

Environmental Product Declaration



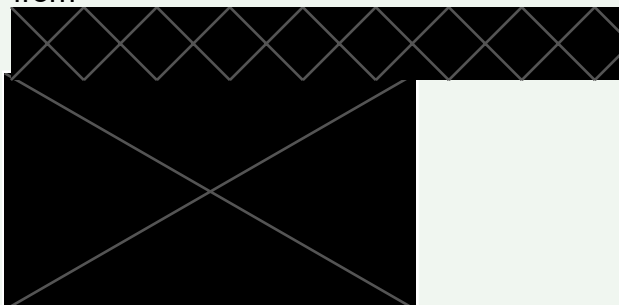
THE INTERNATIONAL EPD® SYSTEM



EPD of multiple products, based on representative product
In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021

SPC/VSPC/LVT Flooring

products listed on page 4
from



Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	EPD-IES-0015235
Publication date:	2024-11-29
Valid until:	2029-11-28

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





General information

Programme information

Programme: The International EPD® System
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Box 210 60
Address: SE-100 31 Stockholm
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Website: www.environdec.com
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Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product Category Rules (PCR): PCR 2019:14 Construction products Version 1.3.4 [valid until: 2025-06-20].

PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.

Life Cycle Assessment (LCA)

LCA accountability: Si Huang, IVL Swedish Environmental Research Institute

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 individual verifier: Matthew Fishwick, Fishwick Environmental Ltd

Approved by: The International EPD® System

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

☐ Yes ☒ No

[Procedure for follow-up the validity of the EPD is at minimum required once a year with the aim of confirming whether the information in the EPD remains valid or if the EPD needs to be updated during its validity period. The follow-up can be organized entirely by the EPD owner or together with the original verifier via an agreement between the two parties. In both approaches, the EPD owner is responsible for the procedure being carried out. If a change that requires an update is identified, the EPD shall be re-verified by a verifier]

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, 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. For further information about comparability, see EN 15804 and ISO 14025.

The results of the end-of-life stage (module C) should be considered when using the results of the production stage (modules A1-A3).

Company information

Owner of the EPD:

Contact: Anne Kandel

Address: Scheuten-Solar-Straße 2; 45881 Gelsenkirchen; GERMANY

Description of the organisation:



Product-related or management system-related certifications:

ISO 9001

ISO14001

CONFORMITE EUROPEENNE

Floorscore

TÜV PROFiCERT-product Interior certification

Name and location of production sites:

Fujan Province, China.

Fujan Province, China.

Jiangsu Province, China.

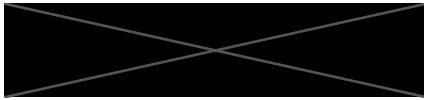
Product information

Product name:

SPC/VSPC/LVT Flooring

Table 1 Product list covered in this EPD

Product group	Products included in the group
SPC products	Length: 470-3000 mm
	Width: 110-1200 mm
	Thickness: 4.2-10 mm (including backing layer 1mm or 1.5 mm or 2 mm)
VSPC products	Length: 470-1900 mm
	Width: 90-190 mm
	Thickness: 6.1-10 mm (including wood/bamboo surface 0.6-1.2 mm, and backing layer 1mm or 1.5 mm or 2 mm)
LVT products	Length: 228.6-1828.8 mm
	Width: 76.2-914.4 mm
	Thickness: 2-5 mm (including wear layer 0.07-0.7 mm)



Product description:



SPC/VSPC/LVT Flooring products in this EPD are a type of vinyl flooring product, made primarily from polyvinyl chloride (PVC), calcium carbonate (limestone), plasticizers, additives (such as stabilizers, lubricants, foaming agent, etc.). It is composed of one clear PVC embossed wear layer, a decor layer or solid wood veneer with a final UV coating, substrate layer for structural strength and stability, and may include a backing layer (such as IXPE, EVA or Cork) to improve acoustic performance and increase comfort underfoot. The product is waterproof, and easy to install and maintain.

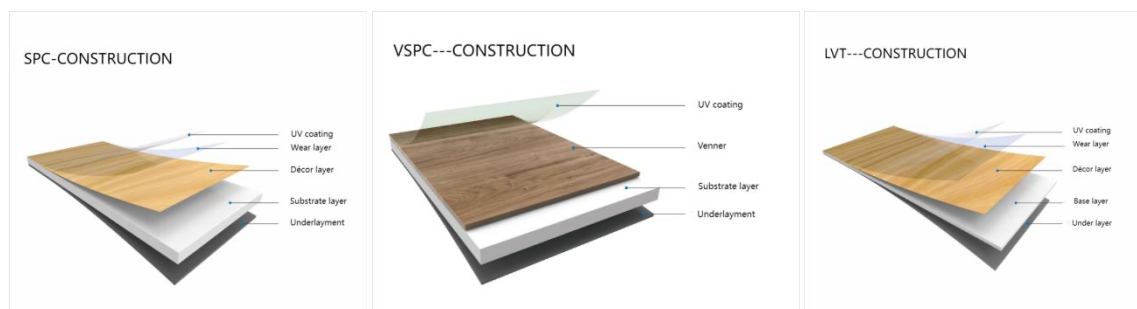


Figure 1 Picture of SPC/VSPC/LVT products

Structure composition (top to down) of the three product groups are listed below:

SPC: UV coating (UV paint), wear layer (PVC), decor layer (PVC), substrate layer (calcium carbonate powder+PVC+paraffin), underlayment (PE foam);

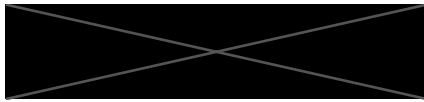
VSPC: UV coating (UV paint), veneer or bamboo layer, substrate layer (calcium carbonate powder+PVC+paraffin), underlayment (PE foam)

LVT: UV coating (UV paint), wear layer (PVC), decor layer (PVC), substrate layer (base layer in the picture) (calcium carbonate powder+PVC), underlayment (PE foam)

This EPD is an EPD of multiple products, based on representative product. 1 m²*2.5 mm LVT is selected as the representative product, because it has the largest sales demand among all the three groups of products in this EPD (around 62%). The performance of all the products included is shown in the table below.

Table 2 Product property indicators

Properties	Standard	Values		
		SPC	LVT	VSPC
Dimensional stability and curling	ISO 23999:2021	Average -	Average -	Average ≤



		0.05%	0.04%	0.5%
Colour fastness to artificial light	ISO 105-B02	Grade 6	Grade 6	Grade 6
Abrasion resistance	EN 13329	>4000 cycles, AC4	>4000 cycles, AC4	/
Micro-scratch resistance (Procedure A)	EN 16094	MSR-A1	MSR-A1	MSR-A1
Micro-scratch resistance (Procedure B)	EN 16094	MSR-B2	MSR-B2	MSR-B2
Effect of a furniture leg	EN 424:2001	No visible damage	No visible damage	No visible damage
Castor chair resistance	EN 425:2002	≥ 25000 cycles	≥ 25000 cycles	≥ 25000 cycles
Thickness swelling	ISO 24336	0.04%	0.03%	
Locking strength	ISO 24334	L ≥ 4 kN/m S ≥ 5 kN/m	/	L ≥ 4 kN/m S ≥ 5 kN/m
Resistance to staining	EN 438-2:2016+A1:2018, Section 26	Grade 5	Grade 5	Grade 5
Residual indentation(mm)	EN ISO 24343-1:2012	0.28	0.07	0.12
Resistance to burning cigarette	EN 1399:1997, Method B	Rating 5	Rating 5	Rating 5
Resistance to impact by large diameter ball	EN 13329:2006+A1:2008, Annex F	Pass	Pass	Pass
Phthalate content test	EN 14372	Not detected	Not detected	Not detected
Heavy metal migration	EN 71-3:2019+A1:2021	Not detected	Not detected	Not detected
SVHC	REACH	Not detected	Not detected	Not detected
IIC	ASTM E492-09	54	/	/
STC	ASTM E90-2009	53	/	/
Slip resistance	DIN 51130	Rating 10	Rating 10	Rating 10
Thermal conductivity(W/m • K)	EN 14041:2004/AC:2006	0.13	0.075	/
Thermal resistance(m2 • K)/W	EN 12667:2001	0.031	0.034	/
Dynamic coefficient of friction	EN 13893:2002	Class DS	Class DS	Class DS
Formaldehyde content test	EN 14041:2004/AC:2006& EN 717-1:2004	ND	ND	0.002 ppm
Content of pentachlorophenol (PCP)	EN 14041:2004/AC:2006 Annex B and EN 12673:1999	ND	ND	ND
The body voltage	EN 1815:2016, Method A	0.8 kV	0.1 kV	0.8 kV
Fire reaction	EN 13501-1:2018&ASTM E648	Bfl-S1	Bfl-S1	Class I

Table 3 Product content per declared unit of the representative product

Product components	Weight, kg	Post-consumer material, weight-% of whole product	Biogenic material, kg C/declared unit
Calcium carbonate powder	1.261	0.00%	0.000
Polyvinyl chloride (PVC) powder	2.502	0.00%	0.000
Diocetyl terephthalate	0.404	0.00%	0.000
Calcium zinc stabilizer	0.023	0.00%	0.000
Carbon black	0.005	0.00%	0.000
Paint	0.010	0.00%	0.000
PVC Color film	0.099	0.00%	0.000
TOTAL	4.304	0.00%	0.000
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/declared unit
Corrugated Box	0.123	1.83%	0.051
PE film	0.004	0.02%	0.000



Plastic belt	0.002	0.04%	0.000
Wood pallet	0.170	1.66%	0.100
TOTAL	0.298	3.55%	0.151

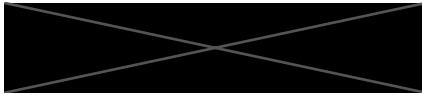
Table 4 Content declaration of the rest products in this EPD

Product components	Portion in mass
Veneer/bamboo	0.00%-7.54%
Calcium carbonate powder	16.76%-31.42%
Polyvinyl chloride (PVC) powder	55.67%-65.16%
Paraffin	0.00%-11.23%
Diethyl terephthalate	0.00%-12.05%
Calcium zinc stabilizer	0.00%-0.60%
Carbon black	0.00%-0.14%
Paint	0.11%-0.28%
PVC wear layer	0.00%-3.98%
PVC Color film	1.10%-2.81%
Back layer	0.00%-0.65%
TOTAL	100.00%
Packaging materials	Portion in mass
Corrugated Box	17.22%-43.82%
PE film	0.47%-1.37%
Plastic belt	0.70%-1.09%
Wood pallet	53.25%-80.81%
TOTAL	100.00%

At the time of data collection, no substance included in the Candidate List of Substances of Very High Concern (SVHC) for authorization under the REACH Regulations is present in the products covered by this LCA and EPD either above the threshold for registration with the European Chemicals Agency or above 0.1% (wt/wt).

UN CPC code:
36910

Geographical scope:
A1-A3 China, A4 from China to EUR, A5-D EUR.



LCA information

Declared unit:

1 m² of the LVT product. The thickness of the representative product under the declared unit is 2.5 mm (including wear layer 0.55 mm), and the mass conversion factor is 4.304 kg per m².

Reference service life:

15 to 20 years for floor use under normal residential conditions and light commercial use, when stored, handled, manufactured, and installed according to manufacturer's recommendations.

Time representativeness:

January 1st 2023 to December 31st 2023.

Database(s) and LCA software used:

LCA Content 2023.1 Databases (2023.1 Edition) and ecoinvent v3.9.1 (cut-off), using the LCA software Sphera LCA for expert (formerly Gabi).

Description of system boundaries:

The system boundaries are cradle to gate with options (A1-A5, B, C + D), serving for type (b) EPD. Most data used in A1-A3 modules were collected from the production sites listed above. Data relevant to the production are average values for the production situation in the whole calendar year 2023. The production sites treat air emission to meet the requirements of discharging after treatment. No wastewater was generated during the manufacturing processes in the factories.

A4 is included in the system boundary with practical transportation information. The representative product is 100% shipped to Germany, among which 90% was installed in, used and disposed in Germany, and the other 10% was distributed to Netherlands (2%), the United Kingdom (2%), Latvia (2%), Scandinavia (4%)..

In regard to the A5 phase, the installation of products requires small consumption of glue and electricity. According to [REDACTED], usually there is no water use, but there is assumed to be 5% product loss in this stage. Also, according to the information provided by [REDACTED], the product packaging is assumed to become waste in this stage and is treated to the end-of-waste state.

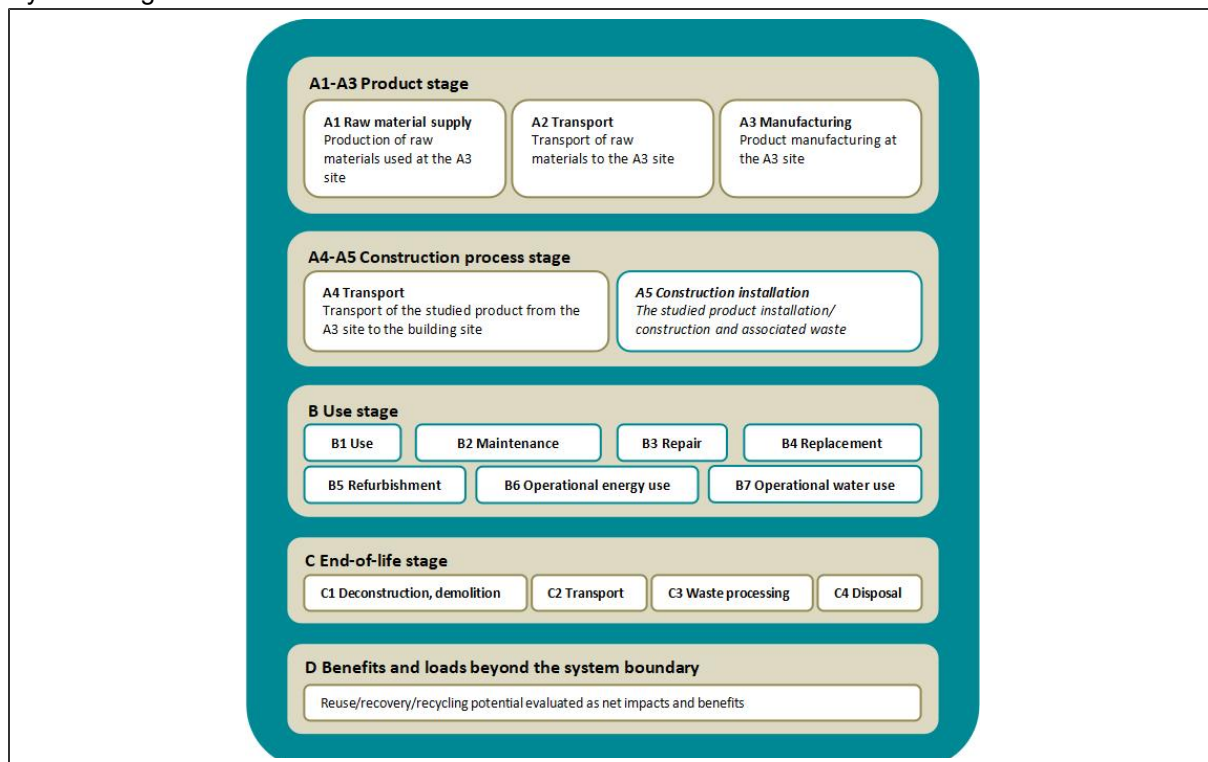
In module B, the products in this study consume water, detergent and rag (cotton cloth) for cleaning, and does not generate emission or consume energy during the whole use phase. Therefore, the environmental burdens from the Module B were calculated with primary data provided by the client. According to EN 15804, cleaning activity and waste use for cleaning shall be included in Module B2.

According to [REDACTED], the product will be deconstructed manually without consuming any materials or energy, so the environmental burdens from the Module C1 is deemed to be zero. For C2 module, conservative assumptions were made. For the waste processing C3 module, the wasted product will be sent to landfill according to the client, so the environmental impact of waste processing stage is deemed to be zero. The corresponding impact of waste disposal C4 module was calculated, and the environmental impact of D module was deemed to be zero. No mass loss is assumed to happen in modules C and D.

Note that the scenarios included are currently in use and are representative for one of the most probable alternatives. Additional declaration of representative mixes for the relevant region is permissible.



System diagram:



Manufacturing processes:

The SPC/VSPC/LVT products are produced in Jiangsu Province, China and in Fujian Province, China, with the same core production process. The flow chart below introduces the production process briefly.

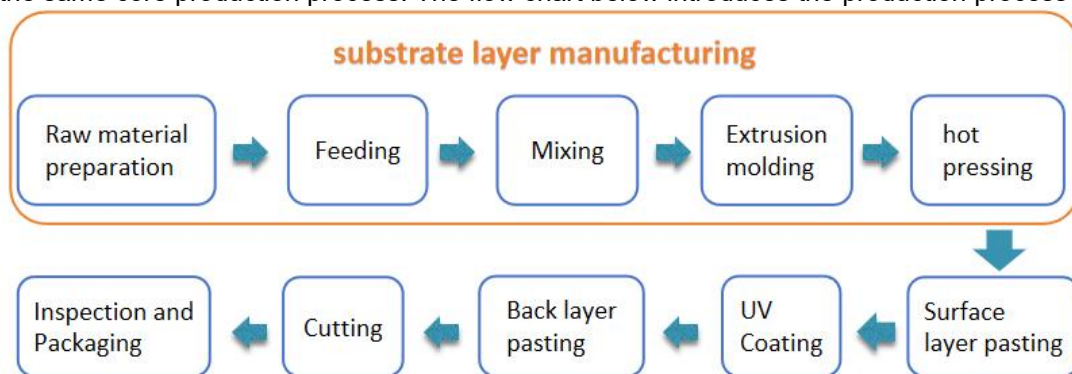


Figure 2 The main production process of the studied products.

The main raw materials for producing the products in this study include polyvinyl chloride (PVC), calcium carbonate (limestone), plasticizers, additives (such as stabilizers, foaming agent, etc.). The structure composition (Top-Down) of the three product groups are UV coating (made of UV paint), wear layer (made of PVC), decor layer (color film made of PVC), substrate layer (made of Calcium carbonate powder and PVC, as well as additives) and back layer (made of PE foam).

The substrate layer manufacturing for all the three product groups are nearly the same. Calcium carbonate powder and PVC, as well as additives are mixed together, then extruded and molded under high temperature and high pressure. The surface layer will then be pasted to the substrate layer and then be mended and coated. Then the back layer will be pasted, then cut to the right size before being packed. The energy source consumed during manufacturing include electricity (for manufacturing machine), diesel (for forklift), as well as PV power, natural gas, and steam. The main waste generated



from the manufacturing process is product scrap and waste auxiliary materials. The product scrap was used internally in the same product system as a case of closed-loop recycling, thereby no co-products leave the product system, and no allocation was done for the product scrap. The waste auxiliary materials was sent to third-party waste processing center for further treatment.

China is relatively large, and the electricity generation structure varies from province to province, so the electricity data for China requires the use of a sub-national electricity mix according to the PCR requirements. Therefore, the electricity datasets used is from the Sphera Managed LCA Content 2023.1 Databases based on sub-national electricity grid composition from the China electric power yearbook 2022.

The representative product was produced in Jiangsu province, China. According to the China electric power yearbook 2022, the electricity grid of Jiangsu province consists of 80.77% electricity from hard coal, 0.53% electricity from hydro power, 8.28% electricity from nuclear power, 7.09% electricity from wind power, and 3.32% electricity from solar power. Therefore a model was made with datasets CN: Electricity from hard coal, CN: Electricity from hydro power, CN: Electricity from wind power, and CN: Electricity from photovoltaic (reference year 2019-2025) in Sphera to calculate the environmental impact of the electricity consumed in Jiangsu Province with specific electricity source portion. Note that the Guarantees of Origin market in China represents an extremely small proportion of production and consumption, and therefore the consumption mix is effectively the same as the residual mix.

Table 5 lists the energy source behind the electricity consumption mix of Jiangsu Province, China and its climate impact using the indicator of GWP-GHG.

Table 5. Electricity structure of the Jiangsu province and the datasets chosen for it

Electricity generation sources	Dataset used in the model	GWP-GHG (CO ₂ eq./kWh)	Percentage in Jiangsu province
Electricity from fossil fuel ⁽¹⁾	CN: Electricity from hard coal Sphera	1.11	80.77%
Electricity from hydro power	CN: Electricity from hydro power Sphera	0.00745	0.53%
Electricity from nuclear power	CN: Electricity from nuclear power Sphera	0.00446	8.28%
Electricity from wind power	CN: Electricity from wind power Sphera	0.0171	7.09%
Electricity from photovoltaic	CN: Electricity from photovoltaic Sphera	0.0288	3.32%

- (1) In the 2022 China Electricity Yearbook, the percentage of electricity from fossil fuel for each province is not specified. A brief description of electricity from fossil fuel for the whole country is given in the yearbook, i.e. it covers coal, gas, oil, biomass, and a small amount of unidentified sources for generating electricity. Based on the information in the yearbook, i.e., electricity from hard coal accounts for more than 80% of the thermal power generation types, and considering that China is a country where coal-fired power generation is the main source of thermal power generation, the LCA practitioner (IVL) decided to use electricity from hard coal as 100% of the dataset selection for electricity from fossil fuel in this study for modelling.

The GWP-GHG of electricity mix is 0.902 kg CO₂ eq./kWh for Jiangsu province.

Allocation:

Allocation rules for co-products are mentioned in the PCR. In the studied system, there were co-products produced along with the studied products, which is product scrap from the manufacturing process. But the product scrap was used internally in the same product system for all products included in this study. This is a case of closed-loop recycling, thereby no co-products leave the product system, and no allocation was done for the product scrap, i.e. burdens of materials entered the final products are calculated in this study.

During data collection, allocation according to physical properties were applied. To specify, the energy use, auxiliary materials consumption, and waste generation for per declared unit of the product is calculated by dividing the total amount of these values by the yield amount of all products. For the allocation of waste, this study strictly follows the PCR. Specifically, the waste allocation is based on the polluter pays principle. For environmental burden from the waste generated from the



manufacturing process, it is allocated to the studied product. For the environmental burden of the end-of-life stage, it is allocated to the studied product.

Cut-off:

The cut-off criteria established by the PCR is that data for elementary flows to and from the product system contributing to a minimum of 95% of the declared environmental impacts shall be included (not including processes that are explicitly outside the system boundary).

This study strictly follows the cut-off rules. No cut-off rule is applied in this study.

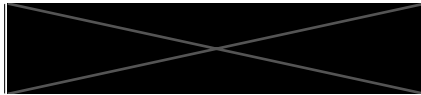
Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage						End of life stage				Resource recovery stage	
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X ⁽¹⁾	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	CN	CN	CN	CN to EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR
Share of specific data	21%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	52%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	27%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

(1) Modules included in the EPD (X) and the modules not declared (ND).

For this EPD project, the infrastructure and capital goods are not included since they are used many times for several years for the product manufacturing.

All results in this report are calculated by the EN 15804+A2. The “EN 15804 reference package” is calculated based on EF 3.1.



Results of the environmental performance indicators

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. In the table below, marked with an asterisk, results of the following environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator: Abiotic depletion potential for non-fossil resources (ADP-minerals & metals), Abiotic depletion potential for fossil resources (ADP-fossil), Water (user) deprivation potential, deprivation-weighted, water consumption (WDP).

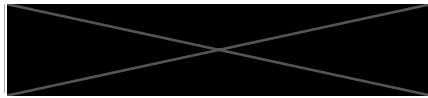
Mandatory impact category indicators according to EN 15804

Results per 1 m²*2.5 mm of the LVT product (including wear layer 0.55 mm)

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	1.16E+01	1.72E+00	1.40E+00	0.00E+00	1.41E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.83E-02	0.00E+00	6.05E-02	0.00E+00
GWP-biogenic	kg CO ₂ eq.	3.54E-01	0.00E+00	3.55E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.57E-04	0.00E+00	1.04E-02	0.00E+00
GWP-luluc	kg CO ₂ eq.	2.87E-02	2.99E-03	7.31E-04	0.00E+00	3.66E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E-04	0.00E+00	1.91E-04	0.00E+00
GWP-total	kg CO ₂ eq.	1.12E+01	1.73E+00	1.75E+00	0.00E+00	1.41E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.88E-02	0.00E+00	7.12E-02	0.00E+00
ODP	kg CFC 11 eq.	5.89E-06	1.00E-13	1.97E-08	0.00E+00	1.32E-14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.58E-18	0.00E+00	1.56E-13	0.00E+00
AP	mol H ⁺ eq.	5.28E-02	2.69E-02	7.20E-03	0.00E+00	9.93E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.41E-05	0.00E+00	4.36E-04	0.00E+00
EP-freshwater	kg P eq.	2.49E-03	1.36E-06	3.78E-04	0.00E+00	8.62E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.33E-08	0.00E+00	1.24E-07	0.00E+00
EP-marine	kg N eq.	1.05E-02	1.36E-02	1.12E-03	0.00E+00	3.42E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.19E-05	0.00E+00	1.13E-04	0.00E+00
EP-terrestrial	mol N eq.	1.04E-01	1.49E-01	1.18E-02	0.00E+00	3.41E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-04	0.00E+00	1.24E-03	0.00E+00
POCP	kg NMVOC eq.	3.79E-02	3.62E-02	4.83E-03	0.00E+00	6.15E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.95E-05	0.00E+00	3.40E-04	0.00E+00
ADP-minerals&metals*	kg Sb eq.	9.46E-05	4.17E-08	6.77E-06	0.00E+00	1.26E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.15E-09	0.00E+00	2.84E-09	0.00E+00
ADP-fossil*	MJ	2.32E+02	2.35E+01	3.06E+01	0.00E+00	2.16E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.73E-01	0.00E+00	8.18E-01	0.00E+00
WDP*	m ³	1.46E+00	5.51E-03	2.28E+00	0.00E+00	1.34E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.44E-04	0.00E+00	6.74E-03	0.00E+00

Acronyms

GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption



Additional mandatory and voluntary impact category indicators

Results per 1 m²*2.5 mm of the LVT product (including wear layer 0.55 mm)

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	1.20E+01	1.73E+00	1.41E+00	0.00E+00	1.39E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.83E-02	0.00E+00	6.05E-02	0.00E+00

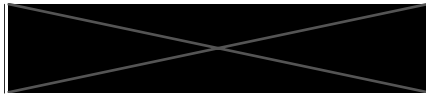
Resource use indicators

Results per 1 m²*2.5 mm of the LVT product (including wear layer 0.55 mm)

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	3.94E+01	3.48E-01	1.35E+00	0.00E+00	1.70E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.08E-02	0.00E+00	1.33E-01	0.00E+00
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	3.94E+01	3.48E-01	1.35E+00	0.00E+00	1.70E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.08E-02	0.00E+00	1.33E-01	0.00E+00
PENRE	MJ	2.32E+02	2.35E+01	3.06E+01	0.00E+00	2.16E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.74E-01	0.00E+00	8.19E-01	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	2.32E+02	2.35E+01	3.06E+01	0.00E+00	2.16E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.74E-01	0.00E+00	8.19E-01	0.00E+00
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m ³	3.53E-02	4.10E-04	5.31E-02	0.00E+00	3.11E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.39E-05	0.00E+00	2.07E-04	0.00E+00

Acronyms
PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; 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 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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

¹ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

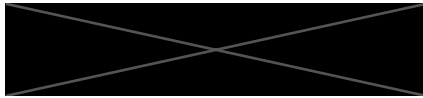


Waste indicators

Results per 1 m ² *2.5 mm of the LVT product (including wear layer 0.55 mm)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.11E-08	2.89E-10	-9.63E-11	0.00E+00	6.01E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.88E-11	0.00E+00	1.78E-11	0.00E+00
Non-hazardous waste disposed	kg	7.31E-02	2.42E-03	2.51E-01	0.00E+00	5.37E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.55E-05	0.00E+00	4.09E+00	0.00E+00
Radioactive waste disposed	kg	8.24E-04	2.71E-05	5.05E-05	0.00E+00	2.69E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.52E-07	0.00E+00	9.33E-06	0.00E+00

Output flow indicators

Results per 1 m ² *2.5 mm of the LVT product (including wear layer 0.55 mm)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00



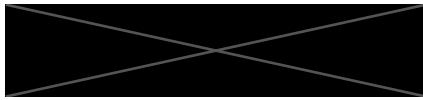
Additional environmental information

This EPD provides results for the representative product (1 m²*2.5 mm of the LVT product), which are used to represent the group of SPC/VSPC/LVT flooring products. The range of results for all products within this group are provided in the table below.

Variation between the representative product and other products in this EPD

LCA result of one declared unit product (A-C)	Min Result	Representative result	Max result	Differ Min	Differ Max
1. Environmental impact indicators					
00 Global warming potential (GWP-GHG) [kg CO ₂ eq.]	1.22E+01	1.54E+01	2.67E+01	24%	54%
01 EN15804+A2 Climate Change - total [kg CO ₂ eq.]	1.25E+01	1.49E+01	2.74E+01	18%	59%
02 EN15804+A2 Climate Change, fossil [kg CO ₂ eq.]	1.24E+01	1.49E+01	2.73E+01	18%	59%
03 EN15804+A2 Climate Change, biogenic [kg CO ₂ eq.]	9.87E-03	1.18E-02	2.15E-02	18%	58%
04 EN15804+A2 Climate Change, land use and land use change [kg CO ₂ eq.]	2.63E-02	3.29E-02	6.55E-02	22%	66%
05 EN15804+A2 Ozone depletion [kg CFC-11 eq.]	4.73E-06	5.91E-06	1.18E-05	22%	67%
06 EN15804+A2 Acidification [Mole of H ⁺ eq.]	7.28E-02	8.84E-02	1.66E-01	19%	61%
07 EN15804+A2 Eutrophication, freshwater [kg P eq.]	2.31E-03	2.88E-03	5.77E-03	22%	67%
08 EN15804+A2 Eutrophication, marine [kg N eq.]	2.10E-02	2.57E-02	4.95E-02	20%	63%
09 EN15804+A2 Eutrophication, terrestrial [Mole of N eq.]	2.21E-01	2.70E-01	5.19E-01	20%	63%
10 EN15804+A2 Photochemical ozone formation, human health [kg NMVOC eq.]	6.52E-02	8.00E-02	1.54E-01	20%	63%
11 EN15804+A2 Resource use, mineral and metals [kg Sb eq.]	8.14E-05	1.02E-04	2.03E-04	22%	66%
12 EN15804+A2 Resource use, fossils [MJ]	2.37E+02	2.89E+02	5.49E+02	20%	62%
13 EN15804+A2 Water use [m ³ world equiv.]	4.11E+00	5.09E+00	9.98E+00	21%	65%
2. Input flows and waste categories					
01 EN15804+A2 Use of renewable primary energy (PERE) [MJ]	3.94E+01	4.30E+01	6.11E+01	9%	35%
02 EN15804+A2 Primary energy resources used as raw materials (PERM) [MJ]	0.00E+00	0.00E+00	0.00E+00		
03 EN15804+A2 Total use of renewable primary energy resources (PERT) [MJ]	3.94E+01	4.30E+01	6.11E+01	9%	35%
04 EN15804+A2 Use of non-renewable primary energy (PENRE) [MJ]	2.37E+02	2.89E+02	5.49E+02	20%	62%
05 EN15804+A2 Non-renewable primary energy resources used as raw materials (PENRM)	0.00E+00	0.00E+00	0.00E+00		
06 EN15804+A2 Total use of non-renewable primary energy resources (PENRT) [MJ]	2.37E+02	2.89E+02	5.49E+02	20%	62%
07 EN15804+A2 Input of secondary material (SM) [kg]	0.00E+00	0.00E+00	0.00E+00		
08 EN15804+A2 Use of renewable secondary fuels (RSF) [MJ]	0.00E+00	0.00E+00	0.00E+00		
09 EN15804+A2 Use of non renewable secondary fuels (NRSF) [MJ]	0.00E+00	0.00E+00	0.00E+00		
10 EN15804+A2 Use of net fresh water (FW) [m ³]	9.71E-02	1.20E-01	2.35E-01	21%	65%
3. Output flows and waste categories					
01 EN15804+A2 Hazardous waste disposed (HWD) [kg]	4.83E-06	6.03E-06	1.21E-05	22%	67%
02 EN15804+A2 Non-hazardous waste disposed (NHWD) [kg]	3.54E+00	4.42E+00	8.83E+00	22%	66%
03 EN15804+A2 Radioactive waste disposed (RWD) [kg]	9.02E-04	9.38E-04	1.12E-03	4%	18%
04 EN15804+A2 Components for re-use (CRU) [kg]	0.00E+00	0.00E+00	0.00E+00		
05 EN15804+A2 Materials for Recycling (MFR) [kg]	0.00E+00	0.00E+00	0.00E+00		
06 EN15804+A2 Material for Energy Recovery (MER) [kg]	0.00E+00	0.00E+00	0.00E+00		
07 EN15804+A2 Exported electrical energy (EEE) [MJ]	0.00E+00	0.00E+00	0.00E+00		
08 EN15804+A2 Exported thermal energy (EET) [MJ]	0.00E+00	0.00E+00	0.00E+00		
4. Summary of environmental impacts					
LCA result of one declared unit product (A1-A3)	Min Result	Representative result	Max result	Differ-Min	Differ-Max
00 Global warming potential (GWP-GHG) [kg CO ₂ eq.] (A1-A3)	8.92E+00	1.20E+01	2.05E+01	30%	52%

The studied products are produced and supplied by Power Dekor Group Co., LTD.



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