values expressed in µPt, that have been calculated with the help of EN 15804+A2 Method available in SimaPro. Calculation results are presented as the total impact occurring in different core impact categories, considering manufacturer's provided data for market shares of 2 destinations –

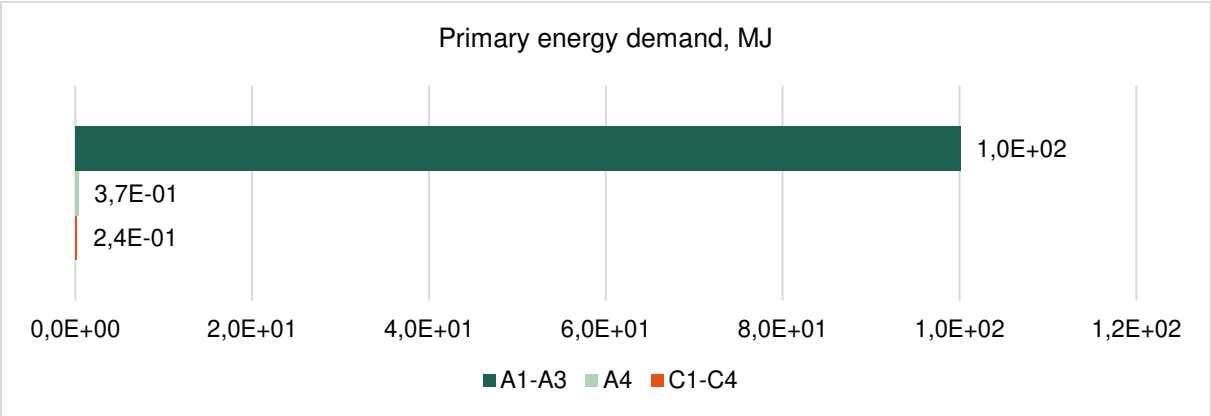
Estonia (local) and Norway. Despite only 2,09% of a total distribution market, impact of Norway's destination involving two types of transportation, i.e., Sea ferry and Freight lorry) is contributing 36% to the total impact of module A4.



Impacts of module A4 for declared unit of MDF-based moulding

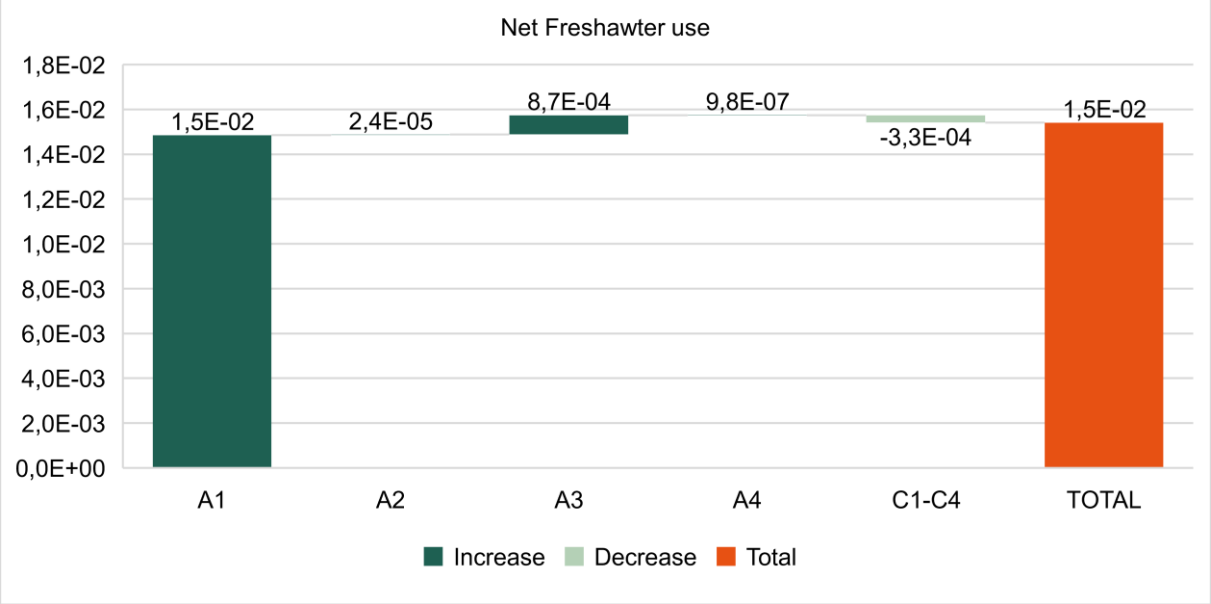
Considering total demand of primary energy per declared unit, that has been calculated using Cumulative Energy Demand (LHV) V1.00 impact assessment method, demand of primary energy (displayed in following Figure) is distributed as follows:

- 99.4% for Product stage (A1-A3)
- 0.4% for Distribution module (A4)
- 0.2% for End-of-life stage (C1-C4)



Primary energy demand per DU of MDF-based moulding, aggregated

Other key effect factor is Freshwater consumption, that is displayed in following Figure as a Waterfall chart. A waterfall chart shows a running total as values are added or subtracted. It's useful for understanding how an initial value of net Freshwater use is affected by a series of positive and negative values. In case of MDF-based coated moulding, decrease has been observed in the End-of-Life stage of the product. In terms of freshwater use levels, the Product stage (A1-A3) is responsible for most of its demand with more than 96% share.



Net freshwater use for MDF-based coated moulding, aggregated

Additional environmental information

Not applicable

Information related to Sector EPD

This is an individual EPD.

Differences versus previous versions

This is the first version of EPD.

References

General Programme Instructions of the International EPD® System. Version 4.0.

PCR 2019:14 Construction products v1.3.2

C-PCR-006 Wood and wood-based products for use in Construction (version 2019-12-20)

EN 16485:2014. Round and sawn timber - Environmental Product Declarations - Product category rules for wood and wood-based products for use in construction

LCA software SimaPro 9.5.0.2, Ecoinvent v3.8

ISO 14040:2006. Environmental management – Life cycle assessment – Principles and framework

ISO 14044:2006. Environmental management – Life cycle assessment – Requirements and guidelines

ISO 14025:2006: Environmental labels and declarations - Type III environmental declarations - Principles and procedures

Yahong D. et al., (2021). Developing Conversion Factors of LCIA Methods for Comparison of LCA Results in the Construction Sector.

Šiškins A., (2024) LCA background report v1.1 for Vindor OÜ MDF-based coated moulding

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