




# ENVIRONMENTAL PRODUCT DECLARATION

## Ekovilla EKI-12 asphalt fiber



<b>Program operator, publisher:</b>	
<b>Owner of the declaration:</b>	<b>Ekovilla Oy</b>
<b>Name of the product:</b>	<b>Ekovilla EKI-12 asphalt fiber</b>
<b>Declaration number:</b>	<b>RTS_192_22</b>
<b>Registration number:</b>	-
<b>ECO Platform reference number:</b>	-
<b>Issue date:</b>	<b>June 27, 2022</b>
<b>Valid to:</b>	<b>June 27, 2027</b>
<b>Scope of the declaration</b>	<b>This environmental product declaration covers the environmental impacts of Ekovilla EKI-12 asphalt fiber. The declaration has been prepared in accordance with SFS-EN 15804:2012 + A2:2019 and ISO 14025 standards and the additional requirements stated in the RTS PCR (English version, 26.8.2020). This declaration covers the life cycle stages from cradle to gate, end of life stage and benefits and loads beyond the system boundary.</b>
<b>Logot (RTS, ECO Platform yms)</b>	  Jukka Seppänen RTS EPD Committee Secretary  Laura Apilo Managing Director

## 1. GENERAL INFORMATION, THE SCOPE AND VERIFICATION OF THE DECLARATION

EPD of construction products may not be comparable if they do not comply with SFS-EN 15804:2012 + A2:2019 and seen in a building context.

The geographic representative area is Finland.

### Owner of the declaration, manufacturer

Ekovilla Oy  
Katajajarjuntie 10  
45720 Kuusankoski  
[www.ecoup.fi](http://www.ecoup.fi)  
[www.ekovilla.com](http://www.ekovilla.com)

### Product name and number

Ekovilla EKI-12 asphalt fiber

### Place of production

Ylistaron tehdas  
Pajatie 1  
61410 Ylistaro  
Finland  
Puh. +358 40 066 0509

### Additional information

Additional Information from: [info@ecoup.fi](mailto:info@ecoup.fi)

### Product Category Rules and the scope of the declaration

The declaration has been prepared in accordance with SFS-EN 15804:2012 + A2:2019 and ISO 14025 standards and the additional requirements stated in the RTS PCR (English version, 26.8.2020)

### Author of the life-cycle assessment and declaration

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### Verification

The declaration has been prepared in accordance with SFS-EN 15804:2012 + A2:2019 and ISO 14025 standards and the additional requirements stated in the RTS PCR (English version, 26.8.2020).

The declaration was verified according to abovementioned standards and PCR rules by:

Third party verification on 24.8.2021.

Verification is valid 24.8.2021-24.8.2026.

## Declaration issue date and validity

Declaration issue date 27.06.2022. The declaration is valid 5 years, 27.06.2027.

## 2. PRODUCT INFORMATION

### Product description

The declaration is made for Ekovilla EKI-12 asphalt fiber, which is blended in stone mastic asphalt to create a more durable and long-lasting road surface. Asphalt fiber is manufactured in Ylistaro, Finland. Asphalt fiber is produced by milling wastepaper.

### Key information of environmental information reported per kilogram

Indicators	Unit	A1	A2	A3	A1-A3	A4	C1	C2-C4	D
Climate change - total	kg CO <sub>2</sub> eq.	-1,50E+00	4,57E-03	9,21E-03	-1,48E+00	2,08E-02	1.50E+00	0.00E+00	0.00E+00
Abiotic depletion, minerals & metals	kg Sb eq.	7,84E-09	0,00E+00	8,08E-10	8,65E-09	0,00E+00	0,00E+00	0,00E+00	0.00E+00
Abiotic depletion of fossil resources	MJ, net calorific value	8,70E-01	0,00E+00	2,04E-03	8,72E-01	0,00E+00	0,00E+00	0,00E+00	0.00E+00
Water use	m <sup>3</sup> world eq. Deprived	3,98E-04	0,00E+00	7,40E-08	3,99E-04	0,00E+00	0,00E+00	0,00E+00	0.00E+00
Biogenic carbon content in product	kg C/kg			0.41E+00					
Use of secondary material	kg/kg	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

### Technical information

Density (25 °C) /PANK 3105	24 kg/m <sup>3</sup>
Moisture content, weight% /PANK 3103	4,1%
Heat resistance, weight% /PANK 3104	4,1%
Uniformity /PANK 3107	2,1%
Fiber content /PANK 3106	50% value/0,2mm, 80% value/0,9mm
Specific area /PANK 2401	3,2 m <sup>2</sup> /g
Assessment document	Asfalttinormit 2017

### Product raw materials

Material	Amount %	Usability		
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		Renewable	Non-renewable	Recycled	Origin of the material	Raw material type
Wastepaper	100%			x	Finland	Bio-based

### Substances under European Chemicals Agency’s REACH, SVHC restrictions

None

### 3. SCOPE OF LIFE CYCLE ASSESSMENT

This EPD covers cradle to gate with modules A4, C1-C4 and module D, as shown in the Figure 1. Geographical representativeness on all included modules is FI/EU. Specific data from the producer is used in modules A1-A4 for all the amounts and generic data is used for the unit emissions.

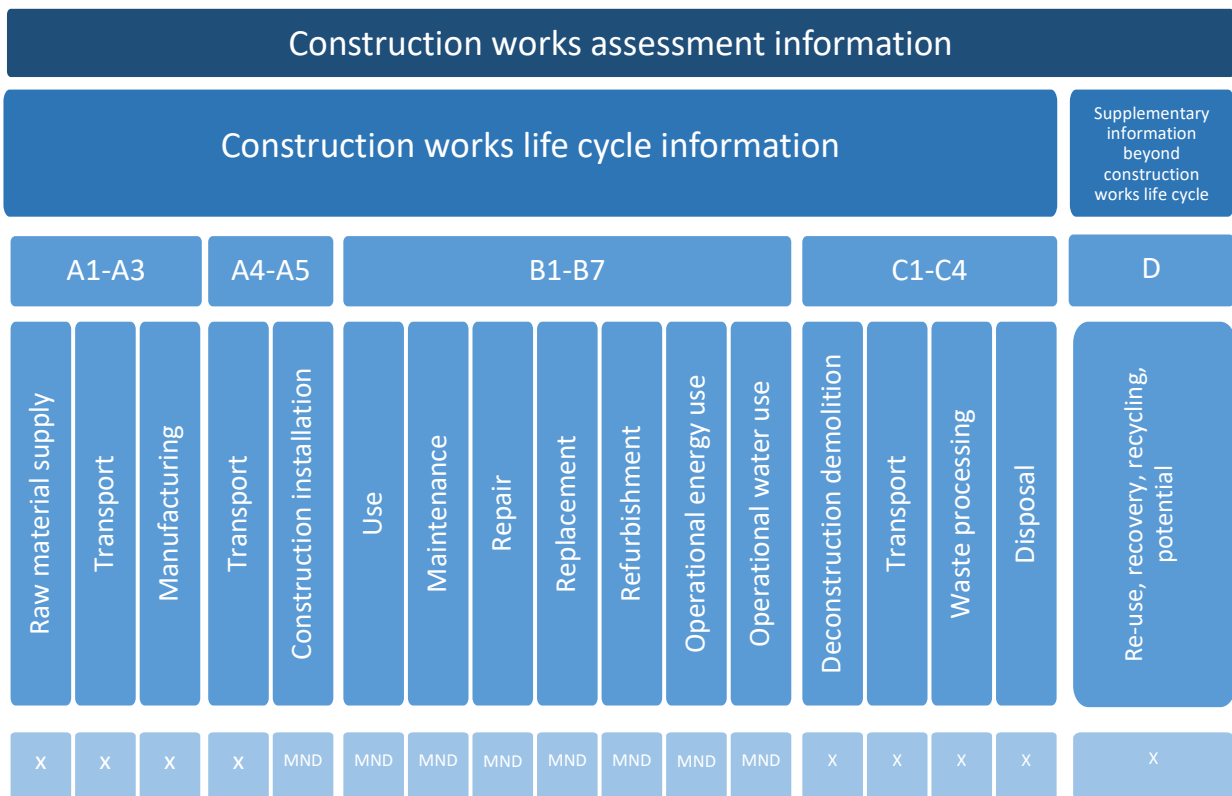


Figure 1. Modules in life cycle assessment of construction works. Modules included in this EPD are marked with x and MND = Module not included.

### Declared unit

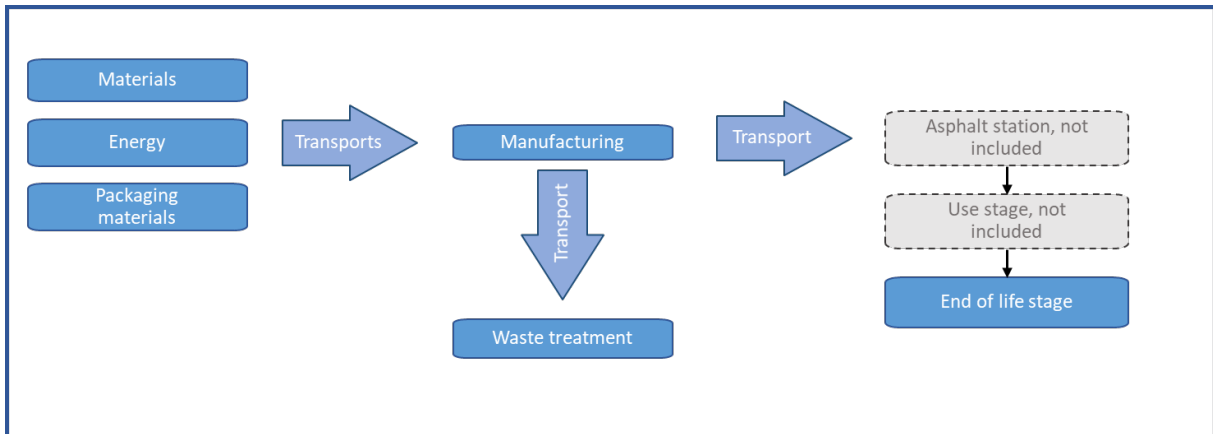
Indicators are reported per 1kg asphalt fiber insulation.

## Cut-off criteria

Data for A1-A4 have been collected from the producer. Modules A1 to A3 include all the raw materials used, energy production (electricity, heat and fuels), including primary production and processing of raw materials and fuels, transport and final disposal or processing of the wastes. The main component is recycled paper, which is considered waste and doesn't carry the loads of paper production. All waste paper is collected from Finland and the original source of wood material used for paper production can be assumed to be from sustainably grown forests.

In modules C and D the fibers are mixed with the asphalt and it is not possible to separate them. The weight share of the asphalt fibers in asphalt is very low, approximately 0,3 % so the effect in the collection of asphalt is negligible in C1 where the asphalt is collected for reuse or recycle. The asphalt fibers will remain in the asphalt where they are impregnated by bitumen. The biogenic carbon content is reported as emission in C1 and avoided emission in module D. The end-of-waste stage of asphalt is reached when it is collected in C1. At this point it is either remixed to the same surface or transported to asphalt station for mixing with new materials. Here it is assumed to be remixed in the same place and hence there are no transportations reported in the end of life stage. For module D, the recovery rate of the asphalt mix is based on the EPD of NCC mastic asphalt.

The production of production equipment and means of transport, as well as the machinery, equipment and premises (production goods) needed for production and in production are excluded from the scope of the assessment, as are the commuting of workers.



## Allocation

In the factory in Ylistaro, also insulation fiber is produced and some allocations were needed. Allocation of energy and waste treatment for the insulation material and asphalt fiber production were made based on the masses of the products produced.

## 4. SCOPE OF THE LIFE-CYCLE ASSESSMENT

The results are given as described in RTS PCR.

### Core environmental impacts

Indicators	Unit	A1	A2	A3	A1-A3	A4	C1	C2-C4	D
Climate change - total	kg CO <sub>2</sub> eq.	-1,50E+00	4,57E-03	9,21E-03	-1,48E+00	2,08E-02	1.50E+00	0.00E+00	0.00E+00
Climate change - fossil	kg CO <sub>2</sub> eq.	1,74E-02	3,97E-03	5,93E-04	2,20E-02	1,80E-02	0.00E+00	0.00E+00	0.00E+00
Climate change - biogenic	kg CO <sub>2</sub> eq.	-1,51E+00	6,02E-04	8,61E-03	-1,50E+00	2,77E-03	1.50E+00	0.00E+00	0.00E+00
Climate change - LULUC	kg CO <sub>2</sub> eq.	1,83E-05	0,00E+00	8,61E-08	1,84E-05	0,00E+00	0.00E+00	0.00E+00	0.00E+00
Ozone depletion	kg CFC-11 eq.	1,02E-08	0,00E+00	1,83E-11	1,02E-08	0,00E+00	0.00E+00	0.00E+00	0.00E+00
Acidification	mol H <sup>+</sup> eq.	1,22E-04	1,61E-06	1,67E-06	1,25E-04	4,08E-06	0.00E+00	0.00E+00	0.00E+00
Eutrophication aquatic freshwater	kg PO <sub>4</sub> eq.	3,73E-06	0,00E+00	1,20E-07	3,85E-06	0,00E+00	0.00E+00	0.00E+00	0.00E+00
Eutrophication aquatic marine	kg N eq.	1,90E-05	8,34E-07	6,82E-07	2,06E-05	2,10E-06	0.00E+00	0.00E+00	0.00E+00
Eutrophication terrestrial	mol N eq.	2,02E-04	9,14E-06	6,65E-06	2,18E-04	2,30E-05	0.00E+00	0.00E+00	0.00E+00
Photochemical ozone formation	kg NMVOC eq.	8,30E-05	2,19E-06	1,65E-06	8,68E-05	5,51E-06	0.00E+00	0.00E+00	0.00E+00
Depletion of abiotic resources - minerals & metals *	kg Sb eq.	7,84E-09	0,00E+00	8,08E-10	8,65E-09	0,00E+00	0.00E+00	0.00E+00	0.00E+00
Depletion of abiotic resources - fossil fuels *	MJ, net calorific value	8,70E-01	0,00E+00	2,04E-03	8,72E-01	0,00E+00	0.00E+00	0.00E+00	0.00E+00
Water use *	m <sup>3</sup> world eq. Deprived	3,98E-04	0,00E+00	7,40E-08	3,99E-04	0,00E+00	0.00E+00	0.00E+00	0.00E+00

\* 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 experience with the indicator.

## Additional environmental impacts

Impacts	Indicators	Unit	A1	A2	A3	A1-A3	A4	C1-C4	D
Particulate Matter emissions	Potential incidence of disease due to PM emissions (PM)	Disease incidence	1,07E-09	1,02E-11	1,85E-11	1,10E-09	2,95E-11	0.00E+00	0.00E+00
Ionizing radiation, human health **	Potential Human exposure efficiency relative to U235 (IRP)	kBq U235 eq.	4,33E-03	0,00E+00	1,31E-05	4,35E-03	0,00E+00	0.00E+00	0.00E+00
Eco-toxicity (freshwater) *	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	CTUe	4,86E-01	2,75E-08	4,98E-03	4,91E-01	7,16E-08	0.00E+00	0.00E+00
Human toxicity, cancer effects *	Potential Comparative Toxic Unit for humans (HTP-c)	CTUh	3,12E-11	0,00E+00	3,30E-13	3,15E-11	0,00E+00	0.00E+00	0.00E+00
Human toxicity, non-cancer effects *	Potential Comparative Toxic Unit for humans (HTP-nc)	CTUh	1,93E-10	1,19E-12	1,15E-11	2,05E-10	3,08E-12	0.00E+00	0.00E+00
Land use related impacts/Soils quality *	Potential soil quality index (SQP)	Dimensionless	1,04E+00	0,00E+00	8,68E-04	1,05E+00	0,00E+00	0.00E+00	0.00E+00

\*\* 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.

\* 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 experience with the indicator.

## Resource use

Use of natural resources	Unit	A1	A2	A3	A1-A3	A4	C1-C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	1,54E-01	1,66E-04	7,92E-01	9,46E-01	7,51E-04	0.00E+00	0.00E+00
Renewable primary energy resources used as raw materials	MJ	1,30E+01	0,00E+00	0,00E+00	1,30E+01	0,00E+00	-1,30E+01	1,30E+01
Total use of renewable primary energy resources	MJ	1,32E+01	1,66E-04	7,92E-01	9,46E-01	7,51E-04	-1,30E+01	1,30E+01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	2,62E-01	9,02E-02	1,21E-01	4,73E-01	4,07E-01	0.00E+00	0.00E+00
Non-renewable primary energy resources used as raw materials	MJ	1,30E-01	0,00E+00	0,00E+00	1,30E-01	0,00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	3,93E-01	9,02E-02	1,21E-01	6,04E-01	4,07E-01	0.00E+00	0.00E+00
Use of secondary material	kg	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0.00E+00	0.00E+00
Net use of fresh water	m <sup>3</sup>	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0.00E+00	0.00E+00

## 5. OTHER INDICATORS

### Biogenic carbon content

Biogenic carbon content	Unit	A3
Biogenic carbon content in product	kg C	0.41
Biogenic carbon content in packaging	kg	0

### Wastes

Waste categories	Unit	A1-A3	A4	C1-C4	D
Hazardous waste disposed	kg	3.10E-05	0.00E+00	0.00E+00	0.00E+00
Non hazardous waste disposed	kg	8.60E-03	0.00E+00	0.00E+00	0.00E+00
Radioactive waste disposed	kg	8.33E-08	0.00E+00	0.00E+00	0.00E+00

### Other environmental indicators

Other environmental indicators	Unit	A1-A3	A4	C1	C2-C4	D
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	1.00E+01	0.00E+00	0.00E+00
Materials for energy recovery	kg	8.59E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy (heat)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00



## 6. SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

### Energy in manufacturing phase

Parameter	Finland
Electricity data source and quality	Ecoinvent database 3.7, Electricity production, wind, 1-3MW turbine, onshore, FI, reference year 1945-2020
GWP per 1kWh electricity	0.01606 kg CO <sub>2</sub> -Eq

### Additional technical information, transport to the building site, A4

Scenario information	Quantity	Data quality
Full trailer, diesel	50,4 l/100km	Lipasto/Ecoinvent
Specific transport emissions (without the diesel production)	0,038 kg CO <sub>2</sub> -Eq/tkm	Lipasto
Average distance	350km	
Capacity utilization % (including empty returns)	95%	
Bulk density of transported products kg/m <sup>3</sup>	205 kg/m <sup>3</sup>	
Volume capacity utilisation factor	60%	

### Additional technical information, End-of-life

Processes	Quantity
Collection process	0 kg collected separately
	1 kg collected as part of asphalt
Recovery system	0 kg for reuse
	1 kg for recycling*
	0 kg for energy recovery
Disposal	0 kg for final disposal
Assumptions for scenario development, e.g. transportation	For further scenario-based information regarding e.g. transportation can be found from EPDs of asphalt

\*The loss is considered so small that it is not relevant.

### Additional information

#### Emissions to indoor air

The information is not available

#### Emissions to soil

The information is not available

#### Emissions to water

The information is not available

## 7. REFERENCES

EN15804:2019 Sustainability of construction works. Environmental Product Declarations. Core rules for the product category of construction products

ISO 14025:2011-10 Environmental labels and declarations. Type III environmental declarations. Principles and procedures

Ecoinvent database <http://www.ecoinvent.org/>

Lipasto - a calculation system for traffic exhaust emissions and energy use in Finland. VTT Technical Research Centre of Finland Ltd. <http://lipasto.vtt.fi/en/index.htm>

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Nors, M. et al., 2009. Calculating the carbon footprints of a Finnish newspaper and magazine from cradle to grave

<https://www.vttresearch.com/sites/default/files/pdf/symposiums/2009/S262.pdf>

Environmental Product Declaration for asphalt mixtures from Stockholm mastic asphalt plant – Arlanda, NCC, EPD International AB, 2021