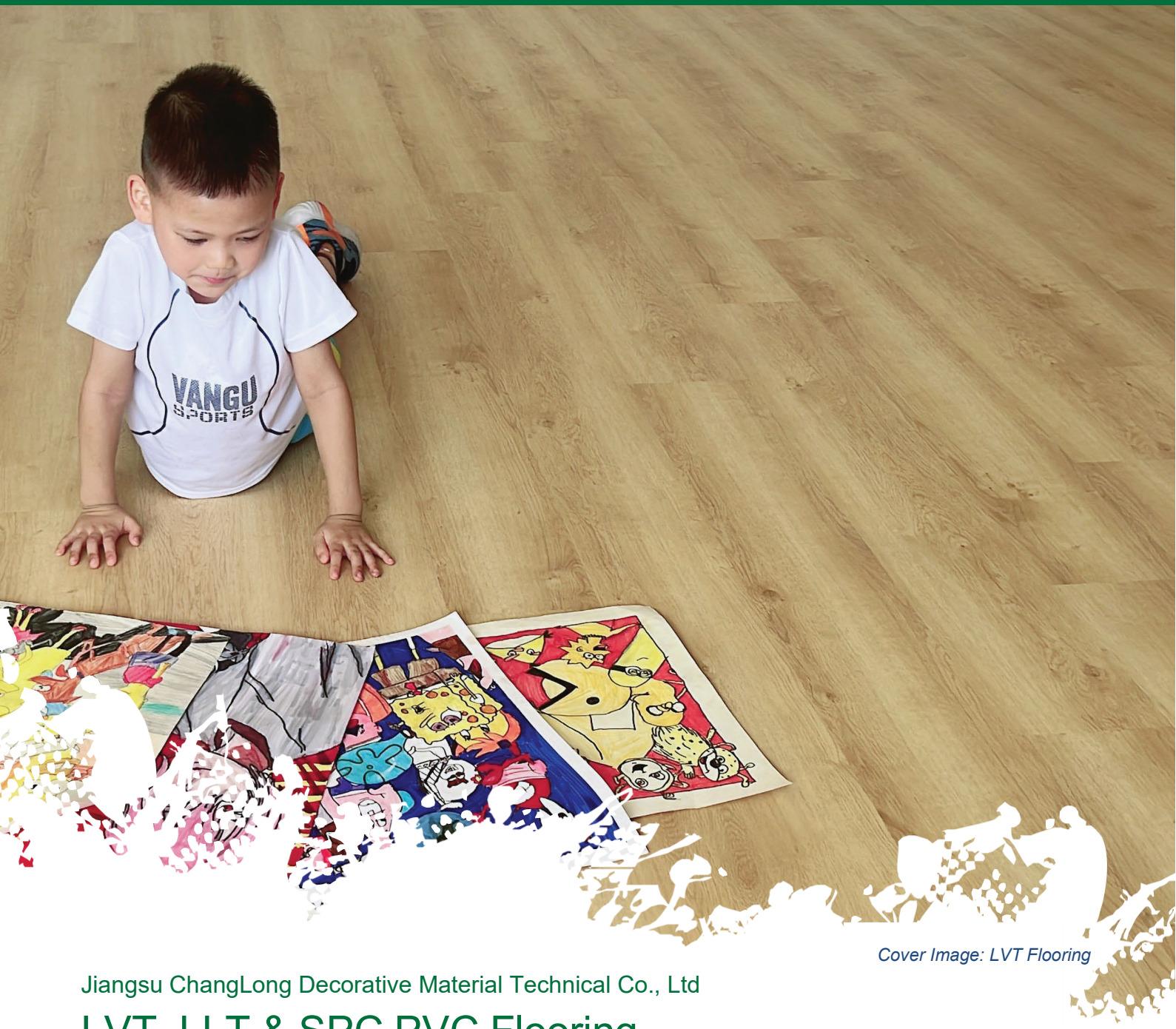
GLOBAL GREEN TAG INTERNATIONAL PTY LTD Level 38/71 Eagle St, Brisbane, OLD, 4000, Australia

EPD™

Environmental Product Declaration

in accordance with ISO 14025 and EN 15804



Cover Image: LVT Flooring

Jiangsu ChangLong Decorative Material Technical Co., Ltd

LVT, LLT & SPC PVC Flooring

Company Address:	No.168, BaiChuan Road, Hai'An City, Jiangsu Province, China
Issue Date:	02 August 2024
Valid to:	02 August 2029
Document Version:	1.0
Revision Date:	02 August 2024

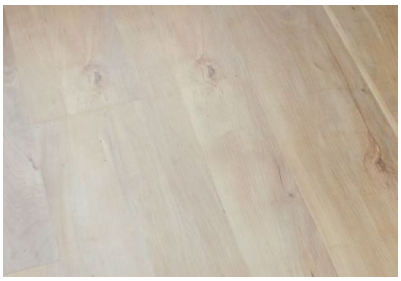
ECO PLATFORM

ECO PLATFORM EPD VERIFIED

Environmental Product Declaration Details

EPD Type	Cradle to Gate with modules C1–C4 and module D (A1–A3, C and D)
EPD Number	JDC:FL01:2024:EP
Issue Date	02 August 2024
Valid Until	02 August 2029
GPI Version	Version 2.1

Product Image



LVT Flooring

Demonstration of Verification	
PCR	CEN Standard EN 15804+A2 2019 serves as core Product Category Rules (PCR). Sub-PCR FC:2022 V1 Interior Floor Coverings V1
☑ ***Internal***	2024.02.08 LCA Developed by AnKang, Chengdu IKE Environmental Technology Co., Ltd. 2024.08.02 EPD Reviewed by Dr Nana Bortsie-Aryee, Global GreenTag International
☑ ***External***	2024.08.01 Third Party Verifier. Direshni Naiker, Gaia Conscious Consulting
Verification	Independent external verification of the declaration and data, mandatory for business-to-consumer communication according to ISO 14025:2010.
Communication	This EPD discloses potential environmental outcomes compliant with EN 15804 for business-to-business communication.
Comparability	EPD of construction products may not be comparable if they do not comply with EN 15804. Different program EPDs may not be comparable. Comparability is further dependent on the product category rules and data source used.
Reliability	LCIA results are relative expressions that do not predict impacts on category endpoints, exceeding of thresholds, safety margins or risks.
Owner	This EPD is the property of the declared manufacturer.
Explanations	Further explanatory information is available at info@globalgreentag.com or by contacting epd@globalgreentag.com.

EPD Program Operator	***LCA and EPD Producer***	***Declaration Owner***
Global GreenTag International Pty Ltd	IKE Environmental Technology Co. Ltd.	Jiangsu ChangLong Decorative Material Technical Co., Ltd
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Program Description

EPD Scope	Cradle to gate with options (A1 to A3, C1-C4 and D)
EPD Type	EPD based on specific site and product data
System boundary	The system boundary with nature includes processing material and energy system inputs, transport to factory gate, manufacturing plus packing, waste disposal, as well as waste removal and waste disposal after the expiration of product life.
Stages included	A1-A3, C1-C4, D
Stages excluded	A4-A5, B1-B7
Information Modules	Figure 1 depicts all modules being declared including some with zero results. Any module not declared (MND) does not indicate a zero result.

Model	Actual					Scenarios											Potential
Information	Life Cycle Assessment												Supplementary				
Stages	Product			Construct		Use							End-of-Life				Benefit & load beyond system
Modules						Fabric					Operation						
Unit Operations	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Cradle to grave phases	Resources	Transport	Manufacture	Transport	Construct	Use	Maintain	Repair	Replace	Refurbish	Energy Use	Water use	Demolish	Transport	Process Waste	Disposal	Reuse
Modules Declared	✓	✓	✓	ND	ND	ND	ND	ND	ND	ND	ND	ND	✓	✓	✓	✓	✓

Note: ND = Module not declared ✓= included

Figure 1 EPD Life Cycle Modules Cradle to Grave

Product Information

General Information

Brand Name & Code	CHANGLONG PVC flooring
Range Names	LVT, LLT, SPC flooring
Factory warranty	10-20 Years
Geographical Area	China
Application	Indoor flooring
Function in Building	Flooring covering
Reference Service Life	10 Years
Declared Unit	3.8 kg of LVT interior floor covering per square metre covered in any building sectors cradle to gate. 8.2 kg of SPC interior floor covering per square metre covered in any building sectors cradle to gate. 9.4 kg of LLT interior floor covering per square metre covered in any building sectors cradle to gate.
Manufacturer Warranty	10-20 Years
Manufacturing Site	No.168, Baichuan Road, Haian City, Jiangsu Province, P.R.China
Site Representation & Geography	Jiangsu, China
Substances Of Very High Concern	None

Test Reports

Standard/Certification	Status	Last Date Completed
EN 13501-1:2018 Fire	B_{fl}-s1, passed	Apr 12, 2023
ISO 8301:1991 Thermal Conductivity and Thermal Resistance	<0.05 m^2K/W, passed	Apr 11, 2023
EN 717-1:2004 Formaldehyde Emission (In air)	0.080 mg/m^3	Apr 14, 2023
BS EN 14041:2018 Annex B & EN12673:1999 Pentachlorophenol (PCP)	0.1 mg/kg	Apr 11, 2023
ASTM E 648-19ae1 Critical Radiant Flux	Min. 1.1W/cm^2 (Class I > 0.45W/cm2), passed	Apr 11, 2023
ASTM E662-21ae1 Smoke Density	Smoke density of <450	Apr 11, 2023
EN ISO 26987:2012 Determination of Staining and Resistance to Chemical	Index 0 (Not affected, passed)	May 31, 2024
EN ISO 105-B02:2014 Colour Fastness to Light	≥6, passed	Jun 05, 2024

	ISO 4918:2016+Amd.1:2018 Castor Chair Test	No visible damage after 25000 cycles	May 31, 2024
	EN 1815:2016 Method A Static electricity propensity	<=2.0KV, passed	May 31, 2024
	BS 7976-2:2002+A1:2013 Slip Test	KT 2.0 #19 emboss Dry 60, Wet 32	May 31, 2024
	DIN EN 16165:2023-02 Annex B Slip Test	KT 2.0 #19 emboss R9 (9.7 drgree)	May 31, 2024
	EN 14372:2004 Diisononyl Phthalate (DINP)	0.010%	Jun 11, 2024
	EN 71-3:2019+A1:2021 Migration of certain elements	Passed	Jun 11, 2024
	SGS In-House method SVHC Test	SVHC ≤ 0.1%(w/w), passed	Jun 11, 2024
	ISO 16000-9:2006 / Cor1:2007	TVOC, SVOC not detectable	Jul 05, 2024
	EN 660-2:1999+A1:2003 Wear Resistance	Passed, Group T	May 31, 2024

Table 1 LVT resilient flooring specifications

Attribute	Comment	Date
Density	1800 kg/m^3	2024.02
Product thickness	2mm	
Product weight	3.8 kg/m2	

Table 2 SPC resilient flooring specifications

Attribute	Comment	Date
Density	2000 kg/m^3	2024.02
Product thickness	4mm	
Product weight	8.2 kg/m^2	

Table 3 LLT resilient flooring specifications

Attribute	Comment	Date
Density	1900 kg/m^3	2024.02
Product thickness	5mm	
Product weight	9.4 kg/m^2	

Note: Specifications are current at time of publishing. Please check currency of specifications with manufacturer.

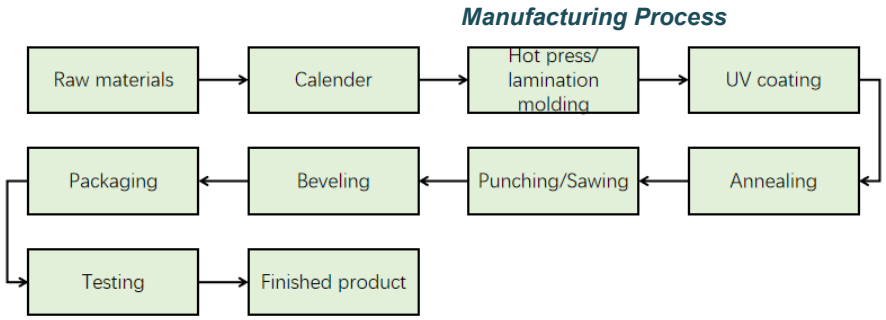

Figure 2. LVT&LLT resilient flooring Cradle to Gate System Boundary

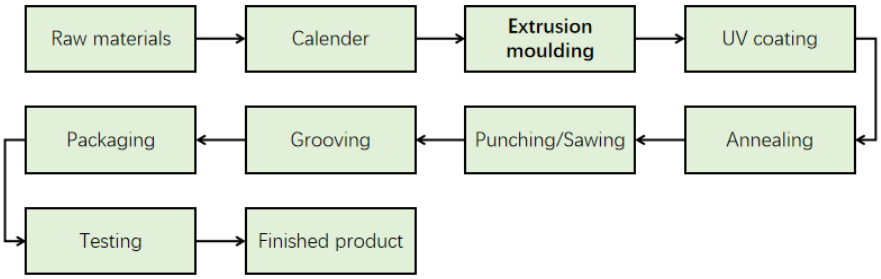

Figure 3. SPC resilient flooring Cradle to Gate System Boundary

Product Components

In product content listed below the % mass has a ±5% range and a confidence interval that is 90% certain to contain true population means at any time. Listing such 90±5% certainty considers normal resource acquisition, supply chain, sedimentation, seasonal, manufacturing and product colour variation over this EPD's 5-year validity period. This also allows for intellectual property protection whilst ensuring fullest possible transparency.

Table 4 List of key components and additives by function, type, key operation, source and amount

Function	Component	Source	Amount
Fillers	$CaCO_3$	China	50-75%
Binder	PVC	Taiwan, China	35-45%
Plasticizer	DOTP	China	10-15%
Backing	PRINTING FILMS	China	0-5%
Backing	Glass fiber (only for LLT flooring)	China	0-5%
Stabilizer	Calcium stearate	China	0-5%
Pigment	Carbon black	China	0-5%
Pigment	UV Lacquer.	China	0-5%
Packing			
Pallet	Wood pallet	China	55-60%
Cardboard caps	Cardboard box	China	35-40%
PET	PET Wrapping Film and Strapping	China	0-5%

Program Description

Product Stages Included	A1 Raw material supply Raw material acquisition, extraction, refining and processing Electricity generated from all sources with extraction, refining & transport A2 Transport internal and to the factory gate A3 Manufacture of product, co-products and plus packaging Production of ancillary material System flows leaving at end-of-waste boundary allocated as co-products C1 Deconstruction demolition C2 Transport to waste processing C3 Waste processing for reuse, recovery and/or recycling C4 Disposal D Reuse, recovery and/or recycling potentials, expressed as net impacts and benefits.
Cut off criteria	In this study, waste transport during the production phase is not considered, as the volume of waste is small and the transport distance is less than 100km. Since the system boundary of this study does not include the CONSTRUCTION PROCESS STAGE of A4-A5, the final disposal of the packaging was not considered in the study.
Data collection Year	2023
Background Data	Table 5
Allocations Method	For production stage allocation be distinguished between multi-input and multi-output processes - Multi-input processes: Allocation is based on physical properties and is based on weight. For example, a variety of products flooring products are produced in one factory. The consumption of the target products is obtained by dividing the total annual production weight of each product by the total weight of all the products produced in the factory, obtaining the weight ratio of target product, and then multiplying by the total data. - Multi-output processes: The production process generates economically valuable co-products, and its price is very different from the price of the target product (the difference about 13 times), so economic allocation is used for the co-products. Other outputs, such as solid waste, etc. follow mass allocation. No allocation is required for products at end-of-life.

Scenario Modelling Assumption	Stage A - production stage: 1. The raw material Stabilizer (calcium stearate) was used in the production of 3 PVC flooring in an amount of less than 1% which was not in the background database, so they were substituted with stearic acid from Econinvent database. 2. According to Changlong's statement, the subsequent disposal of the Off cut generated in the production stage is usually to landfill, but in Changlong's plant the Off cut is directly reused by the production line instead of being disposed of in a landfill, which is a typical closed loop, so there is no need to make any allocation. On the other hand, theoretically, the environmental benefits of not disposing to landfill should be considered, but here according to EN 15804 section 6.3.5.2, 'Therefore, as a general rule, potential loads or benefits from A1-A3 do not appear in module D.' and to be conservative, the benefits of Off cut reuse and subsequent landfill avoidance are not considered in this study. Stage C - end of life: it is assumed that the product be deconstructed manually and transported from building site to waste processing is 161 km (100 miles) by diesel-powered truck (unspecified). Stage D - benefits and loads beyond the system boundary: PVC flooring is typically not reused or recycled following removal from a building. Thus, reuse, recycling, and energy recovery are not applicable for this product.

Table 5 Data sources for LVT, LLT, SPC flooring

Component	Material Description	Material Dataset	Data Source	Publication Date
LVT, LLT, SPC flooring				
PVC	polyvinyl chloride	polyvinylchloride production, suspension polymerisation	EI 3.9.1	2022
Filler	calcium carbonate stone powder	calcium carbonate, precipitated	EI 3.9.1	2022
Stabilizer	calcium stearate	stearic acid	EI 3.9.1	2022
UV LACQUER	polyurethane acrylic resin	acrylic varnish production, with water, in 53% solution state	EI 3.9.1	2022
DOTP	dioctyl terephthala	market for dioctyl terephthalate	EI 3.9.1	2022
Pigment	carbon black	market for carbon black	EI 3.9.1	2022
Pigment Paste	pigment mixture	market for toner, colour, powder	EI 3.9.1	2022
Printing films	polypropylene film	polypropylene production, granulate	EI 3.9.1	2022
Glass fibre	glass fibre	market for glass fibre	EI 3.9.1	2022
Packing				
Cardboard caps	cardboard	market for folding boxboard carton	EI 3.9.1	2022
Wooden pallet	wood	market for furniture, wooden	EI 3.9.1	2022
PET	PET wrapping film and strapping	polyethylene terephthalate production, granulate, bottle grade	EI 3.9.1	2022

Transportation				
Transportation of raw and auxiliary materials	truck transportation	Transport, freight, lorry, unspecified	EI 3.9.1	2022
Transportation of waste flooring	truck transportation	transport, freight, lorry, unspecified	EI 3.9.1	2022
Energy				
Grid Electricity for producing	Electricity production, transmission	East China power grid, transmission to the user	CLCD 0.9	2020
Solar Electricity for producing	Factory self-generated solar electricity production, transmission	electricity production, photovoltaic, 570kWp open ground installation, multi-Si	EI 3.9.1	2022
Natural gas for producing	Natural gas	Natural gas acquisition	CLCD 0.9	2020
Steam for producing	0.8MPa steam	Steam (1Mpa, 183°C) production	CLCD 0.9	2020
Diesel oil for warehouse forklifts	Diesel oil	Diesel oil acquisition (Market average)	CLCD 0.9	2020
Waste treatment				
Landfilled floor	flooring	treatment of waste plastic, mixture, sanitary landfill	EI 3.9.1	2022
Hazardous waste	spray tower sludge, cloth and gloves containing color paste, etc.	market for hazardous waste, for underground deposit	EI 3.9.1	2022

Data Quality Assessment

The data quality assessment addressed the following parameters: time-related coverage, geographical coverage, technological coverage, precision, completeness, representativeness, consistency, reproducibility, sources of data, and uncertainty.

Table 6 Data quality assessment for the Product Name product system

Data Quality Parameter	Data Quality Discussion
Time-Related Coverage: Age of data and the minimum length of time over which data is collected	The most recent available data are used, based on other considerations such as data quality and similarity to the actual operations. Typically, these data are less than 2 years old (typically 2022). Manufacturer-supplied data (primary data) are based on half annualized production for 2023.
Geographical Coverage: Geographical area from which data for unit processes is collected to satisfy the goal of the study	The data used in the analysis provides the best possible representation available with current data. Electricity use for product manufacture is modeled using representative data for China. Surrogate data used in the assessment are representative of global or rest of world operations. Data representative of rest of world operations are considered sufficiently similar to actual processes.
Technology Coverage: Specific technology or	For the most part, data is representative of the actual technologies used for processing, transportation, and manufacturing operations.

technology mix	Representative fabrication datasets, specific to the type of material, are used to represent the actual processes, as appropriate.
Precision: Measure of the variability of the data values for each data expressed	All relevant foreground data is primary data, which is collected from on-site reviewing and supported by professional data input document. The activity data of the enterprise are all from enterprise statistics or on-site measured data, with high precision.
Completeness: Percentage of flow that is measured or estimated	The LCA model included all known mass and energy flows for production of 3 PVC flooring. No known processes or activities contributing to more than 1% of the total environmental impact for each indicator are excluded.
Representativeness: Qualitative assessment of the degree to which the data set reflects the true population of interest	In this study, for all background processes representative primary data input based on specific industry averages which derived from reliable databases and the data input for foreground processes all obtained from on-site product related precise investigation. Considerable deviation may exist among actual processes on a site-specific basis; however, such a determination would require detailed data collection throughout the supply chain back to resource extraction.
Consistency: Qualitative assessment of whether the study methodology is applied uniformly to the various components of the analysis	In order to figure out that the LCA methodology can be uniformly applied or not, various component's qualitative assessment is conducted. The primary data input provided by manufacturers is re-checked and recalculated.
Reproducibility: Qualitative assessment of the extent to which information about the methodology and data values would allow an independent practitioner to reproduce the results reported in the study	Based on the description of data and assumptions used, this assessment would be reproducible by other practitioners. All assumptions, models, and data sources are documented.
Sources of the Data: Description of all primary and secondary data sources	Data representing energy use, raw and auxiliary material consumption, and emissions, etc. at CHANGLONG's facility in China represent an annual average and are considered of high quality due to the length of time over which these data are collected. For secondary LCI datasets, Ecoinvent v3.9.1 and CLCD 0.9 LCI data are used.
Uncertainty of the Information: Uncertainty related to data, models, and assumptions	Uncertainty related to materials in the 3 PVC flooring product is low. Actual supplier data for upstream operations was not available for all suppliers and the study relied upon the use of existing representative datasets. These datasets contained relatively recent data (<4 years).

LCA Scenarios

End of Life stages (C1 - C4, D)

At the end of life, for 3 PVC products, no emissions are generated during demolition (C1) while no waste processing (C3) is required for landfill disposal. Transportation of waste materials at end-of-life (C2) assumes a 161 km (100 miles) average distance to disposal. No recycling of the product

materials is assumed at end-of-life.

Table 7 C1-C4 and D Scenario Information

Processes	Unit	LVT Scenario Value	SPC Scenario Value	LLT Scenario Value
Collection process by type	kg collected separately	3.8	8.2	9.4
	kg collected with mixed construction waste	0	0	0
Recovery system by type	Kg for re-use	0	0	0
	Kg for recycling	0	0	0
	Kg for energy recovery	0	0	0
Safe disposal	Kg or product or material for final disposal	3.8	8.2	9.4
transportation	km	161	161	161

Additional Technical Information

The environmental impact category indicators are also reported based on the CML-IA characterization factors according to EN15804.
No substances required to be reported as hazardous (as determined under the Resource Conservation and Recovery Act (RCRA (EPA, n.d.)) are associated with the production of flooring.
Please visit https://www.changlongflor.com for additional information regarding product.

Additional Environmental Information

The flooring products in this EPD comply with the Indoor Air Comfort GOLD requirements. Low VOC cleaning materials are available for use in maintaining flooring.

Product Results

Table 8 LCA impact indicators, resource use, waste and other measured flows

Acronyms, methods and units of impact potentials plus inventory inputs and outputs, are defined below:

Impact Potentials	Acronym	Description of Methods	Units
Climate Change biogenic	GWP_{bio}	GWP biogenic [7]	kg CO_{2eq}
Climate Change luluc	GWP_{luluc}	GWP land use & change [7]	kg CO_{2eq}
Climate Change fossil	GWP_{ff}	GWP fossil fuels [7]	kg CO_{2eq}
Climate Change total	GWP_{t}	Global Warming Potential [7]	kg CO_{2eq}

Stratospheric Ozone Depletion	ODP	Stratospheric Ozone Loss [8]	kg CFC_{11eq}
Photochemical Ozone Creation	POCP	Summer Smog [9]	kg NMOC $_{eq}$
Acidification Potential	AP	Accumulated Exceedance [10]	mol H^+ $_{eq}$
Eutrophication Freshwater	EP $_{fresh}$	Excess nutrients freshwater [11]	kg Po_4 $_{eq}$
Eutrophication Marine	EP $_{marine}$	Excess marine nutrients [11]	kg N $_{eq}$
Eutrophication Terrestrial	EP $_{land}$	Excess Terrestrial nutrients [11]	mol N $_{eq}$
Mineral & Metal Depletion[1]	ADP $_{min}$	Abiotic Depletion minerals [12]	kg Sb $_{eq}$
Fossil Fuel Depletion[1]	ADP $_{ff}$	Abiotic Depletion fossil fuel [13]	MJ $_{ncv}$
Water Depletion[1]	WDP	Water Deprivation Scarcity [14,15]	m^3 $_{WDP\ eq}$
Particulate Matter Emissions	PM	SETAC-UNE [26]	Disease incidence
Ionizing Radiation, Human Health[2]	IRP	Human health effect model [27]	kBq U235 eq
Eco-toxicity (freshwater)[1]	ETP-fw	USEtox [28]	CTUe
Human toxicity, cancer effects[1]	HTP-c	USEtox [28]	CTUh
Human toxicity, non-cancer effects[1]	HTP-nc	USEtox [28]	CTUh
Land use related impacts/ Soil quality[1]	SQP	Soil quality index	dimensionless

Resource Use	**Acronym**	**Units**
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ_{NCV}
Use of renewable primary energy resources used as raw materials	PERM	MJ_{NCV}
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	PERT	MJ_{NCV}
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ_{NCV}
Use of non-renewable primary energy resources used as raw materials	PENRM	MJ_{NCV}

[1] The results of this environmental impact indicator shall be used with care as uncertainties on these results are high or as there is limited experience with the indicator.
[2] 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.

Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	PENRT	MJ_{NCV}
Use of secondary material	SM	kg
Use of renewable secondary fuels	RSF	MJ_{NCV}
Use of non-renewable secondary fuels	NRSF	MJ_{NCV}
Use of net fresh water	FW	m3
Waste Type	**Acronym**	**Units**
Hazardous waste disposed	HWD	kg
Non-hazardous waste disposed	NHWD	kg
Radioactive waste disposed	RWD	kg
Other Outputs	**Acronym**	**Units**
Components for re-use	CRU	kg
Materials for recycling	MFR	kg
Materials for energy recovery	MER	kg
Exported energy	EE	Mj_{pec}

Note: MJ_{NCV} is MJ, net calorific value, Mj_{pec} is Mj, per energy carrier

Cradle to Gate + modules C1–C4 and module D Inventory

Table 9 Inventory Resource Use Results/1 m2-LVT flooring

		Product stage	End of life stage				Resource recovery stage
		A1-A3	C1	C2	C3	C4	D
Module Codes	Unit	Production	De-construction demolition	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling
GWP-total	kg CO2 eq	1.12E+01	0.00E+00	5.83E-02	0.00E+00	3.85E-01	0.00E+00
GWP-luluc	kg CO2 eq	7.61E-03	0.00E+00	3.04E-05	0.00E+00	3.75E-05	0.00E+00
GWP-biogenic	kg CO2 eq	2.13E-02	0.00E+00	1.59E-05	0.00E+00	3.05E-05	0.00E+00
GWP-fossil	kg CO2 eq	1.12E+01	0.00E+00	5.82E-02	0.00E+00	3.85E-01	0.00E+00
ADP-fossil	MJ, net calorific value	1.94E+02	0.00E+00	8.37E-01	0.00E+00	1.00E+00	0.00E+00
ADP-minerals & metals	kg Sb eq.	7.96E-05	0.00E+00	1.81E-07	0.00E+00	1.03E-07	0.00E+00
EP-freshwater	kg P eq.	1.93E-03	0.00E+00	4.83E-06	0.00E+00	6.77E-06	0.00E+00
POCP	kg NMVOC eq.	3.50E-02	0.00E+00	3.82E-04	0.00E+00	5.36E-04	0.00E+00
AP	mol H+eq.	4.82E-02	0.00E+00	2.77E-04	0.00E+00	3.45E-04	0.00E+00
EP-terrestrial	mol N eq	9.77E-02	0.00E+00	1.12E-03	0.00E+00	1.32E-03	0.00E+00
EP-marine	kg N eq.	9.22E-03	0.00E+00	1.05E-04	0.00E+00	8.13E-03	0.00E+00
ODP	kg CFC 11 eq.	4.83E-06	0.00E+00	9.01E-10	0.00E+00	1.07E-09	0.00E+00
WDP	m3 world eq	3.16E+00	0.00E+00	4.09E-03	0.00E+00	6.00E-03	0.00E+00

See table 8 for additional information

Table 2 Inventory Resource Use Results/1 m2-LLT flooring

		Product stage	End of life stage				Resource recovery stage
		A1-A3	C1	C2	C3	C4	D
Module Codes	Unit	Production	De-construction demolition	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling
GWP-total	kg CO2 eq	2.69E+01	0.00E+00	1.44E-01	0.00E+00	9.53E-01	0.00E+00
GWP-luluc	kg CO2 eq	1.83E-02	0.00E+00	7.51E-05	0.00E+00	9.29E-05	0.00E+00
GWP-biogenic	kg CO2 eq	5.05E-02	0.00E+00	3.92E-05	0.00E+00	7.54E-05	0.00E+00
GWP-fossil	kg CO2 eq	2.68E+01	0.00E+00	1.44E-01	0.00E+00	9.53E-01	0.00E+00
ADP-fossil	MJ, net calorific value	4.63E+02	0.00E+00	2.07E+00	0.00E+00	2.48E+00	0.00E+00
ADP-minerals & metals	kg Sb eq.	2.22E-04	0.00E+00	4.48E-07	0.00E+00	2.55E-07	0.00E+00
EP-freshwater	kg P eq.	4.64E-03	0.00E+00	1.20E-05	0.00E+00	1.67E-05	0.00E+00
POCP	kg NMVOC eq.	8.42E-02	0.00E+00	9.46E-04	0.00E+00	1.33E-03	0.00E+00
AP	mol H+eq.	1.16E-01	0.00E+00	6.86E-04	0.00E+00	8.52E-04	0.00E+00
EP-terrestrial	mol N eq	2.36E-01	0.00E+00	2.78E-03	0.00E+00	3.27E-03	0.00E+00
EP-marine	kg N eq.	2.22E-02	0.00E+00	2.59E-04	0.00E+00	2.01E-02	0.00E+00
ODP	kg CFC 11 eq.	1.14E-05	0.00E+00	2.23E-09	0.00E+00	2.64E-09	0.00E+00
WDP	m3 world eq	7.54E+00	0.00E+00	1.01E-02	0.00E+00	1.48E-02	0.00E+00

See table 8 for additional information

Table 3 Inventory Resource Use Results/1 m2-SPC flooring

		Product stage	End of life stage				Resource recovery stage
		A1-A3	C1	C2	C3	C4	D
Module Codes	Unit	Production	De-construction demolition	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling
GWP-total	kg CO2 eq	2.26E+01	0.00E+00	1.26E-01	0.00E+00	8.32E-01	0.00E+00
GWP-luluc	kg CO2 eq	1.60E-02	0.00E+00	6.55E-05	0.00E+00	8.10E-05	0.00E+00
GWP-biogenic	kg CO2 eq	4.47E-02	0.00E+00	3.42E-05	0.00E+00	6.58E-05	0.00E+00
GWP-fossil	kg CO2 eq	2.25E+01	0.00E+00	1.26E-01	0.00E+00	8.31E-01	0.00E+00
ADP-fossil	MJ, net calorific value	3.97E+02	0.00E+00	1.81E+00	0.00E+00	2.17E+00	0.00E+00
ADP-minerals & metals	kg Sb eq.	1.68E-04	0.00E+00	3.91E-07	0.00E+00	2.23E-07	0.00E+00
EP-freshwater	kg P eq.	4.08E-03	0.00E+00	1.04E-05	0.00E+00	1.46E-05	0.00E+00
POCP	kg NMVOC eq.	7.16E-02	0.00E+00	8.25E-04	0.00E+00	1.16E-03	0.00E+00
AP	mol H+eq.	9.77E-02	0.00E+00	5.99E-04	0.00E+00	7.43E-04	0.00E+00
EP-terrestrial	mol N eq	1.97E-01	0.00E+00	2.42E-03	0.00E+00	2.85E-03	0.00E+00
EP-marine	kg N eq.	1.86E-02	0.00E+00	2.26E-04	0.00E+00	1.75E-02	0.00E+00
ODP	kg CFC 11 eq.	1.02E-05	0.00E+00	1.94E-09	0.00E+00	2.30E-09	0.00E+00
WDP	m3 world eq	6.66E+00	0.00E+00	8.82E-03	0.00E+00	1.29E-02	0.00E+00

See table 8 for additional information

Table 4 Optional Indicators -LVT flooring

		Product stage	End of life stage				Resource recovery stage
		A1-A3	C1	C2	C3	C4	D
Module Codes	Unit	Production	De-construction demolition	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling
ETP-fw	CTUe	5.09E+01	0.00E+00	4.56E-01	0.00E+00	1.90E+00	0.00E+00
HTP-c	CTUh	9.70E-09	0.00E+00	3.07E-11	0.00E+00	2.88E-11	0.00E+00
HTP-nc	CTUh	7.44E-07	0.00E+00	6.52E-10	0.00E+00	1.05E-09	0.00E+00
SQP	dimensionless	4.77E+01	0.00E+00	6.23E-01	0.00E+00	2.21E+00	0.00E+00
PM	Disease incidence	2.41E-06	0.00E+00	5.61E-09	0.00E+00	6.96E-09	0.00E+00
IRP	kBq U235 eq	4.90E-01	0.00E+00	7.46E-04	0.00E+00	1.57E-03	0.00E+00

See table 8 for additional information

Table 5 Optional Indicators -LLT flooring

		Product stage	End of life stage				Resource recovery stage
		A1-A3	C1	C2	C3	C4	D
Module Codes	Unit	Production	De-construction demolition	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling
ETP-fw	CTUe	1.21E+02	0.00E+00	1.13E+00	0.00E+00	4.71E+00	0.00E+00
HTP-c	CTUh	2.32E-08	0.00E+00	7.58E-11	0.00E+00	7.12E-11	0.00E+00
HTP-nc	CTUh	1.77E-06	0.00E+00	1.61E-09	0.00E+00	2.59E-09	0.00E+00
SQP	dimensionless	1.13E+02	0.00E+00	1.54E+00	0.00E+00	5.46E+00	0.00E+00
PM	Disease incidence	5.71E-06	0.00E+00	1.39E-08	0.00E+00	1.72E-08	0.00E+00
IRP	kBq U235 eq	1.18E+00	0.00E+00	1.85E-03	0.00E+00	3.89E-03	0.00E+00

See table 8 for additional information

Table 6 Optional Indicators -SPC flooring

		Product stage	End of life stage				Resource recovery stage
		A1-A3	C1	C2	C3	C4	D
Module Codes	Unit	Production	De-construction demolition	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling
ETP-fw	CTUe	1.02E+02	0.00E+00	9.84E-01	0.00E+00	4.10E+00	0.00E+00
HTP-c	CTUh	1.90E-08	0.00E+00	6.62E-11	0.00E+00	6.21E-11	0.00E+00
HTP-nc	CTUh	1.40E-06	0.00E+00	1.41E-09	0.00E+00	2.26E-09	0.00E+00
SQP	dimensionless	9.69E+01	0.00E+00	1.34E+00	0.00E+00	4.77E+00	0.00E+00
PM	Disease incidence	4.54E-06	0.00E+00	1.21E-08	0.00E+00	1.50E-08	0.00E+00
IRP	kBq U235 eq	1.01E+00	0.00E+00	1.61E-03	0.00E+00	3.39E-03	0.00E+00

See table 8 for additional information

Table 7 Resource Use and other environmental flows -LVT

		Product stage	End of life stage				Resource recovery stage
		A1-A3	C1	C2	C3	C4	D
		Production	De-construction demolition	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling
Resource Use	**Unit**						
PERE	MJ_{NCV}	8.98E+00	0.00E+00	2.08E-02	0.00E+00	1.10E-02	MNR
PERM	MJ_{NCV}	5.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
PERT	MJ_{NCV}	1.40E+01	0.00E+00	2.08E-02	0.00E+00	1.10E-02	MNR
PENRE	MJ_{NCV}	1.36E+02	0.00E+00	1.00E+00	0.00E+00	8.37E-01	MNR
PENRM	MJ_{NCV}	5.80E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
PENRT	MJ_{NCV}	1.94E+02	0.00E+00	1.00E+00	0.00E+00	8.37E-01	MNR
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
RSF	MJ_{NCV}	3.82E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
NRSF	MJ_{NCV}	2.68E+01	0.00E+00	4.86E-01	0.00E+00	0.00E+00	MNR
FW	m^3	5.06E-02	0.00E+00	5.35E-05	0.00E+00	1.56E-04	MNR
Waste	**Unit**						
HWD	kg	6.70E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR

NHWD	kg	4.72E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
RWD	kg	5.17E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
Outputs	**Unit**						
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
MFR	kg	4.60E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
EE	M_{jpec}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR

See table 8 for additional information

Table 8 Resource Use and other environmental flows -LLT

		Product stage	End of life stage				Resource recovery stage
		A1-A3	C1	C2	C3	C4	D
		Production	De-construction demolition	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling
Resource Use	**Unit**						
PERE	MJ_{NCV}	2.14E+01	0.00E+00	2.71E-02	0.00E+00	5.14E-02	MNR
PERM	MJ_{NCV}	1.19E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
PERT	MJ_{NCV}	3.33E+01	0.00E+00	2.71E-02	0.00E+00	5.14E-02	MNR
PENRE	MJ_{NCV}	3.24E+02	0.00E+00	2.07E+00	0.00E+00	2.48E+00	MNR
PENRM	MJ_{NCV}	1.39E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
PENRT	MJ_{NCV}	4.63E+02	0.00E+00	2.07E+00	0.00E+00	2.48E+00	MNR
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
RSF	MJ_{NCV}	9.43E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
NRSF	MJ_{NCV}	6.64E+01	0.00E+00	1.20E+00	0.00E+00	0.00E+00	MNR
FW	m^3	1.22E-01	0.00E+00	1.32E-04	0.00E+00	3.86E-04	MNR
Waste	**Unit**						
HWD	kg	1.87E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
NHWD	kg	1.17E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
RWD	kg	5.17E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
Outputs	**Unit**						
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
MFR	kg	1.14E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
EE	M_{jpec}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR

See table 8 for additional information

Table 9 Resource Use and other environmental flows -SPC

	Product stage	End of life stage				Resource recovery stage
	A1-A3	C1	C2	C3	C4	D
	Production	De-construction demolition	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling
Resource Use	**Unit**					
PERE	MJ_{NCV}	1.78E+01	0.00E+00	2.36E-02	0.00E+00	4.48E-02	MNR
PERM	MJ_{NCV}	1.07E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
PERT	MJ_{NCV}	2.85E+01	0.00E+00	2.36E-02	0.00E+00	4.48E-02	MNR
PENRE	MJ_{NCV}	2.74E+02	0.00E+00	1.81E+00	0.00E+00	2.17E+00	MNR
PENRM	MJ_{NCV}	1.23E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
PENRT	MJ_{NCV}	3.97E+02	0.00E+00	1.81E+00	0.00E+00	2.17E+00	MNR
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
RSF	MJ_{NCV}	7.34E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
NRSF	MJ_{NCV}	5.17E+01	0.00E+00	1.05E+00	0.00E+00	0.00E+00	MNR
FW	m^3	1.01E-01	0.00E+00	1.15E-04	0.00E+00	3.37E-04	MNR
Waste	**Unit**						
HWD	kg	1.78E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
NHWD	kg	1.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
RWD	kg	3.07E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
Outputs	**Unit**						
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
MFR	kg	1.14E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR
EE	M_{jpec}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MNR

See table 8 for additional information

Table 18 Biogenic Carbon at Factory Gate (A1-A3)

Biogenic Carbon	*Unit*	*LVT*	*SPC*	*LLT*
Biogenic carbon content in product	*Kg C*[3]	0	0	0
Biogenic carbon content in accompanying	*Kg C*	0.309375	0.6788	0.7587

[3] 1 kg biogenic carbon is equivalent to 44/12 kg of CO2.

Interpretation

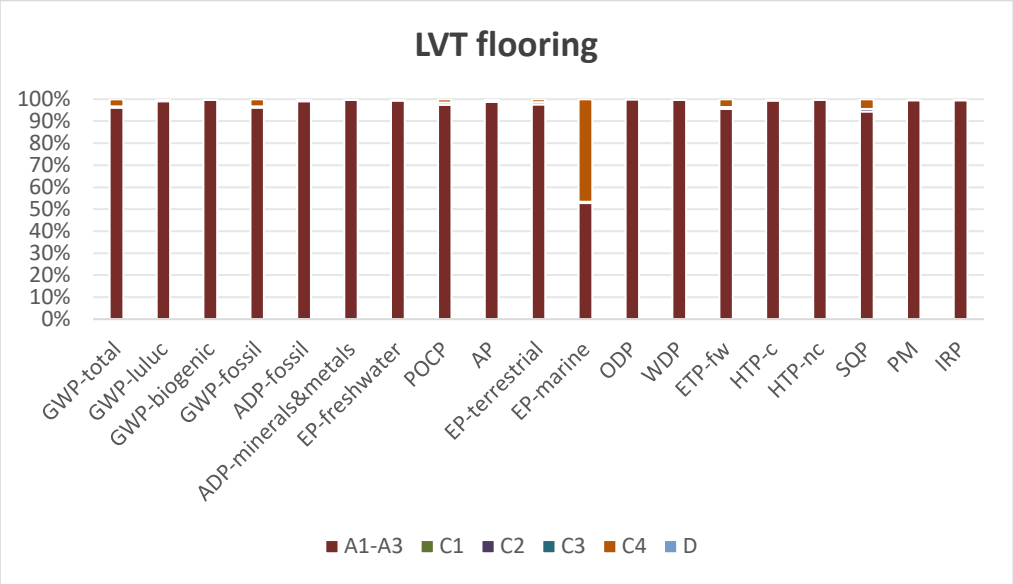

Figure 4. LVT flooring each stage contribution to LCA results

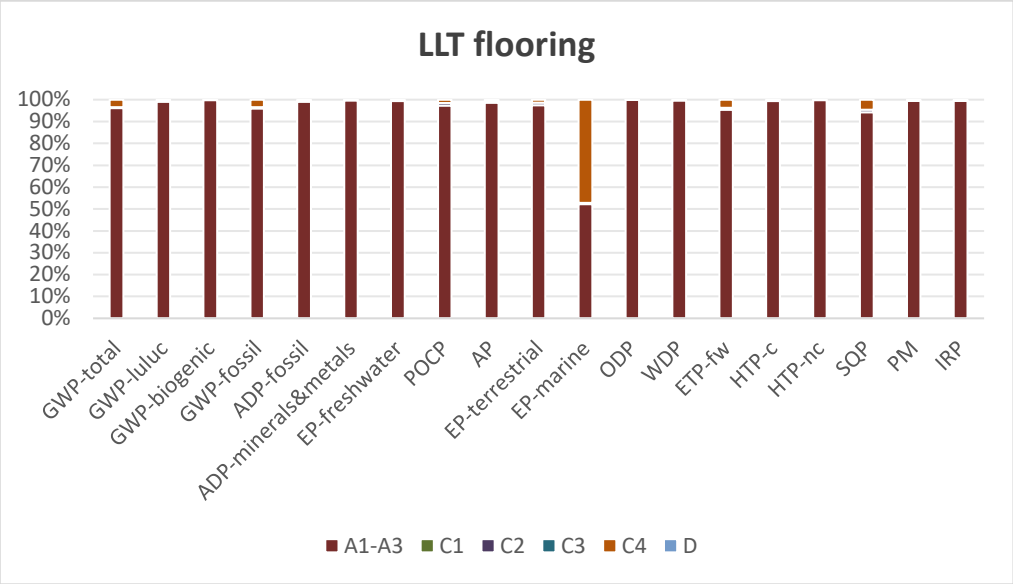

Figure 5. LLT flooring each stage contribution to LCA results

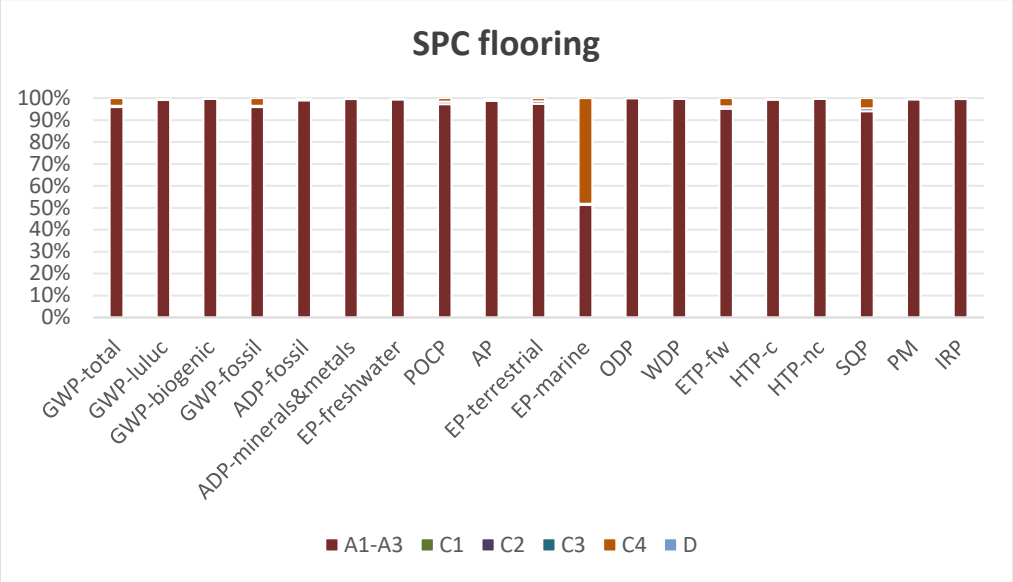

Figure 6. SPC each stage contribution to LCA results

For the indicator EP-marine, the high contribution of the C4 phase compared to other indicators is due to direct emissions such as total organic carbon during waste disposal (treatment of waste plastic, mixture, sanitary landfill).

The wastewater generated from the used water is divided into two parts. One part needs to be discharged after WWT wastewater treatment, and the other part is directly discharged into the municipal wastewater system. Therefore this part is not included in the inventory.

The LCA study has been carried out based on available data, information, regional and global knowledge and experience to achieve more possible accuracy, completeness and representative of the results.

References for this EPD

1. Ecoinvent, Switzerland.Ecoinvent database. http://www.ecoinvent.org/
2. EN 15804:2012+A2:2019: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products, CEN
3. ISO 14025:2006 Environmental labelling & declarations Type III EPDs Principles & procedures ISO 14031:1999 EM: Environmental performance evaluation: Guidelines
4. ISO 14040:2006: Life cycle assessment (LCA): Principles & framework
5. ISO 14044:2006: LCA: Requirement & guideline for data review: LCI; LCIA, Interpretation results
6. Global GreenTag International. Product Category Rules. Sub-PCR FC:2022 V1 Interior Floor Coverings V1.http://www.globalgreentag.com/greentag-epd-program
7. Global GreenTag International. General Program Instructions Version 2.1. http://www.globalgreentag.com/greentag-epd-program
8. Product Environmental Footprint Category Rules Guidance, Version 6.3, May 2018
9. IKE, 2012a. Chinese Life Cycle Database-CLCD accessed in March 2015 <http://www.ike-global.com/products-2/chinese-lca-database-clcd>