Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

[LVT RVT and ESPC *Flooring Products*]

from

[*FUJIAN SIJIA NEW MATERIAL TECHNOLOGY CO., LTD.*]

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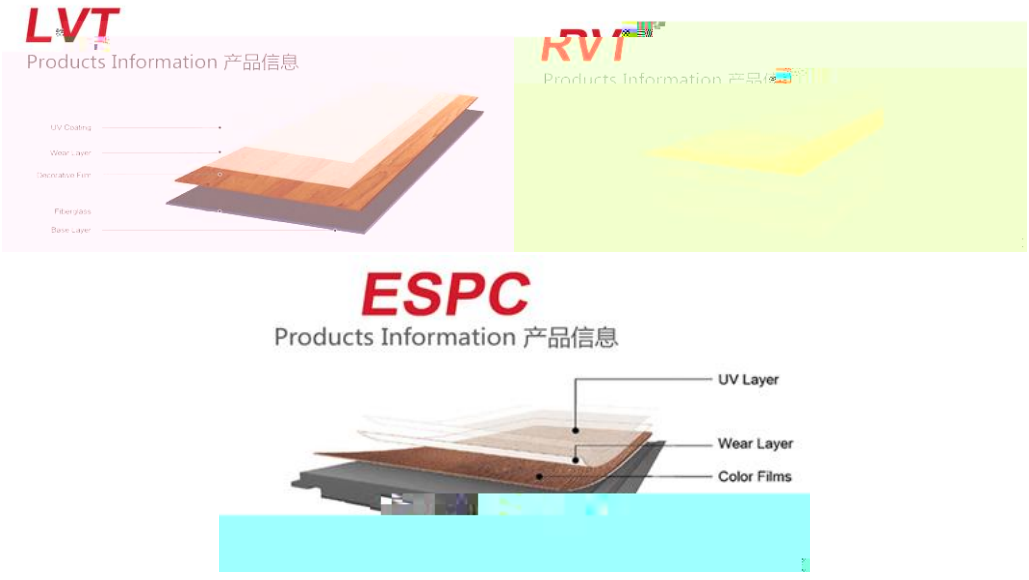
***Statement**: EPD of multiple products, based on worst case results. The list of the flooring products covered is Luxury Vinyl Tile (LVT), Rigid Vinyl Tile (RVT) and Embossing in regular Stone Plastic Composite (ESPC)*



General information

Programme information

Programme:	The International EPD® System
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factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025

Company information

Owner of the EPD:
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Description of the organisation:

Fujian Sijia New Material Technology Co., Ltd. is a wholly-owned subsidiary of Sijia Group, which is a company engaged in new material technology research and development, high-performance fiber manufacturing, composite material manufacturing and other businesses, established on January 19, 2021. The business scope of the enterprise is: new material technology research and development, high-performance fiber and composite material manufacturing, high-performance fiber and composite material sales, synthetic material manufacturing (excluding hazardous chemicals), synthetic materials sales, floor manufacturing, floor sales, building waterproofing membrane product manufacturing, building waterproofing membrane product sales, new building materials manufacturing (excluding dangerous goods), technical services, technology development, technical consultation, technology exchange, technology transfer, technology promotion, industrial textile products sales, Amusement equipment and entertainment products manufacturing (excluding game and amusement equipment), outdoor products sales, new material technology promotion services, housing leasing, import and export of goods, technology import and export, etc.

Product-related or management system-related certifications:
Management system-related certifications: IS09001, ISO14001

Name and location of production site(s):
Sixth Wei Road, Fuqing City, Fujian Province, China

Product information

Product name:
LVT, RVT, ESPC flooring tiles

Product identification:
Table 1: Product specification

Specification	LVT	ESPC	RVT
Total Thickness	(-0.10, +0.13 mm)	(-0.10, +0.10 mm)	±0.10 mm
Wear Layer Thickness	±0.03 mm	±0.03 mm	±0.03 mm
Weight per Unit Area	(-10%, +10%)	(-10%, +10%)	(-10%, +10%)
Peeling Strength			
Dimensional Stability after Heating	2%		
Curling after Heating	2 mm		

Straightness

Description of system boundaries:
The system boundary of the study is from cradle to gate (A1-A3) with A4, A5, C1-C4. Module D is also considered in this report.
A1-A3: Product stage (raw material acquisition, transport to manufacturing site and manufacturing)
A4: Production distribution stage
A5: Installation
C1-C4: End-of-life stage (deconstruction, transport, waste processing and disposal)
D: Reuse, recovery and/or recycling potentials

A1 Raw materials extraction
The products are all manufactured in Xiamen, Fujian Province, China. The Life Cycle Inventory (LCI) of

These materials include significant quantities of PVC (polyvinyl chloride), calcium carbonate, DOTP (a plasticizer), stabilizers, and various additives. The LCI captures data from raw material extraction to the production of these compounds, forming the basis for environmental impact assessment in subsequent stages of the life cycle. The major components are sourced directly from suppliers, ensuring that the LCI is as accurate as possible, and background data for upstream processes are modeled using established databases like Ecoinvent.

A2 Raw materials transport
The transportation mainly takes place on the upstream of raw material and packaging material supply. Since there lacks of the detailed transportation type, the transport dataset -
32 metric ton, EURO5 {RoW}| transport, freight, lorry 16-32 metric ton, EURO5 | Cut- is applied.

A3

C2 - Transportation: Following de-installation, the waste is assumed to be transported 100 km by road to a waste treatment facility. This reflects standard transportation distances in Europe for construction waste.

C3 - Waste Processing: In this stage, the waste materials are processed by shredding into flakes to prepare for further treatment or recycling. This step enables easier handling, separation, and processing of recyclable materials. The energy consumption and emissions from the shredding process are modeled using data from the Ecoinvent database, representing typical shredding operations for similar materials.

C4 - Disposal: Since the flooring products mainly contains calcium in the mass composition followed by polyvinyl chloride, the disposal scenario, as recommend by the SiJia, the manufacturer, is landfill (C3 and C4).

Module D

The environmental benefits or loads resulting from recyclable materials and energy recovery of the waste products and waste packaging leaving a product system are declared in module D. According to EN15804, the benefits and loads for module D can be calculated according to the following formula:

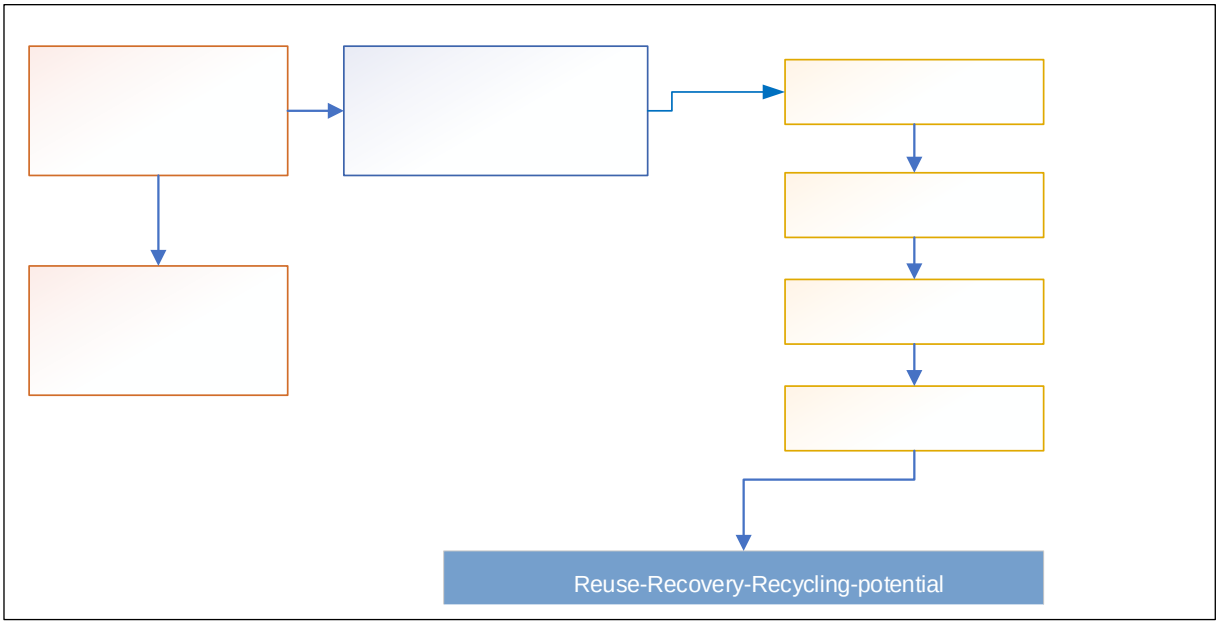
Where indicates the being the loads and benefits related to the export of secondary materials, being the loads and benefits related to the export of secondary fuels; being the loads and benefits related to the export of energy as a result of waste incineration (for R1 < 60 % and R1 > 60 %) being the loads and benefits related to the export of energy as a result of landfilling. For these flooring products, and are zeros. For , the parameters for its calculation are given in the following Table

Table 4: Module D modeling for recycling of the packaging materials

Product category	**Materials**

LVT	Paper packaging	0.007	15.92	0.011	0.024
	Plastic packaging	0.001	42.47	0.007	0.013
RVT	Paper packaging	0.023	15.92	0.036	0.075
	Plastic packaging	0.003	42.47	0.016	0.032
ESPC	Paper packaging	0.011	15.92	0.018	0.037
	Plastic packaging	0.004	42.47	0.020	0.040

System diagram:



More information:

Cut-off criteria

The following steps/stages were not included in the system boundary due to the reason that the elements below are considered irrelevant or not within the boundary to the LCA study of the product system:

1) Storage phases of flooring products

2) Secondary and intermediate packaging.

3) Personnel-related processes, such as transportation of employees to and from work are excluded.

4) The production and end-of-life processes of infrastructure or capital goods used in the product system are excluded since it has no evidence that it is of relevance in terms of environmental impact.

Allocation

For recycling and disposal process at the end-of-life stage, the Polluters Pay Principle (PPP) has been adopted. PPP indicates that the environmental impacts to dispose the products are allocated to the polluter, i.e., the product manufacturer. The benefits of recycling and recovery is out of boundary of the product system and will not be allocated to flooring product. For data sets in this study, allocation is done via total dimension in m2 of the flooring on a yearly average. The principle for choosing the size is based on the linear relationship of the product output to the environmental impacts.In this study, there is no other by products produced from the production line, hence there is quite little occasion that required allocation for multi-output processes.

Key assumptions

The main assumptions and limitations of this LCA study are as follows

In the Life Cycle Assessment (LCA) for LVT, ESPC, RVT, the additives and stabilizers used in the manufacturing process are represented using proxy data due to confidentiality restrictions. These substances play a crucial role in enhancing product performance, but specific details regarding their composition and sourcing are not disclosed. Their mass contribution to the overall material composition ranges between 0.9% and 4.1% of the total product weight (Table 7). Despite this, their impact is included in the analysis, albeit with generalized data, as they constitute a relatively small fraction of the total materials.

Table 7 Proxy dataset selection

Substances	Proxy data	Dosage in (kg/m2)	Dosage in RVT(kg/m2)	Dosage in ESPC(kg/m2)
Stabilizer	Chemical, organic {GLO}| chemical production, organic | Cut-off, U	0.021	0.133	0.192
Additive	Chemical, inorganic {GLO}| chemical production, inorganic | Cut-off, U	0.011	0.167	0.260

Waste transport from the A3 stage is assumed to be to be 100km. A sensitivity analysis will be implemented to examine this scenario.

Installation of De-installation of the floor are assumed to be done through manual labour

The product is assumed to be firstly shredded into flakes (C3) and finally disposed through a combination of recycling and inert materials landfill.

Product losses due to abnormal damage such as natural disaster or fire accident. These losses would mostly be accidental.

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	x	x	x	x	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x
Geography	CN	CN	CN	EUR	EUR								EUR	EUR	EUR	EUR	EUR
Specific data used	16.2%~33.2%					-	-	-	-	-	-	-	-	-	-	-	-
Variation products	57.2%					-	-	-	-	-	-	-	-	-	-	-	-
Variation sites	0%					-	-	-	-	-	-	-	-	-	-	-	-

Results of the environmental performance indicators

The results section presents the environmental impact for the worst-case scenario among the peer products, i.e., the A-C modules results are based on a higher impacts values. Variations for these impacts including minimum and maximum values are presented as well

Mandatory impact category indicators according to EN 15804 with EF3.1

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Climate change-total	kg CO2 eq.	1.75E+01	3.19E+00	9.84E-01	0.00E+00	2.11E-01	1.22E-01	6.44E-02	-9.16E-03
Climate change - Fossil	kg CO2 eq.	1.76E+01	3.17E+00	2.13E-02	0.00E+00	2.09E-01	1.06E-01	6.28E-02	-8.69E-03
Climate change - Biogenic	kg CO2 eq.		1.27E-02	9.63E-01	0.00E+00	1.52E-03	1.59E-02	1.53E-03	-3.93E-04
Climate change - Land use and LU change		1.44E-02		5.53E-06		1.02E-04	2.84E-04	1.24E-05	-8.28E-05

GWP-GHG1	kg CO2 eq.	1.76E+01	3.18E+00	2.13E-02	0.00E+00	2.09E-01	1.07E-01	6.28E-02	-8.77E-03

Environmental impact variations for the products

The variations for environmental impact categories are supplied. The variation is defined as the ratio between the distance of max and min results over the maximum results.

Impact category	Unit	Min	Max	Variation
GWP-GHG	kg CO2 eq.	7.55E+00	1.76E+01	57.2%
Climate change - Fossil	kg CO2 eq.	7.54E+00	1.76E+01	57.2%
Climate change - Biogenic	kg CO2 eq.	-3.79E-01	-1.37E-01	277.0%
Climate change - Land use and LU change	kg CO2 eq.	6.56E-03	1.44E-02	54.3%
Climate change	kg CO2 eq.	7.41E+00	1.73E+01	57.1%
Ozone depletion	kg CFC11 eq.	5.85E-06	7.81E-06	25.1%
Acidification	mol H eq.	1.71E		

Output flow indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
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
Material for recycling	kg	0.00E+00	0.00E+00	2.42E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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
Exported energy, electricity	MJ	0.00E+00	0.00E+00	5.10E-02	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	1.05E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional environmental information

None

Additional social and economic information

None

Information related to Sector EPD

This EPD is not sectorial

Differences versus previous versions

This EPD is a new submission

References

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