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Geographical Scope: Global



An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com.





ENVIRONMENTAL PRODUCT DECLARATION

Engineered Hardwood Flooring 22 mm plank

IN ACCORDANCE WITH ISO 14025:2006 and EN 15804:2012 - A2:2021



Programme
Information

ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product Category Rules (PCR)

Product Category Rules (PCR):

2019:14 Version 1.2.5, 2024-12-20, Construction Products and CPC 54 Construction Services, EN 15804:2012 + A2:2019 Sustainability of Construction Works, c-PCR-006 Wood and wood based products for use in construction (EN 16485)

PCR review was conducted by: The Technical Committee of the International EPD® System. Review chair: Claudia A. Peña, University of Concepción, Chile

EPDs within the same product category but registered in different EPD programmes may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison.

Third-party verification

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

EPD verification by individual verifier

Third party verifier: Prof. Ing. Vladimír Koçí, Ph.D., MBA, LCA Studio Šárecká 5,16000 Prague 6 - Czech Republic

Approved by: The International EPD® System

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

Yes



Forestry Timber Holdings Limited has the sole ownership, liability, and responsibility for this EPD.

The International EPD® System

EPD International AB Box 210 60 SE-100 31 Stockholm, Sweden www.environdec.com

About Forestry Timber

Our company is a family owned business located in Isle of Man. Our business was established in 1991 under Forestry Timber Environment Consult. Over the past 32 years we have developed a global reputation for quality, service and innovation. Our unique combination of cuttingedge technology and hand craftsmanship creates bespoke 3-layered engineered hardwood flooring (parguet) that is in high demand for residential, retail and commercial spaces around the world. Our Sales Directors span the globe and are recognised for their expertise and experience in hardwood flooring. Each Director offers a deep knowledge of their regional market, understands client expectations and is at the forefront of international trends. This ensures our clients, who include multinational franchises, developers and small to medium-sized suppliers, receive the best-fit solution for the needs of their individual markets. Forestry Timber Holdings Limited currently showcases eleven distinctive Collections which provide a choice of more than a thousand colours and finish options in planks which are:

- Individually hand-crafted
- Available in up to six widths 145 400 mm
- Quick and easy to install
- Client-ready within 24 hours
- Scientifically developed core creates strength and accommodates temperature extremes
- Suitable for underfloor heating
- Splash proof and easy to maintain
- International certified and planet friendly product
- A long term investment that adds value to your home or commercial space

All Forestry Timber Holdings Limited flooring comes with a 25 year manufacturer's warranty on residential and five year warranty on commercial installations. Our dedicated production facility is located in Sumatra, Indonesia. Over 2,000 timber workers and craftsmen are

employed at the 20-hectare site which houses every aspect of the manufacturing process from receiving raw material imports from Europe through to shipping.

Forestry Timber Holdings Limited has five brands, each appealing to different markets and offering many marketing advantages. Our flooring collections are not locked into any one brand. Rather, we give our clients full flexibility of their choice of wood flooring options. Our world-recognised and registered brands are Elyseum Fertigparkett, Floorart Parquetry, Sienna Parquetry, Timbertop and Woodline Parquetry.

Forestry Timber Holdings Limited is experienced in managing high-volume demand whilst meeting client expectations. We are an environmentally responsible company. All our raw materials are legally harvested from sustainably managed forests and meet stringent global regulations. Our manufacturing and quality process are certified to the highest international standards by the following bodies of compliance:

CE - European Norm standards (EN 13489:2002E) for Parquet France - VOC "Emissions dans l'air interieur California – CARB Phase2 USA – FloorScore certification USA - No added Formaldehyde Indonesia - SVLK/FLEGT Certified Earn BREEM® Credits LEED® V4.1 FSC® & PEFC™ available on request Blue Angel

About the Product

As opposed to a traditional solid timber floor, our engineered hardwood flooring utilises cutting-edge technology to create a great looking, multi-layered, low maintenance floor that will last a lifetime.

The top layer of a Forestry Timber floor is made from a species of your choice with a huge selection of colours and finishes to choose from. Our Collections include carefully selected, legally harvested wood from Western Europe, Australia, South East Asia and Brazil. Once sourced, this wood is hand graded for quality, tone, pattern and form. The next step in the process is surface treatment with a tough protective anti-scratch coating to ensure optimum durability.

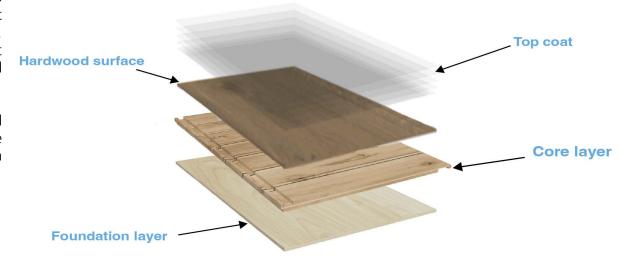
In the centre of our floor is Forestry Timber's scientifically developed Hevea Core which is constructed from a tree known for its strength, Hevea Brasiliensis. Our core technology uses multiple staves of Hevea in a scientifically formulated pattern to create a highly stable core that is less likely to expand, contract or move when exposed to moisture, humidity and temperature. This is the key to ensuring our engineered wood flooring out performs all other construction formats, lasts a lifetime and makes a great option for every room in the house.

The final foundation layer acts as a balancing agent and contributes to the durability and stability of the floor. We source the medium density hardwood needed for the base from renewable plantations in Indonesia.

Composition of the Product

Product Component	Weight, %	Biogenic Content, kg C/kg
Wood	94-98	100
Adhesive	1-2	0
Additives	<1	0

From foundation to precious hardwood surface each individual layer of our engineered flooring is best in-class. Together the result is unparalled.



Technical Specifications

PLANK SPECIFICATION	TEST METHOD	SINGLE PLANK 145mm	SINGLE PLANK 190mm	SINGLE PLANK 240mm	SINGLE PLANK 290mm	SINGLE PLANK 340mm	SINGLE PLANK 400mm		
Length		1820mm ± 5mm	1820mn	n, 2130mm, 2	2450mm ±5mm	2450mm ± 5mm	3000mm ± 5mm		
Width	EN 13489	145mm ± 0.2mm	190mm ± 0.2mm	240mm ± 0.2mm	290mm ± 0.2mm	340mm ± 0.2mm	400mm ± 0.2mm		
Total thickness Top Layer			,	m or 22mm ± 6.02mm ± 0.2			nm ± 0.2mm mm ± 0.2mm		
Total thickness Top Layer				20mm ± 0.21 n ± 0.2mm	nm				
Squareness	EN 13489		≤0.2% Over the width						
Cup	EN 13489		≤0.2% Over the width						
Spring	EN 13489				≤0.1% Over the	length			
Lipping	EN 13489				≤0.2mm				
Moisture Content	EN 13183-1			7%	± 2% (at the time	of delivery)			
Adhesive	EN 717-1				JAPAN F☆☆☆	☆~ EO			
Finishing	EN 13696 : 2008 SIS				>800 Revolu	tion			
	ASTM D4060 CS 17		>5000 Revolution						
Gloss Value	ISO 2813, 60° angle		5%, 10% or 30% gloss level ± 3%						
Formaldehyde Emission	ASTM D 5116			NO	ADDED FORM	ALDEHYDE			

System Boundary

A1: Raw Material Supply

Initial raw material for Forestry Timber is wood. The company sources Hevea Brasiliensis (rubberwood) and Sengon wood from local plantations (in Indonesia) and imports Oak from Western Europe.

A2: Transportation

All raw materials are transported to and within the plant. The transport distances and routes are calculated based on information provided by the manufacturer for 2022.

A3: Manufacturing

The Production process starts at the sawmills with hardwood, which is cut to size dimensions then connected with adhesive followed by colouring and finishing processes.

A4: Transport

Transport of the final product to customers is considered and the routes and distances are calculated accordingly. Transport routes were provided by the manufacturer for 2022.

A5: Installation

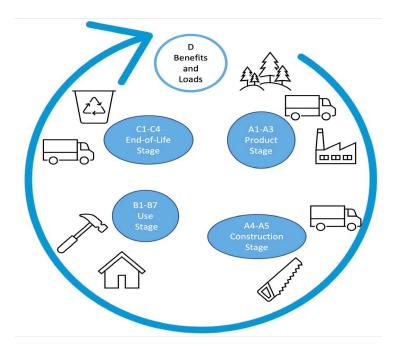
The installation method mainly used is tongue and groove. Tongue and groove refers to the traditional installation method of a 'tongue' which juts out on one side of the board and an indented 'groove' on the other side. An alternative installation method is 5G click for floating floors. Plank cutting consumes 2kWh/m2 of electricity.

C1: Demolition

A total of 0.323 MJ electricity was assumed for the deconstruction of 1 kg of material (Gervasio et al., 2018).

C2: Transport

This step includes the transportation of materials after they reach their end-of-life. The average distance by truck was assumed as 25 km from the demolition site to a disposal or recycling area.



C3: Waste Processing

The product is recycled (50 % of product as input), incinerated with energy recovery (35% and partly landfilled (15 %). The landfill and incineration do not require any additional processes. However, recycling includes sorting wood panels and wood chipping.

C4: Disposal

Forestry Timber's products may be disposed of with any disposal scenario in their end-of-life phase and modelled accordingly for this EPD. It is assumed that 50% of the waste is used in recycling, 35% of the waste is used as raw material for incineration plants due to their high calorific value and 15% of the waste sent to landfill sites.

D: Future Reuse, Recycling or Energy Recovery Potentials

Post-consumer recycling scenarios are considered, 50 % of waste product is recycled to secondary wood and 35 % is incinerated to generate energy.

LCA Information

Functional / Declared Unit

The declared unit is 1 m² of Engineered Wood Flooring 22 mm

REACH Regulation

No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in this product either above the threshold for registration with the European Chemicals Agency or above 0.1% (wt/wt)

System Boundary

Cradle to gate with options, modules C1-C5, module D and with optional modules (A1-A3 + A4 + A5 + C + D) modules).

Cut-off Rules

1% cut-off is applied. Data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts have been included.

Background Data

For all LCA modelling and calculation, Ecoinvent database (v3.9.1) and SimaPro (v9.5) LCA software were used.

LCA Modelling, Calculation and Data Quality

The results of the LCA with the indicators as per EPD requirements are given in the LCA result tables. All energy calculations were obtained using Cumulative Energy Demand (LHV) methodology, while freshwater use is calculated with selected inventory flows in SimaPro according to the PCR. There are no co-product allocations within the LCA study underlying this EPD. The regional energy datasets were used for all energy calculations.

Period Under Review

The data used for LCA study concerns the year 2022.

Allocations

Energy consumption and raw material transportation were weighted according to 2022 production figures. In addition, hazardous and non-hazardous waste amounts were also allocated from the total waste generation in 2022.

LCA Information

		Product Stage	:	Pro	ruction cess ige		Use Stage					End of Life Stage			Benefits and Loads		
	Raw Material Supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction / Demolition	Transport	Waste Processing	Disposal	Future reuse, recycling or energy recovery potentials
Module	Α1	A2	A3	A4	A5	В1	B2	В3	В4	B5	В6	В7	C1	C2	C3	C4	D
Modules Declared	X	X	Χ	Х	X	-	-	-	-	-	-	-	X	X	X	X	Х
Geography	GLO	GLO	ID	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO
Specific Data Used			>90%	•		-	-	-	-	-	-	-	-	-	-	-	-
Variation - Products	0%			-	-	-	-	-	-	-	-	-	-	-	-		
Variation - Sites		0%			-	-	-	-	-	-	-	-	-	-	-	-	

(X = Module included)

LCA Results

Impact Category	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP - Fossil	kg CO₂ eq	1,56E+01	1,31E+00	2,51E+00	1,65E+00	2,98E-01	1,18E-01	1,15E-01	-7,39E+00
GWP - Biogenic	kg CO₂ eq	-2,75E+01	-2,71E-04	1,95E-02	1,28E-02	1,13E-04	1,64E+00	3,64E-04	-3,42E+00
GWP - Luluc	kg CO₂ eq	7,34E-02	1,01E-03	3,78E-03	2,49E-03	1,53E-04	4,74E-05	2,27E-04	-6,79E-04
GWP - Total	kg CO ₂ eq	-1,18E+01	1,31E+00	2,53E+00	1,67E+00	2,98E-01	1,75E+00	1,15E-01	-1,08E+01
ODP	kg CFC-11 eq	1,66E-07	1,98E-08	1,24E-08	8,17E-09	5,07E-09	7,72E-10	6,76E-10	-1,39E-07
AP	mol H+ eq	1,06E-01	3,90E-02	1,30E-02	8,58E-03	8,17E-04	3,73E-04	5,61E-04	-6,25E-03
*EP - Freshwater	kg P eq	2,31E-02	4,36E-05	4,52E-03	2,97E-03	2,50E-05	3,46E-05	4,75E-05	-2,30E-04
EP - Marine	kg N eq	3,13E-02	9,75E-03	3,50E-03	2,30E-03	2,15E-04	3,88E-03	1,14E-04	-1,68E-03
EP - Terrestrial	mol N eq	2,91E-01	1,08E-01	2,84E-02	1,87E-02	2,22E-03	1,06E-03	1,16E-03	-1,80E-02
POCP	kg NMVOC	8,37E-02	2,91E-02	7,92E-03	5,22E-03	1,18E-03	8,01E-04	3,42E-04	-1,32E-02
ADPE	kg Sb eq	1,51E-05	1,27E-06	7,95E-06	5,23E-06	8,35E-07	1,36E-07	1,10E-07	-6,89E-06
ADPF	MJ	1,68E+02	1,60E+01	2,52E+01	1,66E+01	4,50E+00	7,46E-01	1,38E+00	-1,04E+02
WDP	m³ depriv.	2,04E+00	3,61E-02	3,21E-01	2,12E-01	2,29E-02	2,60E-02	1,83E-02	-1,10E-01
PM	disease inc.	1,87E-06	3,84E-08	0,00E+00	1,25E-07	2,94E-08	4,86E-09	5,40E-09	-1,56E-08
IR	kBq U-235 eq	6,92E-02	7,71E-03	5,49E-03	3,61E-03	4,13E-03	2,75E-03	1,12E-02	-3,09E-02
ETP - FW	CTUe	1,49E+02	1,58E+01	1,75E+01	1,15E+01	4,78E+00	1,11E+01	5,89E-01	-9,19E+00
HTTP - C	CTUh	9,99E-09	1,13E-09	1,10E-09	7,25E-10	2,65E-10	1,40E-10	8,41E-11	-2,45E-09
HTTP - NC	CTUh	2,96E-07	9,26E-09	5,45E-08	3,59E-08	6,53E-09	6,37E-09	1,95E-09	-3,10E-08
SQP	Pt	1,08E+04	1,19E+00	7,17E-01	4,72E-01	4,56E+00	1,30E+00	2,21E-01	-5,95E+01
GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics - particulate matter, IR: lonising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality.									
Legend	Δ1: Raw Material Supply Δ2: Transport Δ3: Manufacturing Δ4: Transport C1: Deconstruction / demolition C2: Transport C3: Waste Processing C4: Disposal D: Future								
Disclaimer 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.								
Disclaimer 2	The results of this enviro	onmental impact indi	cator shall be used	with care as the	uncertainties on the	ese results are high or	as there is limited	experienced with	the indicator.

Resource use									
Impact Category	Unit	A1-A3	A4	A5	C1	C2	С3	C4	D
PERE	MJ	8,28E+02	1,78E-01	1,03E+00	6,76E-01	9,27E-02	6,83E-02	1,88E-01	1,10E+01
PERM	MJ	7,61E-06	1,27E-06	7,95E-06	5,23E-06	8,35E-07	1,10E-07	-6,89E-06	0,00E+00
PERT	MJ	8,28E+02	1,78E-01	1,03E+00	6,76E-01	9,27E-02	6,83E-02	1,88E-01	1,10E+01
PENRE	MJ	1,89E+02	1,72E+01	2,86E+01	1,88E+01	4,84E+00	7,99E-01	1,47E+00	-1,09E+02
PENRM	MJ	0,00E+00	0,00E+00						
PENRT	MJ	1,89E+02	1,72E+01	2,86E+01	1,88E+01	4,84E+00	7,99E-01	1,47E+00	-1,09E+02
SM	kg	0,00E+00	0,00E+00						
RSF	MJ	0,00E+00	0,00E+00						
NRSF	MJ	0,00E+00	0,00E+00						
FW	m³	7,55E-02	1,41E-03	1,28E-02	8,44E-03	9,19E-04	6,75E-04	4,81E-04	-6,00E-03

Acronyms

PERE: Use of renewable primary energy excluding resources used as raw materials, PERM: Use of renewable primary energy resources used as raw materials, PERM: Use of renewable primary energy, PENRE: Use of non-renewable primary energy excluding resources used as raw materials, PENRM: Use of non-renewable primary energy resources used as raw materials, PENRT: Total use of non-renewable primary energy, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water.

Waste & Output Flows									
Impact Category	Unit	A1-A3	A4	A5	C1	C2	С3	C4	D
HWD	kg	4,11E-03	0,00E+00						
NHWD	kg	7,34E+00	0,00E+00						
RWD	kg	0,00E+00							
CRU	kg	0,00E+00							
MFR	kg	0,00E+00							
MER	kg	0,00E+00							
EE (Electrical)	MJ	0,00E+00							
EE (Thermal)	MJ	0,00E+00							
Acronyms	Acronvms HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER:								

Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, Thermal

Climate impa	ct								
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
*GHG-GWP	kg CO, eq	1,62E+01	1,31E+00	2,52E+00	1,66E+00	2,99E-01	1,36E+00	1,15E-01	-7,41E+00

Legend

GWP-GHG = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology

* The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013

Glossary of Terms

Global Warming Potential, GWP	Global warming is a concept expressing warming of the atmosphere leading to climate change. One of the human activities which has the greatest effect on global warming is the burning of fossi fuels such as petroleum, coal and natural gas. In LCA, global warming is expressed in terms of the equivalent weight of carbon dioxide (CO ₂) emitted.
Ozone Depletion Potential, ODP	Ozone layer depletion is a concept expressing the reduction of ozone in the stratosphere and depletion of the ozone layer (the 'ozone hole') as a consequence of emissions of man-made resources such as CFCs, HCFCs, chlorine, bromine, etc. Damage to the ozone layer reduces its ability to preven UV light entering the earth's atmosphere, increasing the amount of carcinogenic UVB light hitting the earth's surface. In LCA, ozone layer depletion is expressed in terms of the equivalent weight of CFC-11 emitted.
Acidification Potential, AP	Acidification is an impact category expressing the toxic impact that acidifying substances have or soil, underground water-courses, ground water, organisms, ecosystems and materials. Reaction o acidic gases with water in the atmosphere creates 'acid rain'. The formation of acid rains cause a reduction in biodiversity. In LCA, acidification is expressed in terms of the equivalent weight o sulphur dioxide (SO ₂) emitted.
Eutrophication Potential, EP	It is an abnormal proliferation of vegetation in the aquatic ecosystems caused by the addition of nutrients into rivers, lakes or ocean which determinates a lack of oxygen. The eutrophication potential is mainly influenced by emission into water of phosphates and nitrates. Its occurrence car lead to damage to ecosystems, increasing mortality of aquatic fauna and flora and to loss of specie that are dependent on low-nutrient environments. In LCA, EP is expressed in mass of P eq.
Formation potential of tropospheric ozone photochemical oxidants, POCP	POCP is the formation of reactive substances (mainly ozone) which are injurious to human health and ecosystems and which also may damage crops. This problem is also indicated with "summer smog" In LCA, POCP is expressed in kg $\rm C_2H_4$ eq.
Abiotic Depletion Potential, ADP	In LCA, resource depletion is one of the impact categories expressing how much of the world' natural resources (petroleum, iron ore, etc.) are used up. It has global, regional and local aspects o impact and expresses the amount of mineral/ fossil fuel used. In LCA, fossil and non-fossil resource depletion are expressed in terms of the MJ and Sb eq. respectively.

References

/ISO 9001:2015/ Quality Management Systems

/ISO 50001:2018/ Energy Management Systems

/GPI/ General Programme Instructions of the International EPD® System. Version 4.0.

/ISO 14020:2000/ Environmental Labels and Declarations — General principles

/EN 15804:2012+A2:2019/ Sustainability of construction works - Environmental Product Declarations — Core rules for the product category of construction products

/ISO 14025/ DIN EN ISO 14025:2009-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures

/ISO 14040/44/ DIN EN ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006)

/PCR for Construction Products and Construction Services/ Prepared by IVL Swedish Environmental Research Institute, Swedish Environmental Protection Agency, SP Trä, Swedish Wood Preservation Institute, Swedisol, SCDA, Svenskt Limträ AB, SSAB, The International EPD System, 2019:14 Version 1.11 DATE 2019-12-20

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/Ecoinvent / Ecoinvent Centre, www.ecoinvent.org

/SimaPro/ SimaPro LCA Software, Pré Consultants, the Netherlands, www.pre-sustainability.com

/EXIOBASE3/exiobase/exoiobase.eu

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