

Environmental Product Declaration

In accordance with ISO14025:2006 and EN15804:2012+A2:2019

Plywood fire retardant veneered and surface treated



The Norwegian
EPD Foundation

Owner of the declaration:
Vyrk AS

Product name:
Plywood fire retardant board veneered and
surface treated

Declared unit:
1 m²

Product category /PCR:
ISO 14044:2006, NS-EN 15804:2012, ISO
14025:2006, NPCR Part A:2021 Construction
products and services Ver 2 and NPCR 10 Part
B for building boards Ver 2.

Program holder and publisher:
The Norwegian EPD foundation

Declaration number:
NEPD-7566-6948-EN

Registration number:
NEPD-7566-6948-EN

Issue date: 16.09.2024

Valid to: 16.09.2029

ver-170924

General information

Product:

Plywood fire retardant veneered and surface treated

Program operator:

The Norwegian EPD Foundation
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Declaration number:

NEPD-7566-6948-EN

This declaration is based on Product Category Rules:

NPCR Part A:2021 Construction products and services Ver 2 and NPCR 10 Part B for building boards Ver 2 (03 2022).

Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer, life cycle assessment data and evidences.

Declared unit:

1 m2 installed panel with core material plywood, veneered, surface treated, including end-of-life handling.

Declared unit with option:

A1-A3, A4, A5, C1, C2, C3, C4, D

Functional unit:

-

Verification:

Independent verification of the declaration and data, according to ISO14025:2010

internal external

Julie Lyslo Skullestad

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Independent verifier approved by EPD Norway

Owner of the declaration:

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Place of production:

Trysil, Norway

Management system:

Miljøfyrtårn certified

Organisation no:

919 349 476 MVA

Issue date:

16.09.2024

Valid to:

16.09.2029

Year of study:

Data for year 2023. LCA developed in 2024.

Comparability:

EPD of construction products may not be able to compare if they do not comply with EN 15804 and are seen in a building context.

The EPD has been worked out by:

Carla Assuad and Simen Skrindsrud
Vyrk AS

Håkon Hauøy

Approved Manager of EPD Norway

Product

Product description:

The panel is designed for covering walls in indoor spaces with a standard climate. It features a plywood fire retardant core with a veneered and coated surface. The surface is treated with either oil, lacquer, lacquer fire retardant, or varnish.

Product specification:

The core material used in the panel is standard plywood board.

The EPD covers all dimensions. The mounting system is not included as multiple options are available.

The EPD is an average EPD as multiple surface treatments are available. A conservative approach is used so that the EPD describes the surface treatment with the highest environmental impact for each category.

Product materials	Value	%
Plywood fire retardant board	7,71	88%
Wood Veneer sheet	0,39	4%
Glue	0,20	2%
Kraft Paper	0,10	1%
Lacquer/Oil/varnish	0,33	4%
Total product	8,73	100%
Packaging materials	Value	%
Wood Pallet	0,32	81%
Plastic Wrapping	0,08	19%
Total packaging	0,40	100%

Technical data:

The panels has a density of $\geq 643 \text{ kg/m}^3$ with moisture content 14-18 %. Nominal thickness 9-40mm

For wood based boards surface treated with fire retardants holds fire class B-S1,d0. This is verified by Treteknisk Institutt according to EN 13986:2004 + A1:2015

The panel used in the calculations has a thickness of 12 mm and density of $7,71 \text{ kg/m}^2$. For 1 m^2 of panel, 0.0012 m^3 of planed wood is needed.

Market:

Sweden, Denmark and Norway. The scenario describes use in Norway.

Reference service life, product:

Reference service life is 50 years. The actual service life depends on maintenance and external impacts.

Reference service life, building:

Reference service life is 50 years. The actual service life depends on climatic conditions and external impacts, such as construction and maintenance.

Additional technical information

Plywood boards veneered, and surface treated with lacquer, fulfills the emission requirements in Breeam-NOR V6.0 standard with conclusion exemplary level. Tested according to EN 16516, ISO 16000-3-6-9-11 and ASTM D5116-10

Vyrk AS is not FSC/PEFC certified, but all constituents are purchased from certified providers.

LCA: Calculation rules

Declared unit:

1 m2 installed panel with core material plywood fire retardant board, veneered, surface treated, including end-of-life handling.

Cut-off criteria:

In accordance with 6.3.5 of the PCR.

Allocation:

Allocation has been made according to EN15804:2012 + A2: 2019 and in accordance with chapter 6.3.5 PCR for wood panels. For the production, energy use, water and waste at fabrication are mass-allocated for the production of different panels and slats.

Ecoinvent v3.8, allocation, cut-off by classification is used as the background database. The database apply economic allocation.

Data quality:

Quantities of all raw materials are mapped to the production of 1 m2 of panel, based on the average consumption at the factory in 2023. The following EPDs are used to describe A1-A3 LCA impacts: particle board. Remaining data are sourced from the Ecoinvent database (v.3.8) using the LCA-software Simapro (v 9.5.0.2). Characterization factors have been used from EN15804:2012 + A2: 2019.

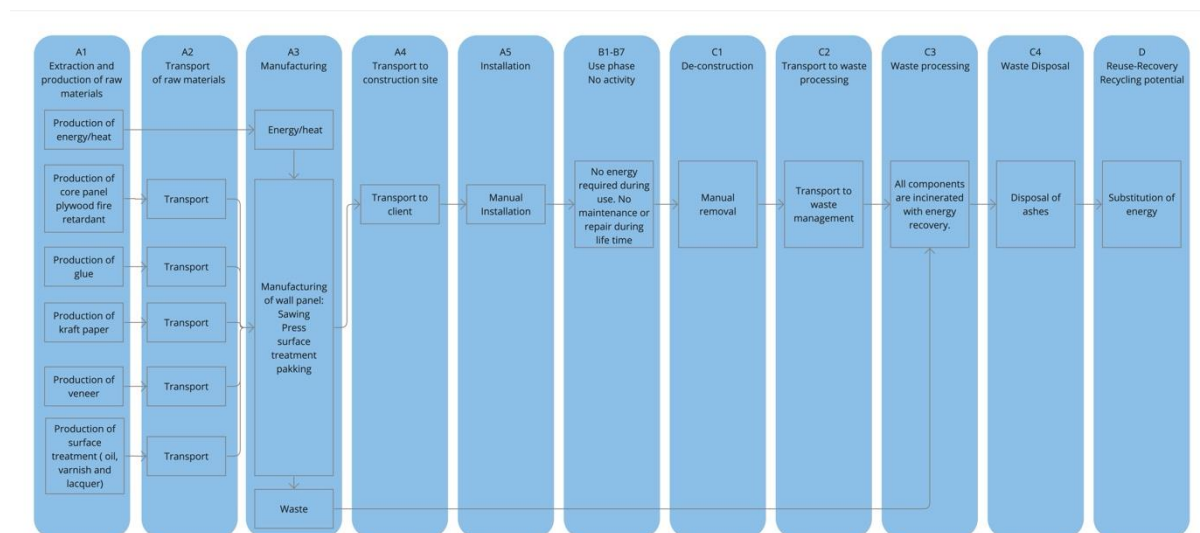
Raw material	EPD	Year
Core – Plywood fire retardant	NEPD-3830-2785-NO	2022-2027
Laquer	EPD-component 1: 20230333569	2023-2028
Laquer	EPD -component 2: 20230333565	2023-2028

System boundaries (X=included, MND=module not declared, MNR=module not relevant)

Product stage			Assembly stage		Use stage								End of life stage				Benefits & loads beyond system boundary
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential	
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X	

System boundary:

The EPD covers all steps from raw material extraction for all raw materials to finished wall panel (module A1-A4), assembly (A5) and end-of-life (C1-C4 and D). The flow chart below describes the system analysed.



LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

Transport from production place to assembly/user (A4)

Transport from production place to assembly/user (A4)	Capacity utilisation (incl. return) %	Type of Vehicle	Distance (km)	Fuel/Energy consumption	Unit	Value (liter/t)
Truck, EURO 5	37%	Lorry, 16-32, EURO 5	300	0,045	l/tkm	13,54

Assembly (A5)

It is assumed no spill at installation as the panels are custom-made/ordered in specific dimensions. Only manual work is required; hence no energy consumption is assumed. Waste treatment of the packaging is included in A5.

The mounting system is not covered by the EPD.

End of Life (C1, C3, C4)

	Unit	Value
Hazardous waste disposed	kg	0
Collected as mixed construction waste	kg	0
Reuse	kg	0
Recycling	kg	0
Energy recovery	kg	8,73
To landfill	kg	0

The waste processing is assumed as wood waste treated with incineration with energy recovery.

Transport to waste processing (C2)

Transport from production place to assembly/user (A4)	Capacity utilisation (incl. return) %	Type of Vehicle	Distance (km)	Fuel/Energy consumption	Unit	Value (liter/t)
Truck	37%	Lorry, 16-32, EURO 5	85	0,045	l/tkm	3,84

Benefits and loads beyond the system boundaries (D)

Benefits and loads beyond the system boundaries (D)	Unit	Value
Substitution of electricity, in Norway	MJ	3,7
Substitution of thermal energy, district heating, in Norway	MJ	112

The benefits of exported energy from energy recovery in a treatment facility is calculated with substitution of Norwegian electricity market mix and Norwegian district heating mix (SSB 2022). Conversion factors for efficiencies and losses from waste to delivered energy are included.

LCA: Results

Results are shown for the declared unit: 1 m² installed panel with core material particleboard, veneered, surface treated, including end-of-life handling.

Core environmental impact indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	6,32E+00	4,47E-01	6,58E-01	0,00E+00	1,21E-01	9,42E+00	2,78E-04	-9,42E-01
GWP-fossil	kg CO ₂ eq.	1,60E+01	4,46E-01	1,57E-01	0,00E+00	1,21E-01	7,86E-02	2,78E-04	-6,09E-01
GWP-biogenic	kg CO ₂ eq.	-9,66E+00	0,00E+00	5,01E-01	0,00E+00	0,00E+00	9,34E+00	0,00E+00	-3,32E-01
GWP-LULUC	kg CO ₂ eq.	7,84E-03	1,75E-04	1,43E-08	0,00E+00	4,75E-05	2,77E-05	8,65E-08	-1,98E-03
ODP	kg CFC11 eq.	1,43E-06	1,03E-07	4,67E-10	0,00E+00	2,80E-08	9,00E-09	1,30E-10	-7,55E-08
AP	mol H ⁺ eq.	1,19E-01	1,81E-03	1,34E-04	0,00E+00	4,91E-04	2,64E-03	2,48E-06	-6,31E-03
EP-freshwater	kg P eq.	1,47E-02	2,88E-05	2,10E-06	0,00E+00	7,78E-06	5,13E-05	2,32E-08	-1,55E-04
EP-marine	kg N eq.	1,25E-02	5,46E-04	7,11E-05	0,00E+00	1,48E-04	1,32E-03	8,84E-07	-2,34E-03
EP-terrestrial	mol N eq.	1,39E-01	5,96E-03	7,23E-04	0,00E+00	1,61E-03	1,42E-02	9,69E-06	-2,65E-02
POCP	kg NMVOC eq.	4,34E-02	1,83E-03	1,87E-04	0,00E+00	4,94E-04	3,72E-03	2,83E-06	-6,80E-03
ADP-M&M	kg Sb eq.	1,66E-04	1,55E-06	1,43E-08	0,00E+00	4,20E-07	2,84E-07	7,63E-10	-1,29E-05
ADP-fossil	MJ	2,42E+02	6,75E+00	3,97E-02	0,00E+00	1,83E+00	7,95E-01	9,47E-03	-8,55E+00
WDP	m ³	2,14E+01	2,02E-02	1,25E-03	0,00E+00	5,47E-03	2,49E-02	5,12E-05	-1,41E-01

GWP-total: Global Warming Potential; **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; See "additional Norwegian requirements" for indicator given as PO₄ eq. **EP-marine:** Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-terrestrial:** Eutrophication potential, Accumulated Exceedance; **POCP:** Formation potential of tropospheric ozone; **ADP-M&M:** Abiotic depletion potential for non-fossil resources (minerals and metals); **ADP-fossil:** Abiotic depletion potential for fossil resources; **WDP:** Water deprivation potential, deprivation weighted water consumption

Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009

Additional environmental impact indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	2,94E-06	3,85E-08	1,02E-09	0,00E+00	4,94E-04	2,13E-08	5,15E-11	-6,80E-03
IRP	kBq U235 eq.	6,84E-01	3,47E-02	1,52E-04	0,00E+00	9,39E-03	3,04E-03	4,38E-05	-1,06E-01
ETP-fw	CTUe	2,56E+02	5,27E+00	1,15E-01	0,00E+00	1,43E+00	1,82E+00	5,11E-03	-5,21E+01
HTP-c	CTUh	7,56E-09	1,71E-10	1,21E-10	0,00E+00	4,62E-11	2,54E-09	1,29E-13	-4,77E-10
HTP-nc	CTUh	1,94E-07	5,54E-09	6,23E-10	0,00E+00	1,50E-09	7,42E-09	2,51E-12	-1,92E-08
SQP	Dimensionless	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

PM: Particulate matter emissions; **IRP:** Ionising radiation, human health; **ETP-fw:** Ecotoxicity (freshwater); **ETP-c:** Human toxicity, cancer effects; **HTP-nc:** Human toxicity, non-cancer effects; **SQP:** Land use related impacts / soil quality

¹ This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

² The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

Resource use

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
RPEE	MJ	3,00E+02	9,51E-02	1,78E-03	0,00E+00	2,58E-02	3,57E-02	2,41E-04	-5,59E+01
RPEM	MJ	8,71E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
TPE	MJ	3,08E+02	9,51E-02	1,78E-03	0,00E+00	2,58E-02	3,57E-02	2,41E-04	-6,03E+01
NRPE	MJ	2,51E+02	6,75E+00	3,97E-02	0,00E+00	1,83E+00	7,95E-01	9,47E-03	-8,89E+00
NRPM	MJ	3,39E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
TRPE	MJ	2,55E+02	6,75E+00	3,97E-02	0,00E+00	1,83E+00	7,95E-01	9,47E-03	-8,55E+00
SM	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
RSF	MJ	1,72E+02	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
W	m3	1,55E+00	7,03E-04	1,88E-04	0,00E+00	1,90E-04	4,01E-03	1,22E-05	-1,60E-03

RPEE Renewable primary energy resources used as energy carrier; **RPEM** Renewable primary energy resources used as raw materials; **TPE** Total use of renewable primary energy resources; **NRPE** Nonrenewable primary energy resources used as energy carrier; **NRPM** Nonrenewable primary energy resources used as materials; **TRPE** Total use of non-renewable primary energy resources; **SM** Use of secondary materials; **RSF** Use of renewable secondary fuels; **NRSF** Use of non-renewable secondary fuels; **W** Use of net fresh water.

End of life – Waste

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HW	KG	4,84E-02	3,43E-04	8,40E-04	0,00E+00	9,29E-05	7,45E-04	3,53E-02	-6,21E-03
NHW	KG	1,29E+00	3,47E-01	2,39E-03	0,00E+00	9,40E-02	4,23E-02	1,46E-02	-1,91E-01
RW	KG	2,27E-04	4,56E-05	9,03E-08	0,00E+00	1,24E-05	1,83E-06	5,77E-08	-4,40E-05

HW Hazardous waste disposed; **NHW** Non-hazardous waste disposed; **RW** Radioactive waste disposed.

End of life – output flow

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
CR	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
MR	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
MER	kg	3,90E-02	0,00E+00	3,97E-01	0,00E+00	0,00E+00	8,56E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-3,41E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,04E+02

CR Components for reuse; **MR** Materials for recycling; **MER** Materials for energy recovery; **EEE** Exported electric energy; **ETE** Exported thermal energy.

Information describing the biogenic carbon content at the factory gate

Biogenic carbon content	Value	
Biogenic carbon content in product	kg C	2,21E+00
Biogenic carbon content in the accompanying packaging	kg C	8,77E-02

Additional requirements

Location based electricity mix from the use of electricity in manufacturing

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (foreground/core) per functional unit.

National electricity grid	Unit	Value
Electricity, low voltage {NO} market for Cut-off, U	kg CO ₂ -eq/kWh	2,70E-02

Additional environmental impact indicators required for construction products

In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

Indicator	Unit	A1-A3	A4	A5		C2	C3	C4	D
EP-freshwater*	kg PO ₄ eq.	8,74E-03	3,13E-04	1,27E-04	0,00E+00	8,48E-05	2,52E-03	4,14E-07	-1,98E-04
GWP-IOBC	kg CO ₂ eq.	1,62E+01	4,47E-01	1,57E-01	0,00E+00	1,21E-01	8,44E-02	2,78E-04	-6,11E-01
GWP-BC	kg CO ₂ eq.	-9,84E+00	0,00E+00	5,01E-01	0,00E+00	0,00E+00	9,34E+00	0,00E+00	-3,32E-01
GWP	kg CO ₂ eq.	6,32E+00	4,47E-01	6,58E-01	0,00E+00	1,21E-01	9,42E+00	2,78E-04	-9,42E-01

GWP-IOBC Global warming potential calculated according to the principle of instantaneous oxidation.

Hazardous substances

The declaration is based upon reference to threshold values and/or test results and/or material safety data sheets provided to EPD verifiers. Documentation available upon request to EPD owner.

- The product contains no substances given by the REACH Candidate list.
- The product contains substances given by the REACH Candidate list that are less than 0,1 % by weight.
- The product contains dangerous substances, more then 0,1% by weight, given by the REACH Candidate List, see table.
- The product contains no substances given by the REACH Candidate list.
- The product is classified as hazardous waste, see table.

Indoor environment






The product meets the requirements for low emissions.

Carbon footprint

While a carbon footprint analysis has not been conducted for the product separately, the results section does include an evaluation of Global Warming Potential (GWP) with such an analysis. The GWP total results presented in this EPD document represents the carbon footprint of the product studied

Bibliography

ISO 14025:2010	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
ISO 14044:2006	Environmental management - Life cycle assessment - Requirements and guidelines
EN 15804:2012+A2:2019	Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products
ISO 21930:2007	Sustainability in building construction - Environmental declaration of building products
NPCR 010 part B	PCR for buildingboards
EPD-component 1: 20230333569	EPD for Teknos fire retardant laquer INIES Les données environnementales et sanitaires de référence pour le bâtiment (base-inies.fr)
EPD -component 2: 20230333565	EPD for Teknos fire retardant laquer INIES Les données environnementales et sanitaires de référence pour le bâtiment (base-inies.fr)
LCA of US hardwood Veneer	For American hardwood export council - By PE international AG – 2014
LCI/LCA report	Vyrk AS. (2024). <i>Environmental Product Declaration for Vyrk Wall Panel System</i> . Report No: 01. Prepared by Carla Assuad and Simen Skrindsrud. Report date: 12.06.2024

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