Environmental Product Declaration

In accordance with ISO 14025 and EN 15804+A1 and ISO 21930 for:

Lightwood and MaxWood

from

AB Golvabia

Programme:	The International EPD® System www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-01338
Publication date:	2018-12-17
Validity date:	2023-12-16
Geographical scope:	Europe

General information

Information about the organization

Owner of the EPD and site of production: Roger Davidsson, roger.davidsson@golvabia.se, AB Golvabia, Box 43 Långgatan 10, Anderstorp

Description of the organisation: Industrial producer of flooring from raw materials purchased from suppliers in EU. Distribution via retail in Scandinavia and other countries.

Product-related or management system-related certifications: Golvabia is certified according to ISO 9001 and ISO 14001. Also, for sustainable supply of wood sources, FCS-STD-40-004 Version 3.0 FSG Standard for Chain of Custody Certification and FSC-STD-50-001 for balance paper and fibreboard.

About the company

Golvabia was established in 1949 and have more than 70 years of experience with wood floors. But the foundation of Golvabia was laid already in 1927 when the 19-year-old Ivar Andersson decided to leave his father's sawmill and get experience in America. Over there he learned the parquet business and when he came back to Sweden, he started his flooring company. Golvabia is today a family business in the third generation and one of Scandinavia's leading flooring companies. Golvabia is certified according to ISO 9001 and ISO 14001, which guarantees that our wood floors meet the highest quality and environmental demands. We manufacture our wood floors in a modern, highly automated facility in Anderstorp in the southern part of Sweden.

The company Golvabia develops and sells floor products. High quality and responsibility throughout the life cycle are core values in the business concept. The products produced at Golvabia are mainly in flooring.

Product information

Product name: Lightwood and Maxwood
Product identification: Golvabia Lightwood 1190x195x7,5 mm Lacquered with (and without) corkbacking, Golvabia Maxwood 1190x195x10 mm Lacquered with corkbacking
Product description: Veneer wood flooring

UN CPC code: 31211 Wood, continuously shaped along any of its edges or faces (including strips and friezes for parquet flooring, not assembled, and beadings and mouldings) of coniferous wood

Geographical scope: Europe

LCA information

Functional unit / declared unit: 1 m2

Reference service life: 25 years

Time representativeness: 2017

Database(s):
ecoinvent 3.4 – "allocation cut off by classification" is used throughout the study (10402 LCI data). Version 3.4 was released on the 4th October 2017.
Complementary generic data from ESU database 2018 has been used for representing the production and disposal of real estate (2474 LCI data).
Industry data 2.0 is used for representing steel constructions in Golvbia production facilities (1 LCI data).

LCA software used: SimaPro 8.5.0.0

Assumptions generic for this study:

- Choice of energy model: regional averages derived from the Ecoinvent.
- Selection of transport model: regional average values from ecoinvent
- Transport by truck is using emission standard Euro 5
- Commercial transports are assumed to be only one way (and not return empty).
- The flooring is used in 20 years and then disposed of.
- At disposal 60 m2 are loaded on one personal Vehicle.

Description of system boundaries: Cradle to grave including raw materials, production, manufacturing, use and disposal and all transports are included in the study.

Excluded lifecycle stages:
The use phase exclude retail, installation, repair, refurbish and dismantling because it is beyond the control of Golvabia and depend much on the specific conditions. It is estimated by Golvabia and LCA practitioner to be insignificant because the installation and dismantling require no processing but only man power and person transport. Repair and refurbish is uncommon.

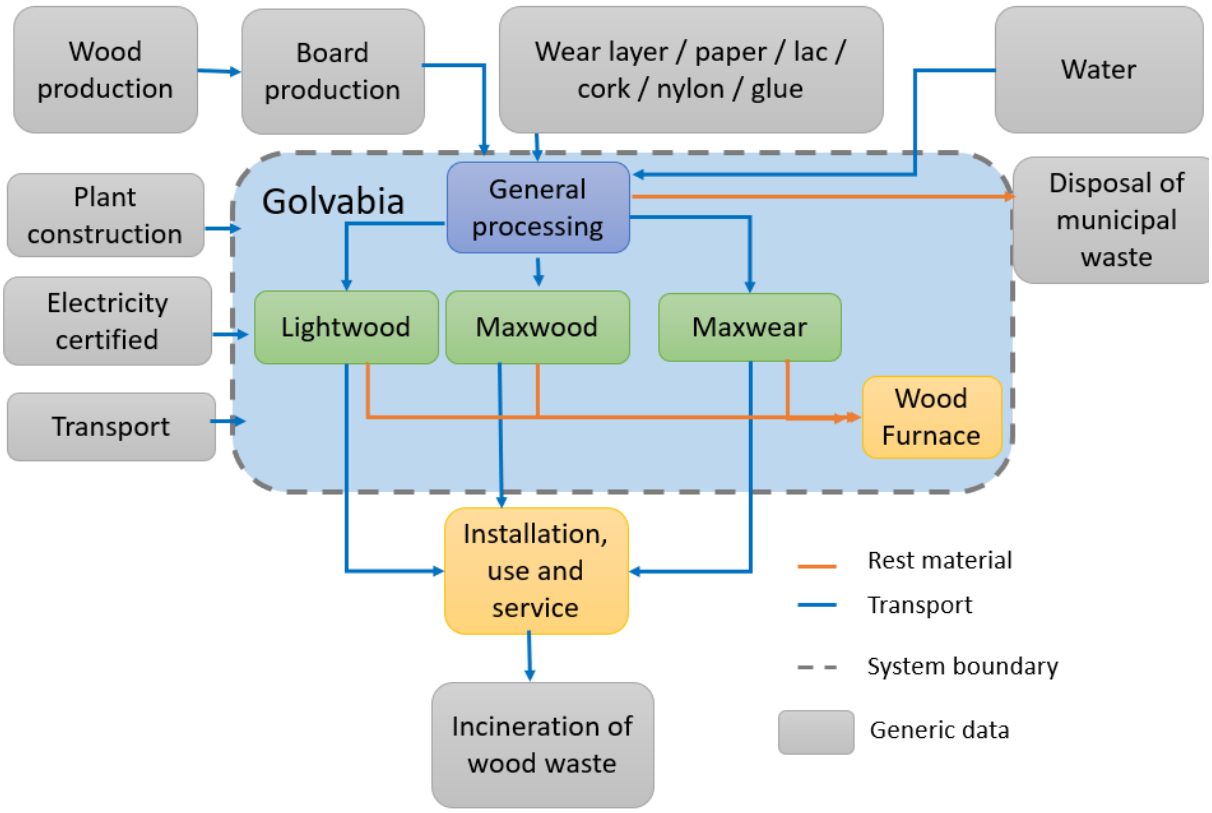
More information:
This EPD and background LCA report was prepared by Miljögiraff AB.

System diagram: See below

Product			Construct		Use							End of life			
Raw material	Transport supply	Manufacturing	Transport	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy	Operational water	Deconstruction	Transport	Waste treatment	Disposal
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
X	X	X	X	NR	X	MND	MND	NR	MND	NR	NR	MND	X	X	X
X = included			NR = module not relevant					MND = Module not declared							

Lifecycle phases and modules included.

The specific data is modelled within system boundary (1) and the generic data for production of raw material are technical inflows to this. Also, the production of electricity, transport and production of the plant, is represented by generic data. For the use phase primary data is used. For treatment of waste the wood is used internally for heat production, but the other fractions are sent to municipal treatment (as a general scenario for Sweden). The disposal of flooring at the end of life are assumed to be sent to municipal waste incineration.



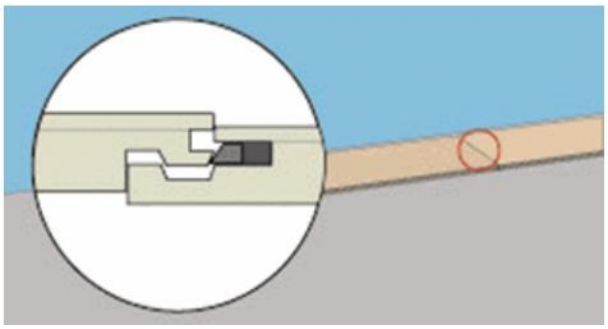
The image show system boundary (1), main processes and type of data quality used to represent these processes.

Content declaration

Product

		Lightwood		Maxwood	
Component	Specification	Weight-%	g/m2	Weight-%	g/m2
Surface treatment	Acrylate-based paint, UV-cured	<1,5	70-80	<1	80-100
Wear layer	Untreated wood of Oak, Beech, Birch, Maple and Ash etc 0.6 mm,	5	300	4	300
Wear layer	PVC	-	-	-	-
Medium material	HDF 6.7 and 8.7mm	90	5850	90	7725
Bottom material	Balance sheet of uncoated cardboard	2	140	1,6	140
Backing	Cork	-	-	2	175
Paste	PVAc, dry substance	2	130	1,5	130
Other components	Glue wire, nylon / hot melt	<0,1	<2	<0,1	<2
Electricity	1090 MWh	55%		11%	

No substances contained in the products are listed in the “Candidate List of Substances of Very High Concern for Authorization”.



With Lightwood and Maxwood you install a floor with the most modern and easiest system to install on the market. The click system is called Rolloc 5G and is developed by Välinge Innovation [1] for Golvabia. The unique design of the short end of the board makes it possible to install the board in one simple movement without using any tools or chemicals.

[1] https://www.valinge.se/

Use

The use phase exclude retail, installation, repair, refurbish and dismantling because it is insignificant, beyond the control of Golvabia and depend much on the specific conditions. It is estimated by Golvabia to be insignificant because the installation and dismantling require no processing but only man power and transport. Repair and refurbish is uncommon. The use phase includes emissions from the installed flooring as a worst-case scenario. The use phase includes also the transports to the user, via retailers.

Country	type	share	Truck (km)	Weighted distance (km)	Ship (km)
Sweden	retailors	50%	327	163	
Norge	retailors	15%	575	86	
Sweden	large customer	15%	327	49	
Export EU	large customer	10%	1751	175	
Export US	large customer	10%	1714	302	6289
Average				776	

Transport scenario to user.

Packaging

Secondary packaging: Carton package with plastic wrapping on EU Pallet.
Primary packaging: Carton package with plastic wrapping

Recycled material

The products do not contain any recycled materials. Rest materials from production of production of board and flooring and end of life treatment, include incineration with energy recovery.

Environmental performance

Potential environmental impact

Results of Lightwood for the total life cycle with the method CML version 4.2.

Global warming (GWP100a) as a total of fossil, biogenic and from landtransformation, and CO2 uptake included.

Impact category	Unit	Total	Raw material (A1)	Production (A2-3)	Transport A4	Use B1	Transport C1	Waste C3-C4
Acidification	kg SO2 eq	0,0638	0,0436	0,0071	0,0113	0	0,0004	0,0014
Eutrophication	kg PO4--- eq	0.02	0.02	1.54E-3	1.36E-3	0	1.11E-4	1.92E-3
Global warming (GWP100a)	kg CO2 eq	10.24	7.57	1.32	0.95	0	0.11	0.06
Photochemical oxidation	kg C2H4 eq	0.01	2.86E-3	2.85E-4	3.93E-4	1.78E-3	2.57E-5	5.77E-5
Ozone layer depletion (ODP) (optional)	kg CFC-11 eq	7.14E-7	3.08E-7	2.12E-7	1.64E-7	0	1.62E-8	6.58E-9
Abiotic depletion (optional)	kg Sb eq	2.18E-5	9.9E-6	5.33E-6	1.03E-6	0	1.26E-6	1.22E-7
Abiotic depletion, fossil fuels (opt.)	MJ	1.21E+2	82.34	20.86	13.73	0	1.47	0.58

Analysing 1 p 'LC Golvabia Lightwood 1 m2'; Method: CML version 4.2 / Characterisation

Impact category	Unit	Total	Raw material (A1)	Production (A2-3)	Transport A4	Use B1	Transport C1	Waste C3-C4
Fossil CO2 eq	kg CO2 eq	10.21	7.55	1.55	0.95	0	0.11	0.06
Biogenic CO2 eq	kg CO2 eq	15.16	4.32	1.34	0.01	0	6.88E-4	9.49
CO2 eq from land transformation	kg CO2 eq	0.12	0.12	1.7E-3	3.64E-4	0	4.19E-5	1.41E-5
CO2 uptake	kg CO2 eq	16.63	15.63	1	0.01	0	8.42E-4	4.29E-4

Analysing 1 p 'LC Golvabia Lightwood 1 m2'; Method: Greenhouse Gas Protocol V1.02 / C02 eq (kg) / Characterisation

Results of Maxwood for the total life cycle with the method CML version 4.2 (baseline).

Global warming (GWP100a) as a total of fossil, biogenic and from landtransformation, and CO2 uptake included.

Impact category	Unit	Total	Raw material (A1)	Production (A2-3)	Transport A4	Use B1	Transport C1	Waste C3-C4
Acidification	kg SO2 eq	0,0828	0,0583	0,0076	0,0148	0	0,0004	0,0018
Eutrophication	kg PO4--- eq	0.03	0.02	1.64E-3	1.77E-3	0	1.11E-4	2.52E-3
Global warming (GWP100a)	kg CO2 eq	13.28	10.14	1.5	1.22	0	0.11	0.08
Photochemical oxidation	kg C2H4 eq	0.01	3.83E-3	3.14E-4	5.13E-4	1.78E-3	2.57E-5	7.59E-5
Ozone layer depletion (ODP) (optional)	kg CFC-11 eq	9.13E-7	4.22E-7	2.48E-7	2.11E-7	0	1.62E-8	8.66E-9
Abiotic depletion (optional)	kg Sb eq	2.57E-5	1.31E-5	5.69E-6	1.28E-6	0	1.26E-6	1.61E-7
Abiotic depletion, fossil fuels (opt.)	MJ	1.56E+2	1.11E+2	23.81	17.71	0	1.47	0.76

Analysing 1 p 'LC Golvabia Maxwood 1 m2'; Method: CML version 4.2 / Characterisation

Impact category	Unit	Total	Raw material (A1)	Production (A2-3)	Transport A4	Use B1	Transport C1	Waste C3-C4
Fossil CO2 eq	kg CO2 eq	13.24	10.1	1.74	1.22	0	0.11	0.08
Biogenic CO2 eq	kg CO2 eq	19.47	5.61	1.35	0.01	0	6.88E-4	12.5
CO2 eq from land transformation	kg CO2 eq	0.16	0.16	1.75E-3	4.71E-4	0	4.19E-5	1.86E-5
CO2 uptake	kg CO2 eq	23.45	22.44	1	0.01	0	8.42E-4	5.65E-4

Analysing 1 p 'LC Golvabia Maxwood 1 m2'; Method: Greenhouse Gas Protocol V1.02 / C02 eq (kg) / Characterisation

Use of resources

Lightwood — Natural resources

		Product		Construct	Use	
Parameter	Unit/M	A1	A2-A3	A4	B1	C1, C3-C4
PERE	MJ	88,3	22,5	14,6	0	2,2
PERM	MJ	15,4	0,7	0,4	0	0,1
PERT	MJ	0,3	0,0	0,0	0	0,0
PENRE	MJ	167	7,1	0,1	0	0,0
PENRM	MJ	1,8	7,6	0,0	0	0,0
PENRT	MJ	2,4	0,7	0,2	0	0,0
SM	kg	0	0	0	0	0
RSF	MJ	0	0	0	0	0
NRSF	MJ	0	0	0	0	0
FW	m3	1,7	1,5	0,1	0,0	0,0

MaxWood — Natural resources

		Product		Construct	Use	End of life
Parameter	Unit/M	A1	A2-A3	A4	B1	C1, C3-C4
PERE	MJ	119	25,6	18,8	0	1,6
PERM	MJ	20,9	0,8	0,6	0	0
PERT	MJ	0,4	0,0	0,0	0	0
PENRE	MJ	240	7,1	0,1	0	0
PENRM	MJ	2,4	7,6	0,0	0	0
PENRT	MJ	3,3	0,7	0,2	0	0
SM	kg	0	0	0	0	0
RSF	MJ	0	0	0	0	0
NRSF	MJ	0	0	0	0	0
FW	m3	2,3	1,6	0,1	0,0	0,0

Legend

PERE=Use of renewable primary energy excluding renewable primary energy resources used
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 reso
PENRM=Use of non-renewable primary energy resources used as raw materials
PENRT=Total use of non-renewable primary energy resources
SM=Use of secondary material
RSF=Use of renewable secondary fuel
NRSF=Use of non-renewable secondary fuels
FW=Use of net fresh water

Waste production and output flows

Waste production

Lightwood

		Waste				
		Product		Construct	Use	End of life
Parameter	Unit/M	A1	A2-A3	A4	B1	C1, C3-C4
HWD	Kg	0,000037	0,029	0	0	0
NHWD	Kg	0	0,026	0	0	0
RWD	Kg	0	5,17E-09	0	0	0

Legend
HWD=Hazardous waste disposed;
NHWD=Non-hazardous waste disposed;
RWD=Radioactive waste disposed

MaxWood

		Waste				
		Product		Construct	Use	End of life
Parameter	Unit/M	A1	A2-A3	A4	B1	C1, C3-C4
HWD	Kg	0	0,029	0	0	0
NHWD	Kg	0	0,026	0	0	0
RWD	Kg	0	5,17E-09	0	0	0

Legend
HWD=Hazardous waste disposed;
NHWD=Non-hazardous waste disposed;
RWD=Radioactive waste disposed

Output flows

Lightwood — Outputs, secondary materials and exported energy

		Product		Construct	Use	End of life
Parameter	**Unit/M**	**A1**	**A2-A3**	**A4**	**B1**	**C1, C3-C4**
CRU	Kg	0	0	0	0	0
MFR	Kg	0	0,05	0	0	0
MER	Kg	0	0,3	0	0	6,5
EE	MJ	0,000037	0	0	0	0

Legend	
CRU	Component for reuse *
MFR	Material For Recycling
MER	Material for energy recovery
EE	Exported energy

MaxWood — Outputs, secondary materials and exported energy

		Product		Construct	Use	End of life
Parameter	**Unit/M**	**A1**	**A2-A3**	**A4**	**B1**	**C1, C3-C4**
CRU	Kg	0	0	0	0	0
MFR	Kg	0	0,046	0	0	0
MER	Kg	0	0,254	0	0	0
EE	MJ	0	0	0	0	0

Legend	
CRU	Component for reuse *
MFR	Material For Recycling
MER	Material for energy recovery
EE	Exported energy

Other environmental indicators

Contribution to water scarcity is relevant for products made of wood.

Results of Lightwood for the total life cycle with the method Aware 1.01

Impact category	Unit	Total	Top	Raw material (A1)	Production (A2-3)	Transport A4	Use B1	Transport C1	Waste C3-C4
Water use	m3	15.3	0	1.73	13.19	0.09	0	0.01	0.28

Results of Maxwood for the total life cycle with the method Aware 1.01

Impact category	Unit	Total	Top	Raw material (A1)	Production (A2-3)	Transport A4	Use B1	Transport C1	Waste C3-C4
Water use	m3	16.05	0	2.34	13.21	0.11	0	0.01	0.37

Interpretation of results

The clearest results that can be used as a benchmark with other flooring is Global warming potential, GWP. The additional environmental information is a weighting of the damage on safeguarding objects human health, ecosystem health and natural resources. That results tell us that GWP is relevant, but also particulate emissions that contribute to damage on human health via effect on respiratory organs. Use of land is also relevant as it contributes to negative effects on biodiversity. The use of fossil resources is also a relevant impact category as it effects the availability of natural resources.

Programme-related information and verification

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.

Programme:	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com info@environdec.com
EPD registration number:	S-P-01338
Published:	2018-12-17
Valid until:	2023-12-16
PCR reviewer	IVL Swedish Environmental Research Institute, Swedish Environmental Protection Agency, SP Trä, Swedish Wood Preservation Institute, Swedisol, SCDA, Svenskt Limträ AB, SSAB
Product Category Rules:	1. PCR 2012-01 v2.2 Construction products and construction services, (EN – 15804) 2. WOOD AND WOOD-BASED PRODUCTS FOR USE IN CONSTRUCTION (EN 16485:2014), Sub-PCR to PCR 2012:01 (v2.2), PCR 2012:01-SUB-PCR-E
Product group classification:	UN CPC 31211
Reference year for data:	2017
Geographical scope:	Sweden

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

☐ EPD process certification ☒ EPD verification

Third party verifier: Dr Hüdai Kara, metsims, 4 Clear Water Place, Oxford OX2 7NL, United Kingdom, Ph: +447557351476, info@metsims.com | www.metsims.com

Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier:

☐ Yes ☒ No

References

General Programme Instructions of the International EPD® System. Version 3.0.

PCR 2012-01 v2.2 Construction products and construction services, (EN – 15804)
WOOD AND WOOD-BASED PRODUCTS FOR USE IN CONSTRUCTION (EN 16485:2014), Sub-PCR to PCR 2012:01 (v2.2), PCR 2012:01-SUB-PCR-E

Name of source	Description
EPD-VHI-20130021-IBE1-EN	EPD on HDF by VHI produced by Matthias Schuls
2010 0017 6.0 Pfleiderer Holzwerkstoffe GmbH Norway_Certifikat_English	Nordic ecolabel licens
BVB leverantörsintyg Fanergolv	Signed certificate to Byggvarubedömningen to guarantee no content of restricted chemicals
BVD_Golvabia Fanergolv_171818	Filled in format to Byggvarubedömningen to describe products environmental impacts
Emissiontest_Golvabia_veneerfloor_1505	Test of VOC emissions from the floor during 28 days in a closed chamber. Below limits
EPD_High-density fibreboard (HDF)	EPD on HDF by VHI
GislavedEnergi elmix GoO 2017	Signed certificate regarding mix of electricity sold to Golvabia from Gislaved Energi 2017
Golvabia innehållsdeklarationer_LCA_1802	Declaration of content in the floors Lightwood, Maxwood and Maxwear, 2018
Lightwood declaration of content _1707	Declaration of content in the floor Lightwood 2017
Pfleiderer FSC EN	HDF producers FSC Germany certificate valid until 2022
Sammanställning av inköp på trämaterial_17	List of all purchased wood raw materials to Golvabia 2017, by application, country of origine and certificate.
Roger Davidsson	Production manager Golvabia

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EPD reviewer	Dr. Hudai Kara, Metsims Sustainability Consulting
Programme operator:	EPD International AB

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