

WISA Spruce 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 Spruce plywood, coated |
| Declaration number: | RTS_20_19 |
| Registration number: | RTS_20_19 |
| ECO Platform reference number: | 00000915 |
| Issue date: | 25.2.2019 |
| Valid to: | 29.10.2023 |
| Scope of the declaration | This environmental product declaration covers the environmental impacts of WISA Spruce 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 |
|  |  Laura Sariola Secretary of certification group |
| |  Markku Hedman RTS General Director |

| | |
|--|--|
| 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: Jyväskylä, Pellos.
www.wisaplywood.com
Sanna Kontinen, sanna.kontinen@upm.com

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

ECOBIO Oy
Runeberginkatu 4c B21
00100 Helsinki
+358 (0)20 756 9450
www.ecobio.fi

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 spruce 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-Form MDO
WISA-Form Spruce
WISA-Form Slab
WISA-Paintply

The EPD is based on product-specific data from the manufacturing facilities located in Finland. 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 12 mm to 30 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 spruce wood, glue and protective agent. The boards do not include Substances of very high concern (SVHC).

| | Component/Substance | Amount | CAS-nr | Classification |
|--------|---------------------------|--------|--------|----------------|
| Coated | Wood | 88,0 % | - | |
| | Phenol-formaldehyde resin | 4,9 % | | |
| | Hardener | 3,8 % | | |
| | Protective agent | - | | |
| | Phenolic films | 4,4 % | | |

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 480 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

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 | 480 kg/m ³ |

| Parameter | Unit |
|---------------|-----------------------|
| Vehicle type | Large engine ship |
| Load capacity | 65 % (GaBi) |
| Distance | 1 499 km |
| Bulk density | 480 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 480 kg/m³.

| Impact category | unit | A1 | A2 | A3 | A1-A3 | A4 | A5 |
|---|---------------|----------|----------|----------|----------|----------|----------|
| Global warming | kg CO2 eq | -1 415 | 5.48 | 1 037 | -372.17 | 39.30 | 43.60 |
| Ozone depletion | kg CFC 11 eq | 4.93E-06 | 1.82E-12 | 1.22E-11 | 4.93E-06 | 1.31E-11 | 8.99E-12 |
| Acidification | kg SO2 eq | 0.71 | 0.01 | 0.14 | 0.86 | 0.23 | 4.10E-03 |
| Eutrophication | kg (PO4)3- eq | 0.06 | 0.003 | 0.026 | 0.09 | 0.058 | 8.46E-04 |
| Photochemical ozone creation | kg Ethene eq | 0.13 | 0.001 | 0.007 | 0.14 | 0.025 | 3.36E-04 |
| Depletion of abiotic resources – elements | kg Sb eq | 6.52E-05 | 3.93E-07 | 1.02E-07 | 6.57E-05 | 2.84E-06 | 9.75E-08 |
| Depletion of abiotic resources – fossil fuels | MJ | 2 084 | 74.98 | 9.03 | 2 168 | 541 | 7.42 |

| Impact category | unit | C1 | C2 | C3 | C4 | D |
|---|---------------|----------|----------|----------|----|---|
| Global warming | kg CO2 eq | 1.13 | 2.25 | 872 | 0 | 0 |
| Ozone depletion | kg CFC 11 eq | 2.47E-14 | 7.45E-13 | 1.8E-10 | 0 | 0 |
| Acidification | kg SO2 eq | 4.13E-03 | 1.99E-03 | 0.08 | 0 | 0 |
| Eutrophication | kg (PO4)3- eq | 8.78E-04 | 3.79E-04 | 0.017 | 0 | 0 |
| Photochemical ozone creation | kg Ethene eq | 3.84E-04 | 2.07E-05 | 6.71E-03 | 0 | 0 |
| Depletion of abiotic resources - elements | kg Sb eq | 3.84E-08 | 1.61E-07 | 1.95E-06 | 0 | 0 |
| Depletion of abiotic resources – fossil fuels | MJ | 15.40 | 30.70 | 148 | 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 | 17 290 | 3.78 | 1.26 | 17 295 | 27.20 | 1.32 |
| Use of renewable primary energy resources used as raw materials | MJ | 9 464 | 0 | 0 | 9 464 | 0 | 0 |
| Total use of renewable primary energy resources | MJ | 26 754 | 3.78 | 1.26 | 26 759 | 27.20 | 1.32 |
| Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials | MJ | 4 059 | 75.26 | 10.19 | 4 144 | 543 | 8.85 |
| 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 | 4 059 | 75.26 | 10.19 | 4 144 | 543 | 8.85 |
| 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 | 0.16 | 0.01 | 0.05 | 0.21 | 0.05 | 0.10 |

| 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 | 1.54 | 26.40 | 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 | 1.54 | 26.40 | 0 | 0 |
| Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials | MJ | 15.40 | 30.80 | 177.00 | 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 | 30.80 | 177.00 | 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 | 2.01 | 0 | 0 |

Waste categories:

| Waste categories | unit | A1 | A2 | A3 | A1-A3 | A4 | A5 |
|------------------------------|------|----------|----------|----------|----------|----------|----------|
| Hazardous waste disposed | kg | 1.97E-06 | 3.95E-06 | 1.15E-06 | 7.06E-06 | 2.85E-05 | 5.17E-09 |
| Non-hazardous waste disposed | kg | 1.03 | 0.006 | 2.29 | 3.33 | 0.042 | 0.10 |
| Radioactive waste disposed | kg | 0.02 | 1.03E-04 | 4.50E-04 | 0.02 | 7.40E-04 | 5.67E-04 |

| Waste categories | unit | C1 | C2 | C3 | C4 | D |
|------------------------------|------|----------|----------|----------|----|---|
| Hazardous waste disposed | kg | 1.93E-09 | 1.62E-06 | 1.03E-07 | 0 | 0 |
| Non-hazardous waste disposed | kg | 1.09E-04 | 2.35E-03 | 1.91 | 0 | 0 |
| Radioactive waste disposed | kg | 3.37E-06 | 4.25E-05 | 0.011 | 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 | 1.2 |
| Materials for energy recovery | kg | 0 | 0 | 0 | 0 | 0 | 22.8 |
| Exported energy, Thermal | MJ | 0 | 0 | 0 | 0 | 0 | 120 |
| Exported energy, Electric | MJ | 0 | 0 | 0 | 0 | 0 | 51,7 |

| 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 | 24 | 0 | 0 |
| Materials for energy recovery | kg | 0 | 0 | 456 | 0 | 0 |
| Exported energy, Thermal | MJ | 0 | 0 | 1 030 | 0 | 0 |
| Exported energy, Electric | MJ | 0 | 0 | 2 410 | 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.*

FRITZOE
ENGROS

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).

FRITZOE
ENGROS