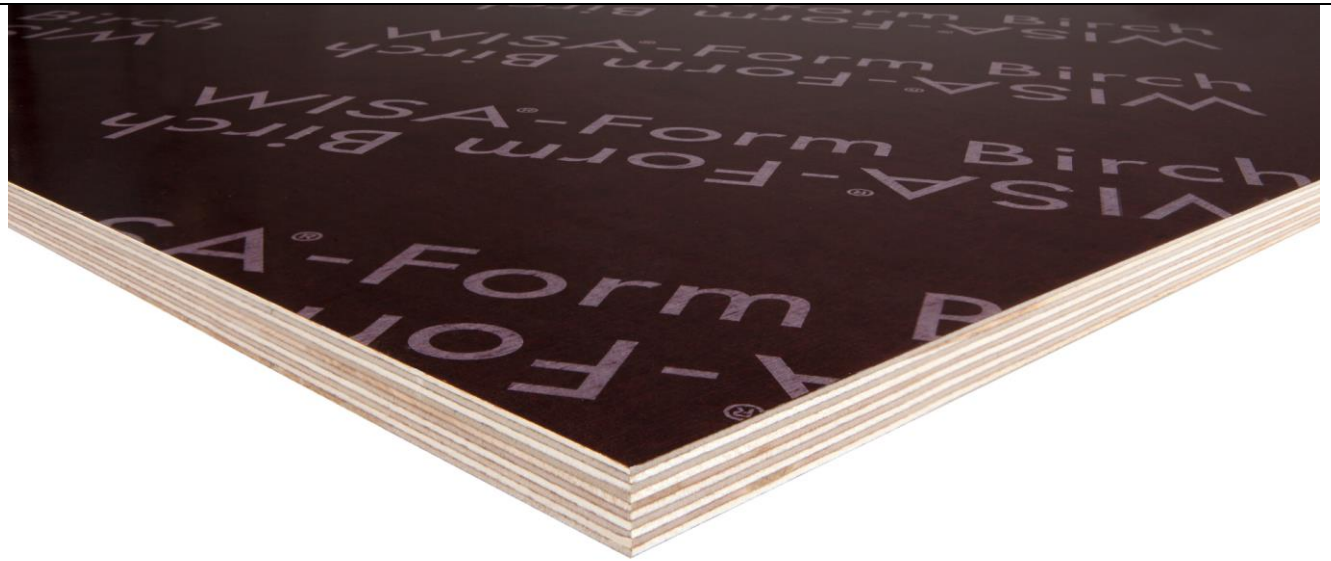



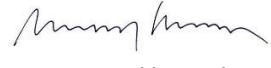



WISA Birch plywood, coated



Program operator, publisher:	Building Information Foundation RTS Malminkatu 16 A 00100 Helsinki http://epd.rts.fi
Owner of the declaration:	UPM Plywood Oy
Name of the product:	WISA Birch plywood, coated
Declaration number:	RTS_18_19
Registration number:	RTS_18_19
ECO Platform reference number:	00000913
Issue date:	25.2.2019
Valid to:	29.10.2023
Scope of the declaration	This environmental product declaration covers the environmental impacts of WISA Birch plywood, coated. The declaration has been prepared in accordance with EN 15804:2012+A1:2013 and ISO 14025 standards and the additional requirements stated in the RTS PCR (English version, 2.6.2016). This declaration covers the life cycle stages from cradle-to-gate
 	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  Laura Sariola Secretary of certification group </div> <div style="text-align: center;">  Markku Hedman RTS General Director </div> </div>
Verified according to the requirements of EN 15804+A1 (product group rules)	
Independent verification of the declaration and data, according to ISO14025:2010	
<input type="checkbox"/> Internal <input checked="" type="checkbox"/> External	
Third party verifier:	
 DI Hannu Karppi, Ramboll Finland Oy	

General information

Manufacturer and Contact Information

UPM Plywood Oy
Niemenkatu 16
15141 Lahti

Production sites: Joensuu, Jyväskylä, Savonlinna, Otepää (EST), Chudovo (RUS).
www.wisaplywood.com
Sanna Kontinen, sanna.kontinen@upm.com

Conductor of Life Cycle Assessment (LCA) and Environmental Product Declaration (EPD)

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Runeberginkatu 4c B21
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Product Category Rules

RTS PCR protocol: EPDs published by the Building Information Foundation RTS sr (2.6.2016)

EN 15804:2012: Sustainability of construction works – Environmental product declaration – Core rules of the product category of construction products

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

Date of publication and validity of EPD

EPD is published on 25.2.2019. EPD is valid for 5 years, 29.10.2018-29.10.2023.

Rakennustietosäätiö RTS
Malminkatu 16 A
00100 Helsinki
<http://epd.rts.fi>

Verification

The EPD is verified by an independent external party according to the EN 15804:2012 standard. The EPD is verified by Ramboll Finland Oy, DI Hannu Karppi according to the product category rules presented above. Pakkahuoneenaukio 2, FI-33101 Tampere, +358 40 5083608, www.ramboll.fi.

Product description

Description of the product and its use

The products covered by this declaration are coated birch plywood boards for building and construction. The boards are strong, stiff and lightweight and hence suitable for multiple different uses, e.g. roofing, flooring and wall sheeting. Related products are e.g:

WISA-Ply Transparent
WISA-PremiumCut
WISA-PremiumCut Lacquered
WISA-Multiwall
WISA-Multifloor
WISA-Wire/Film
WISA-Form
WISA-Trans
WISA-Truck
WISA-Hexa Grip
WISA-Form Elephant
WISA-Form Beto
WISA-Form Stone
WISA-Form Super
WISA-Form Birch MBT
WISA-Form Maxi

The EPD is based on product-specific data from the manufacturing facilities located in Finland, Estonia and Russia. The results presented for 1 m³ of the final product are weighted based on the respective production volumes of each manufacturing facility.

The products are supplied from production in different thicknesses ranging from 6,5 mm to 35 mm. The plywood boards are designed, produced and CE marked according to EN 13986. For specific physical properties, we refer to the CE-declaration or Declaration of Performance on www.wisaplywood.com

Main product components and or materials

The uncoated plywood boards are made of birch wood, glue and protective agent. The boards do not include Substances of very high concern (SVHC).

	Component/Substance	Amount	CAS-nr	Classification
Coated	Wood	87,4 %	-	
	Phenol-formaldehyde resin	6,6 %		
	Hardener	3,6 %		
	Protective agent	-		
	Phenolic films	3,0 %		

LCA calculation information

According to EN 15804, an EPD of construction products may not be comparable if they do not comply with this standard. EPD might not be comparable if different functional unit or reference thickness is used.

Declared unit

This EPD describes the environmental effect of 1m³ of plywood board throughout the life cycle.

The density of the plywood board is 680 kg/m³.

System boundaries

Cradle-to-Gate with options;

- product stage (A1-A3),
- construction process stage (A4-A5),
- use stage (B1-B7),
- end-of-life stage (C1-C4).

Cut-off rules

In the inventory of the input flows a 1 % cut-off rule has been applied. The 1 % cut-off rule is based on the assumption that these input flows do not have a major impact on the environmental impacts as a whole (EN 15805 6.3.5).

Machines and facilities (capital goods) required for and during production are excluded, as is transportation of employees.

Reference service life (RSL)

As permanent component of building or infrastructure, plywood boards are primarily used in dry indoor or moderately humid conditions, such as in roofing, flooring and wall sheeting. According to research results and experience, glued timber products, such as plywood, will have around the same service life expectations than solid wood in dry and moderately humid conditions. The most important factors in evaluating service life of wooden materials in dry and moderately humid conditions are design, execution and maintenance. If installed properly and moisture exposure is low or moderate, the service life of the plywood board is 100 years at minimum. The spruce and birch plywood have the biological durability performance corresponding to Use class 2 for uncoated and Use class 3 for coated and edge-sealed plywood according to EN 13986:2004+A1:2015.

Year of study

Raw materials, transports and manufacturing data: 2016.


LCA-software

GaBi 8, thinkstep AG

Life cycle stages

Product stage			Construction process		Use stage							End-of-life				Benefits and loads beyond the system boundary
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
x	x	x	x	x	NR	NR	NR	NR	NR	NR	NR	x	x	x	x	ND
Raw material supply	Transports	Manufacturing	Transports	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Energy use	Water use	De-construction	Transports	Waste processing	Disposal	Reuse, Recovery, Recycling

 Mandatory modules

 Mandatory in accordance with the provisions of section 6.2.1 of the RTS EPD protocol

 Optional modules based on scenarios

NR = Not relevant, i.e. module not declared; all modules that are not declared within the EPD but where additional data are available. This data can also be used for building assessment scenarios.

ND = Not determined

Product stage; A1-A3

A1; Raw-material supply

The raw material supply covers sourcing and production of all raw materials, fuels and energy used. The supply of packaging materials is also included in module A1.

The emission factors used for the electricity are based on country-specific electricity grid mixes, reflecting actual used electricity per manufacturing facility (Thinkstep database):

- FI: Electricity grid mix 200 g CO₂/kWh
- RU: Electricity grid mix 564 g CO₂/kWh
- EE: Electricity grid mix 1220 g CO₂/kWh

A2; Transports

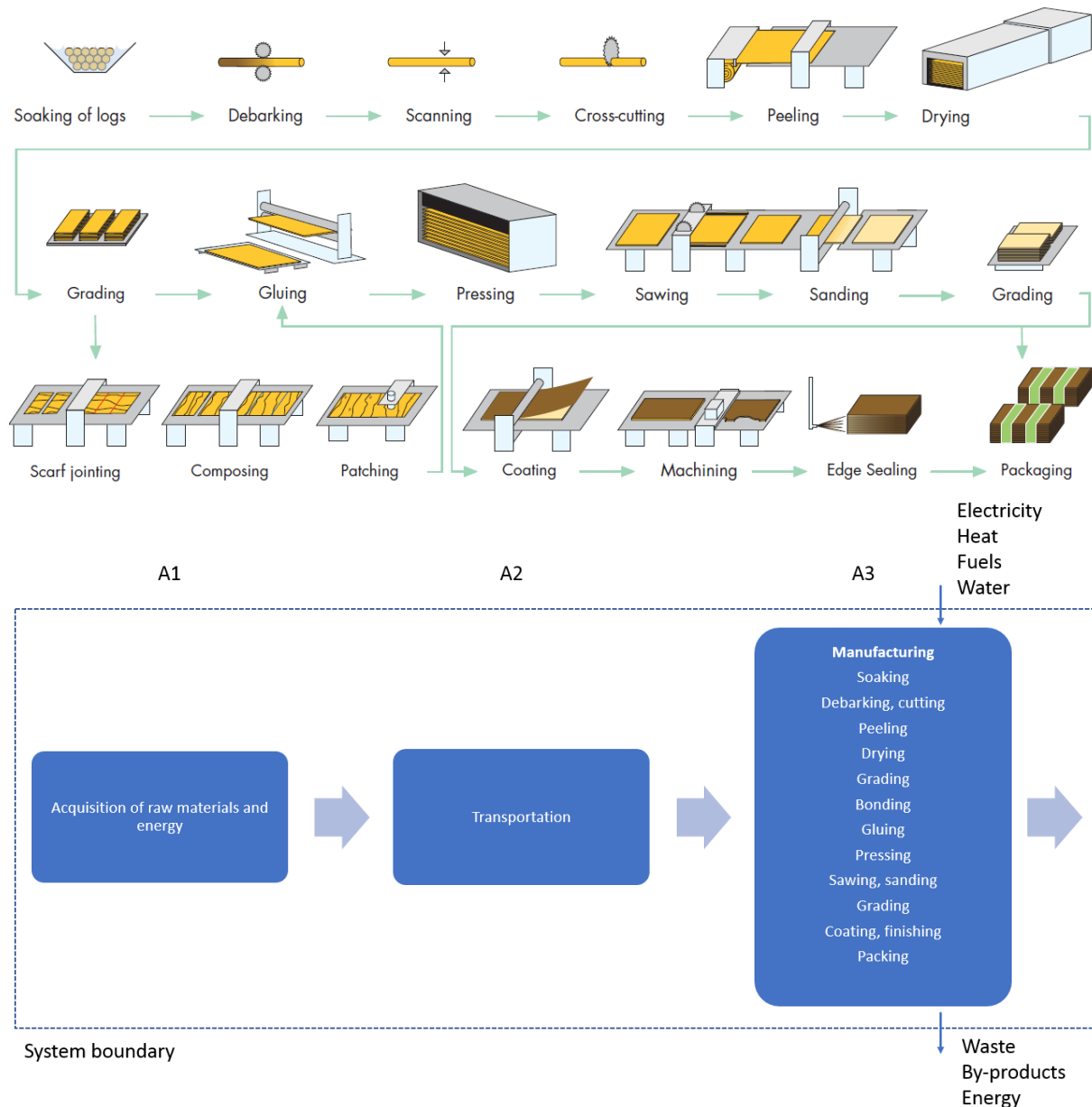
Transports of the different raw materials to the manufacturing plant as well as internal transports at the plant is taken into account.

A3; Manufacturing

The plywood production consists of cutting the wood into veneer, which are then cross-glued together to form boards in various thicknesses.

The emissions to air and water and the disposal of generated waste are taken into account in the manufacturing phase. There are no emissions to ground in the manufacturing process.

Manufacturing process flow diagram



Construction process stage; A4-A5

A4; Transports

From the factories the plywood is transported to centralized warehouses across Europe. The transport distances are based on factory specific logistics from 2016.

Parameter	Unit
Vehicle type	Truck-trailer, Euro 6, 34-40 t
Load capacity	85 % (GaBi)
Distance	778 km
Bulk density	680 kg/m ³

Parameter	Unit
Vehicle type	Large engine ship
Load capacity	65 % (GaBi)
Distance	1 499 km
Bulk density	680 kg/m ³

A5; Installation

At the construction site a 5 % wastage of the material is assumed. The coated plywood is used as castmolds at the construction site. The coated plywood is used on average for 20 molds. The wastage is sent the treatment as follows: 95 % to energy recovery and 5 % to material recovery

Parameter	Unit
Ancillary materials for installation	estimated to very small and hence neglected
Water use	0 m ³
Other resource use	0 kg
Energy type and consumption	estimated to very small and hence neglected
Waste materials	5 % material loss
Output materials	material reuse and energy recovery

Use stage; B1-B7

The use phase consists of the following modules:

B1: Use

B2: Maintenance

B3: Repair

B4: Replacement

B5: Refurbishment

B6: Operational energy use

B7: Operational water use

Once the product is installed, no actions or technical operations are required during the use phase until the demolition of the construction. No operational energy or water use is required by the product

End-of-life stage; C1-C4

C1; De-construction

The de-construction and/or demolition of the product is part of the demolition of the entire construction. The deconstruction is considered to be done by excavation.

C2; Transports

Transport distance to waste processing is estimated to be 100 km by road.

C3; Waste processing

The collected waste is sent either to energy recovery (95 %) or material recover (5 %).

C4; Disposal

No generated waste is disposed to landfill.

Benefits and loads beyond the system boundary; D

The environmental impacts of the benefits and loads beyond the system boundary are not assessed in the life cycle assessment for this environmental product declaration.

LCA results

Environmental impacts

Declared unit = 1m³ of plywood board. The density of the plywood board is 680 kg/m³.

Impact category	unit	A1	A2	A3	A1-A3	A4	A5
Global warming	kg CO2 eq	-2,621	13.38	2,239	-368.82	78.20	61.88
Ozone depletion	kg CFC 11 eq	6.53E-06	4.45E-12	9.56E-11	6.53E-06	2.61E-11	1.27E-11
Acidification	kg SO2 eq	2.58	0.05	0.32	2.94	0.34	5.80E-03
Eutrophication	kg (PO4) ³⁻ eq	0.13	0.011	0.053	0.20	0.082	1.20E-03
Photochemical ozone creation	kg Ethene eq	0.31	0.004	0.018	0.33	0.033	4.75E-04
Depletion of abiotic resources – elements	kg Sb eq	1.15E-04	9.65E-07	1.23E-06	1.17E-04	5.64E-06	1.38E-07
Depletion of abiotic resources – fossil fuels	MJ	7 853	182.91	105.56	8 142	1 070	10.50

Impact category	unit	C1	C2	C3	C4	D
Global warming	kg CO2 eq	1.13	3.18	1 240	0	0
Ozone depletion	kg CFC 11 eq	2.47E-14	1.06E-12	2.55E-10	0	0
Acidification	kg SO2 eq	4.13E-03	2.83E-03	0.12	0	0
Eutrophication	kg (PO4) ³⁻ eq	8.78E-04	5.37E-04	0.024	0	0
Photochemical ozone creation	kg Ethene eq	3.84E-04	2.93E-05	9.51E-03	0	0
Depletion of abiotic resources - elements	kg Sb eq	3.84E-08	2.28E-07	2.76E-06	0	0
Depletion of abiotic resources – fossil fuels	MJ	15.40	43.50	210	0	0

Resource use

Resource use	unit	A1	A2	A3	A1-A3	A4	A5
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	32 305	9.19	15.93	32 330	54.10	1.87
Use of renewable primary energy resources used as raw materials	MJ	16 016	0	0	16 016	0	0
Total use of renewable primary energy resources	MJ	48 321	9.19	15.93	48 346	54.10	1.87
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	13 832	183.82	120.12	14 136	1 080	12.50
Use of non-renewable primary energy resources used as raw materials	MJ	0	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ	13 832	183.82	120.12	14 136	1 080	12.50
Use of secondary material	kg	0	0	0	0	0	0
Use of renewable secondary fuels	MJ	0	0	0	0	0	0
Use of non-renewable secondary fuels	MJ	0	0	0	0	0	0
Net use of fresh water	m3	1.40	0.02	0.61	2.03	0.11	0.14

Resource use	unit	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	0.07	2.19	37.40	0	0
Use of renewable primary energy resources used as raw materials	MJ	0	0	0	0	0
Total use of renewable primary energy resources	MJ	0.07	2.19	37.40	0	0
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	15.40	43.60	251.00	0	0
Use of non-renewable primary energy resources used as raw materials	MJ	0	0	0	0	0
Total use of non-renewable primary energy resources	MJ	15.40	43.60	251.00	0	0
Use of secondary material	kg	0	0	0	0	0
Use of renewable secondary fuels	MJ	0	0	0	0	0
Use of non-renewable secondary fuels	MJ	0	0	0	0	0
Net use of fresh water	m3	0.00	0.00	2.85	0	0

Waste categories:

Waste categories	unit	A1	A2	A3	A1-A3	A4	A5
Hazardous waste disposed	kg	0.024	9.65E-06	3.96E-06	0.024	5.66E-05	7.32E-09
Non-hazardous waste disposed	kg	1.65	0.014	37.58	39.24	0.082	0.14
Radioactive waste disposed	kg	0.15	2.51E-04	5.61E-03	0.16	1.47E-03	8.03E-04

Waste categories	unit	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1.93E-09	2.29E-06	1.46E-07	0	0
Non-hazardous waste disposed	kg	1.09E-04	3.30E-03	2.70	0	0
Radioactive waste disposed	kg	3.37E-06	5.95E-05	0.016	0	0

Other output flows

Other output flows	unit	A1	A2	A3	A1-A3	A4	A5
Components for re-use	kg	0	0	0	0	0	0
Materials for recycling	kg	0	0	0	0	0	1.7
Materials for energy recovery	kg	0	0	0	0	0	32.3
Exported energy, Thermal	MJ	0	0	0	0	0	170
Exported energy, Electric	MJ	0	0	0	0	0	73

Other output flows	unit	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0
Materials for recycling	kg	0	0	34	0	0
Materials for energy recovery	kg	0	0	646	0	0
Exported energy, Thermal	MJ	0	0	3 410	0	0
Exported energy, Electric	MJ	0	0	1 460	0	0

Additional information

Use

There is no harmful substance released to air, water or ground during the use of the product.

Regarding indoor air quality the plywood boards have a M1 emission classification granted by the Building Information Foundation RTS sr (Rakennustietosäätiö RTS sr). M1 stands for low emissions.

End-of-life

- information on recycling including e.g. suitable procedures for recycling the entire product or selected parts and the potential environmental benefits gained*
- information on a suitable method of reuse of the product (or parts of the products) and procedures for disposal as waste at the end of its life cycle, and*
- information regarding disposal of the product or inherent materials, and any other information considered necessary to minimise the product's end-of-life impacts.*

References

1. RTS. PCR protocol: EPDs published by the Building Information Foundation RTS sr (2016)
2. ISO 14025: Environmental labels and declarations - Type III environmental declarations - Principles and procedures (2006)
3. ISO 14040: Environmental management - Life Cycle Assessment - Principles and framework (2006)
4. ISO 14044: Environmental management - Life Cycle Assessment - Requirements and guidelines (2006)
5. EN 15804: Sustainability of construction works - Environmental product declaration - Core rules of the product category of construction products (2014)
6. SFS-EN 16485: Round and sawn timber. Environmental product declarations. Product category rules for wood and wood-based products for use in construction (2014)
7. LCA report: UPM Plywood Oy – Plywood boards. (2018)
8. Research report, 100 years' service life of wood in service class 1 and 2 – dry and moderately humid condition. VTT (2014).