

**Declaration Owner**

Designflooring International

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

**Product**

Stone Plastic Composite (SPC) Flooring:

- *Van Gogh Rigid Core*
- *Rubens Rigid Core*
- *Palio Rigid*

EPD represents delivery of product to customers in Europe.

**Functional Unit**

The functional unit is one square meter of flooring over a 75-year period

**EPD Number and Period of Validity**

SCS-EPD-10232

EPD Valid August 13, 2024 through August 12, 2029

**Product Category Rule**

Product Category Rule.PCR2019:14. Construction Products.

International EPD® System. Version 1.3.2. December 2023

Complementary Product Category Rules (c-PCR) To PCR 2019:14.

Resilient, Textile And Laminate Floor Coverings (EN 16810:2017).

International EPD® System. Version 2019-12-20. December 2019

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

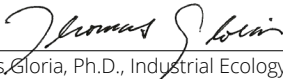

**Program Operator**

SCS Global Services

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Declaration URL Link:	<a href="https://www.scsglobalservices.com/certified-green-products-guide">https://www.scsglobalservices.com/certified-green-products-guide</a>																
LCA Practitioner:	Gerard Mansell, Ph.D., SCS Global Services																
LCA Software and LCI database:	OpenLCA v1.11 software and the Ecoinvent v3.10 database																
Product RSL:	35 years																
Markets of Applicability:	Europe																
EPD Type:	Product-Specific																
EPD Scope:	Cradle-to-Grave																
LCIA Method and Version:	EF3.0 (EN15804)																
Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071	<input type="checkbox"/> internal <input checked="" type="checkbox"/> external																
LCA Reviewer:	 Thomas Gloria, Ph.D., Industrial Ecology Consultants																
Part A Product Category Rule:	Product Category Rule.PCR2019:14. Construction Products. International EPD® System. Version 1.3.2. December 2023.																
Part A PCR Review conducted by:	The Technical Committee of the International EPD® System. Review chair: Claudia A. Peña, University of Concepción, Chile.																
Part B Product Category Rule:	Complementary Product Category Rules (c-PCR) To PCR 2019:14. Resilient, Textile And Laminate Floor Coverings (EN 16810:2017). International EPD® System. Version 2019-12-20. December 2019																
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Independent verification of the declaration and data, according to ISO 14025 and the PCR	<input type="checkbox"/> internal <input checked="" type="checkbox"/> external																
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<p><b>Disclaimers:</b> This EPD conforms to ISO 14025, 14040, 14044, and EN 15804.</p> <p><b>Scope of Results Reported:</b> The PCR requirements limit the scope of the LCA metrics such that the results exclude environmental and social performance benchmarks and thresholds, and exclude impacts from the depletion of natural resources, land use ecological impacts, ocean impacts related to greenhouse gas emissions, risks from hazardous wastes and impacts linked to hazardous chemical emissions.</p> <p><b>Accuracy of Results:</b> Due to PCR constraints, this EPD provides estimations of potential impacts that are inherently limited in terms of accuracy.</p> <p><b>Comparability:</b> 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.</p>																	

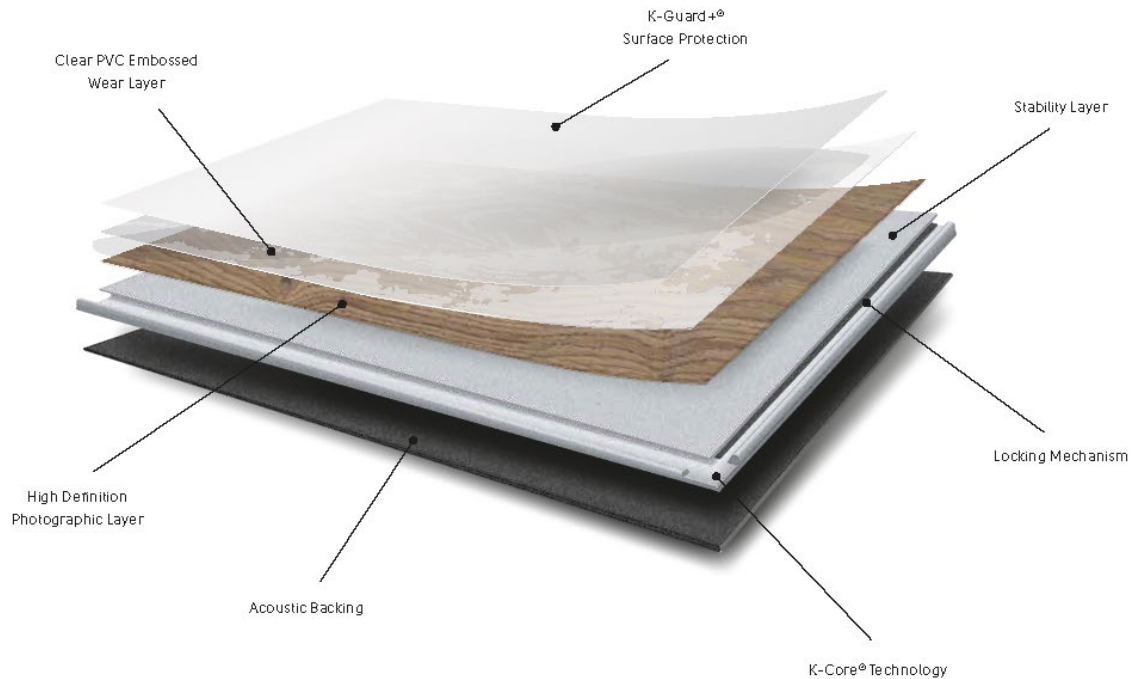
## 1. Designflooring

Designflooring is one of Europe's leading suppliers of luxury vinyl flooring. Throughout continuous growth, we remain true to our roots by offering a wide range of colours and textures to create looks that are unique to your style and needs. Just as we are inspired by nature, we also want to inspire our customers with some of the most beautiful, authentic and practical flooring ideas. For more information about our company, and to view our full product range, please visit us on [www.designflooring.com](http://www.designflooring.com).

## 2. Product

### 2.1 PRODUCT DESCRIPTION

Designflooring's Rigid Core products are suitable for both commercial and residential interiors. The products covered in this environmental product declaration are available in a wide variety of designs, formats and sizes, including both tiles and planks. These products are structured into a number of layers, as shown in the diagram below, and comprise of a rigid core to assist in installation over uneven subfloors, and a pre-attached acoustic backing specifically engineered to give excellent acoustic properties, reducing noise transfer to rooms below.



## 2.2 PRODUCT FLOW DIAGRAM

A flow diagram illustrating the production processes and life cycle phases included in the scope of the EPD is provided below.



## 2.3 APPLICATION

The SPC products provide the primary function of flooring for interior applications. The flooring products are used in various residential and commercial applications including retail, healthcare, education, and hospitality.

## 2.4 DECLARATION OF METHODOLOGICAL FRAMEWORK

The scope of the EPD is cradle-to-grave, including raw material extraction and processing, transportation, product manufacture, product delivery, installation and use, and product disposal. The life cycle phases included in the product system boundary are shown below.

Cut-off and allocation procedures are described below and conform to the PCR and ISO standards.

**Table 1.** Life cycle phases included in the product system boundary. **Table 1.** Life cycle phases included in the product system boundary.

	Product			Construction Process		Use							End-of-life				Benefits and loads beyond the system boundary	
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		D
	Raw material extraction and	Transport to manufacturer	Manufacturing	Transport	Construction - installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse, recovery and/or recycling potential	
Modules Declared	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Geography	GLO	GLO	CN KR	GLO	RER	RER	RER	RER	RER	RER	RER	RER	RER	RER	RER	RER	RER	RER
Share of specific data	>90%			>90%		-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	-			-		-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	-			-		-	-	-	-	-	-	-	-	-	-	-	-	-

X = Included in system boundary; MND = Module not declared

GLO = Global; NA = North America; CN = China; KR = South Korea; RER = Europe

## 2.5 TECHNICAL DATA

Technical specifications for the SPC flooring products are summarized in Table 2 through Table 5.

**Table 2.** Product characteristics for the Rubens Rigid Core SPC flooring product.

Characteristic		Description			
Sustainable certifications		ISO 14001			
VOC emissions test method		FloorScore®, Indoor Air Comfort Gold			
Characteristic		Average Value	Unit	Min Value	Max Value
Product thickness		4.50	mm	4.35	4.65
Wear layer thickness		0.30	mm	0.27	0.33
Product weight		7,890	g/m <sup>2</sup>	7,110	8,690
Product Form	Tiles	Various	mm	Various	Various
	Planks	Various	mm	Various	Various

**Table 3.** Product characteristics for the Palio Rigid SPC flooring product.

Characteristic		Description			
Sustainable certifications		ISO 14001			
VOC emissions test method		FloorScore®, Indoor Air Comfort Gold			
Characteristic		Average Value	Unit	Min Value	Max Value
Product thickness		4.50	mm	4.35	4.65
Wear layer thickness		0.30	mm	0.27	0.33
Product weight		6,630	g/m <sup>2</sup>	6,012	7,348
Product Form	Tiles	Various	mm (inch)	Various	Various
	Planks	Various	mm (inch)	Various	Various

**Table 4.** Product characteristics for the Van Gogh Rigid Core SPC flooring product.

Characteristic		Description			
Sustainable certifications		ISO 14001			
VOC emissions test method		FloorScore®, Indoor Air Comfort Gold			
Characteristic		Average Value	Unit	Min Value	Max Value
Product thickness		5.50	mm	5.35	5.65
Wear layer thickness		0.55	mm	0.50	0.50
Product weight		9,037	g/m <sup>2</sup>	8,145	9,955
Product Form	Tiles	Various	mm	Various	Various
	Planks	Various	mm	Various	Various

**Table 5.** Technical classification and performance standards applicable to the SPC flooring products.

Test Method	Rubens Rigid Core	Palio Rigid	Van Gogh Rigid Core
EN 16511 - Loose-laid panels - Semi-rigid multilayer modular floor covering (MMF) panels with wear resistant top layer	Class 31	Class 23	Class 33
EN 13501-1:2002- Fire classification of construction products and building elements. Classification using test data from reaction to fire tests	Bfl-S1	Bfl-S1	Bfl-S1

## 2.6 MARKET PLACEMENT/APPLICATION RULES

Technical specifications of the flooring products are summarized above. Detailed product performance results can be found on the manufacturer's website [www.designflooring.com/technicaldatasheets](http://www.designflooring.com/technicaldatasheets).

## 2.7 PROPERTIES OF DECLARED PRODUCT AS DELIVERED

The luxury vinyl flooring products are delivered for installation in the form of tiles and planks of various dimensions.

## 2.8 MATERIAL COMPOSITION

The primary materials include polyvinyl chloride (PVC), plasticizers, fillers and various stabilizers and coatings.

**Table 6.** Average material content for the flooring products in kg per square meter and percent of total mass. All values in the table have been rounded; masses to three significant figures, percentages to two significant figures.

Component	Rubens Rigid Core		Palio Rigid		Van Gogh Rigid Core	
	kg/m <sup>2</sup>	% mass	kg/m <sup>2</sup>	% mass	kg/m <sup>2</sup>	% mass
PVC	2.02	26%	2.01	30%	2.00	22%
Re-grind	1.68	21%	0.00	0%	1.81	20%
CaCO <sub>3</sub>	3.14	40%	3.99	60%	4.58	51%
Plasticizer	0.427	5.4%	0.301	4.5%	0.111	1.2%
Stabilizer	0.175	2.2%	9.70x10 <sup>-2</sup>	1.5%	0.161	1.8%
PE	0.106	1.3%	9.06x10 <sup>-2</sup>	1.4%	0.240	2.7%
Other	0.345	4.4%	0.145	2.2%	0.144	1.6%
<b>Total Product</b>	<b>7.89</b>	<b>100%</b>	<b>6.63</b>	<b>100%</b>	<b>9.04</b>	<b>100%</b>

No substances required to be reported as hazardous are associated with the production of this products.

## 2.9 MANUFACTURING

Designflooring's SPC flooring is produced at their manufacturing facilities in China and South Korea. The flooring is made primarily from polyvinyl chloride (PVC), calcium carbonate (mineral reinforcement), plasticizers and additives (i.e., pigments and stabilizers). The product is structured with multiple layers including a polyurethane (PU) protective layer, a clear embossed PVC wear layer, a high definition photographic layer, a core layer and a foamed backing layer.

The production of luxury vinyl tile flooring involves the following general manufacturing processes. Polyvinyl chloride resins are mixed with plasticizers, and additives in a large industrial mixer and then calendared to form the wear layer.

Polyvinyl chloride resins are separately mixed with calcium carbonate, plasticizers, and pigments in a large industrial mixer from which the core is extruded to a dough-like consistency. The dough-like substance is then put through calendar rollers at which point the wear layer and décor layer are co-laminated and embossed.

The products are then PU coated and cut into individual planks, profiled, a foamed backing layer adhered and finally packaged for shipment.

## 2.10 PACKAGING

The products are packaged for shipment using cardboard cartons, plastic wrap and wooden pallets.

**Table 7.** Material content for the flooring product packaging in kg per square meter. All values in the table have been rounded; masses to three significant figures, percentages to two significant figures.

Component	Rubens Rigid Core		Palio Rigid		Van Gogh Rigid Core	
	kg/m <sup>2</sup>	percent mass	kg/m <sup>2</sup>	percent mass	kg/m <sup>2</sup>	percent mass
Corrugated	1.19	91%	0.445	67%	0.202	40%
Plastic	5.15x10 <sup>-2</sup>	3.9%	1.34x10 <sup>-2</sup>	2%	1.61x10 <sup>-2</sup>	3.2%
Wood	6.99x10 <sup>-2</sup>	5.3%	0.205	31%	0.282	56%
<b>Total Packaging</b>	<b>1.31</b>	<b>100%</b>	<b>0.664</b>	<b>100%</b>	<b>0.500</b>	<b>100%</b>

## 2.11 PRODUCT INSTALLATION

Installation of the product is accomplished using hand tools with negligible impacts. Approximately 4% installation waste is assumed. The impacts associated with packaging disposal are included with the installation phase as per PCR requirements.

## 2.12 USE CONDITIONS

No special conditions of use are noted.

## 2.13 REFERENCE SERVICE LIFE

The Reference Service Life (RSL) of the flooring product is 35 years.

## 2.14 RE-USE PHASE

The flooring products are not reused at end-of-life.

## 2.15 DISPOSAL

At end-of-life, the products are disposed of in a landfill.

## 2.16 FURTHER INFORMATION

Further information on the product can be found on the manufacturer's website [www.designflooring.com](http://www.designflooring.com).

# 3. LCA: Calculation Rules

## 3.1 FUNCTIONAL UNIT

The functional unit used in the study is defined as 1 m<sup>2</sup> of floor covering installed for use over a 75-year period. The corresponding reference flow for each product system is presented in Table 8. For the present assessment, a reference service lifetime (RSL) corresponding to the manufacturer's warranted lifetime is assumed. The total number of required product lifecycles during the 75-year period over which the product system is modeled is also summarized for the product in Table 8.

**Table 8.** Reference flows and RSL for the luxury vinyl flooring products.

Product Name	Reference flow (kg/m <sup>2</sup> )	Reference Service Life – RSL (years)	Replacement Cycle (ESL/RSL-1)
Rubens Rigid Core	9.20	35	1.1
Palio Rigid	7.29	35	1.1
Van Gogh Rigid Core	9.54	35	1.1

### 3.2 SYSTEM BOUNDARY

The scope of the EPD is cradle-to-grave, including raw material extraction and processing, transportation, product manufacture, product delivery, installation and use, and product disposal. The following processes are excluded from the system boundary, consistent with the PCR:

- Construction activities, capital equipment, and infrastructure
- Maintenance and operation of capital equipment
- Personnel travel and resource use

The life cycle phases included in the EPD scope are described in Table 9 and illustrated in Figure 1.

**Table 9.** *The modules and unit processes included in the scope for the flooring product system.*

Module	Module description from the PCR	Unit Processes Included in Scope
A1	Extraction and processing of raw materials; any reuse of products or materials from previous product systems; processing of secondary materials; generation of electricity from primary energy resources; energy, or other, recovery processes from secondary fuels	Extraction and processing of raw materials for the flooring components.
A2	Transport (to the manufacturer)	Transport of component materials to the manufacturing facilities.
A3	Manufacturing, including ancillary material production	Manufacturing of flooring products and packaging (including upstream unit processes).
A4	Transport (to the building site)	Transport of product (including packaging) to the building site.
A5	Construction-installation process	Impacts from the installation of product are assumed negligible. Impacts from the production, transport and disposal of waste material associated with installation are included in this phase in addition to impacts from packaging disposal.
B1	Product use	Use of the flooring in a commercial building setting. There are no associated emissions or impacts from the use of the product.
B2	Product maintenance	Maintenance of products over the 75-year ESL, including periodic cleaning.
B3	Product repair	The flooring is not expected to require repair over its lifetime.
B4	Product replacement	The materials and energy required for replacement of the product over the 75-year ESL of the assessment are included in this phase.
B5	Product refurbishment	The flooring is not expected to require refurbishment over its lifetime.
B6	Operational energy use by technical building systems	There is no operational energy use associated with the use of the product.
B7	Operational water use by technical building systems	There is no operational water use associated with the use of the product.
C1	Deconstruction, demolition	Demolition of the product is accomplished using hand tools with no associated emissions and negligible impacts.
C2	Transport (to waste processing)	Transport of flooring product to waste treatment at end-of-life.
C3	Waste processing for reuse, recovery and/or recycling	The product is disposed of by incineration and/or landfilling which require no waste processing.
C4	Disposal	Disposal of flooring product in municipal landfill or incineration.
D	Reuse-recovery-recycling potential	There are no significant impacts associated with Module D as only minimal amounts of recycled materials are used in the products. In addition, no product components are recycled at end-of-life.



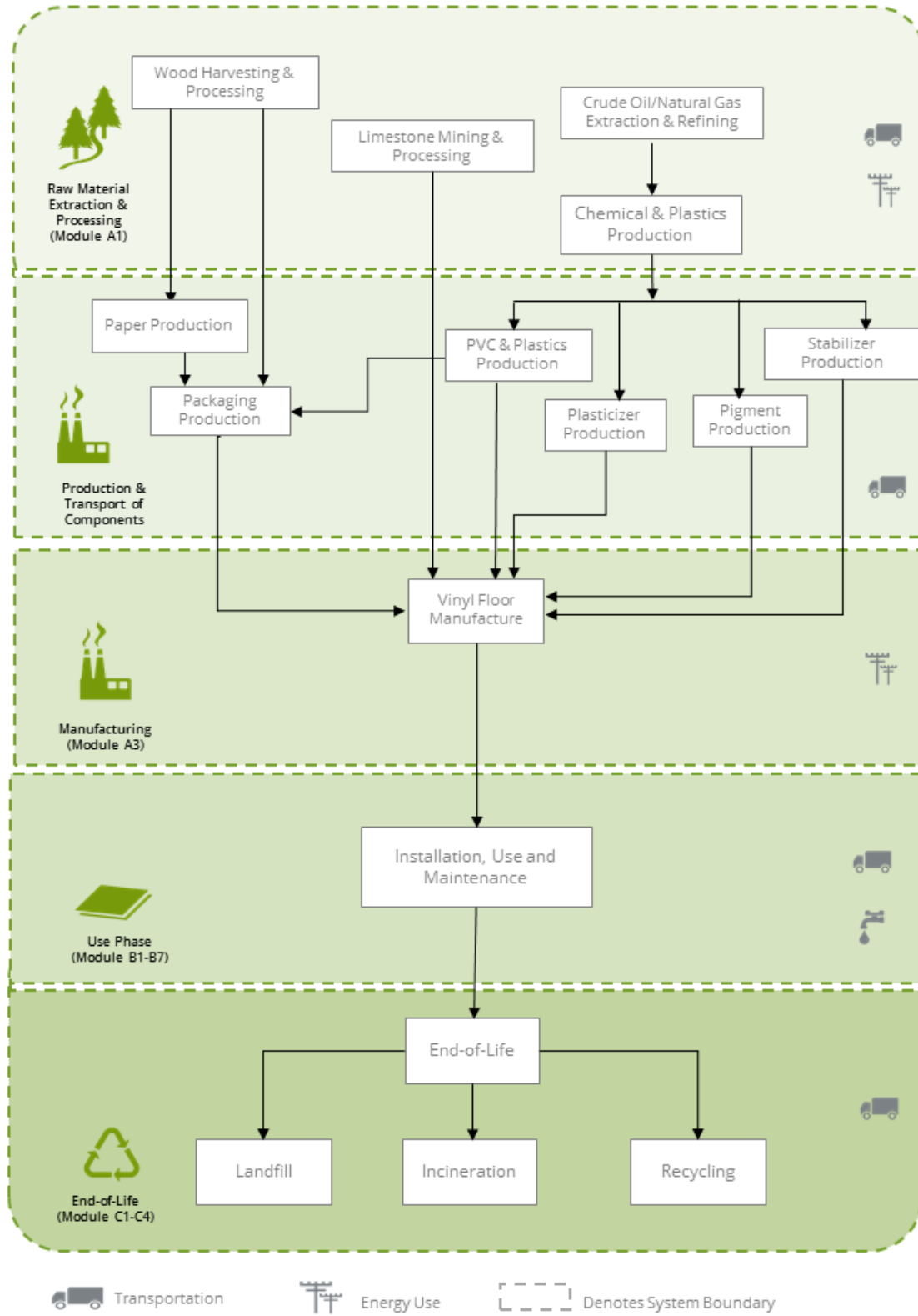


Figure 1. Flow Diagram for the life cycle of the SPC flooring products.

### 3.3 PRODUCT SPECIFIC CALCULATION FOR USE PHASE

The recommended cleaning regime is highly dependent on the use of the premises where the floor covering is installed. In high traffic areas more frequent cleaning will be needed compared to areas where there is low traffic. For the purposes of this EPD, average maintenance (moderate traffic levels) is presented based on typical installations.

### 3.4 UNITS

All data and results are presented using SI units.

### 3.5 ESTIMATES AND ASSUMPTIONS

- The Designflooring manufacturing facilities are located in Asia. Regional Ecoinvent inventory datasets for the appropriate energy grid mix were used to model resource use and emissions from electricity use at the manufacturing facilities.
- Modeling of recycled materials follows the recycled content method (also known as 100-0 method or cut-off method) whereby only the burdens of reprocessing the waste material are allocated to the system from the use of the recycled material.
- The Reference Service Life (RSL) of the products was modeled based on information provided by the manufacturer assuming their products are installed and maintained as recommended and used for the specific application noted.
- Downstream transport was modeled based on information provided by the manufacturer representing transport to consumer markets in Europe.
- The maintenance phase of the product life cycle was modeled based on information provided by the manufacturer including recommended installation and cleaning methods, as well as cleaning frequency.
- For the product end-of-life, disposal of product and product packaging is modeled based on the PCR guidance regarding recycling rates of product and packaging materials. It is assumed that no components of the product are recycled at end-of-life.
- For final disposal of the packaging material and luxury vinyl flooring at end-of-life, all materials are assumed to be transported 161 km by diesel truck to either a landfill, incineration facility, or material reclamation facility (for recycling). Datasets representing disposal in a landfill and waste incineration are from Ecoinvent.

The PCR requires the results for several inventory flows related to construction products to be reported including energy and resource use and waste and outflows. These are aggregated inventory flows, and do not characterize any potential impact; results should be interpreted taking into account this limitation.

### 3.6 CUT-OFF RULES

According to the PCR, processes contributing greater than 1% of the total environmental impact indicator for each impact are included in the inventory. No data gaps were allowed which were expected to significantly affect the outcome of the indicator results. No known flows are deliberately excluded from this EPD.

### 3.7 DATA SOURCES

Primary data were provided by Designflooring for their manufacturing facilities. The sources of secondary LCI data are the Ecoinvent database.

**Table 10.** Data sources for the SPC flooring products.

Component	Dataset	Data Source	Publication Date
<b>PRODUCT</b>			
<b>PVC</b>			
Polyvinyl Chloride	polyvinylchloride production, bulk polymerisation   polyvinylchloride, bulk polymerised   Cutoff, S/RoW	EI v3.10	2023
<b>Filler</b>			
Calcium Carbonate	limestone production, crushed, washed   limestone, crushed, washed   Cutoff, S/RoW	EI v3.10	2023
<b>Plasticizer</b>			
PVC Plasticizer	dioctyl terephthalate production   dioctyl terephthalate   Cutoff, S/GLO	EI v3.10	2023
<b>Stabilizer</b>			
Stabilizer	Ba-Zn stabilizer;	EI v3.10	2023
	chemical production, organic   chemical, organic   Cutoff, S/GLO	EI v3.10	2023
	chemical production, inorganic   chemical, inorganic   Cutoff, S/GLO	EI v3.10	2023
	limestone production, crushed, washed   limestone, crushed, washed   Cutoff, S/RoW	EI v3.10	2023
	zinc oxide production   zinc oxide   Cutoff, S/RoW	EI v3.10	2023
<b>Pigment</b>			
Titanium dioxide	market for titanium dioxide   titanium dioxide   Cutoff, S/RoW	EI v3.10	2023
Carbon Black	carbon black production   carbon black   Cutoff, S/GLO	EI v3.10	2023
Printing ink	market for printing ink, offset, without solvent, in 47.5% solution state   printing ink, offset, without solvent, in 47.5% solution state   Cutoff/RoW	EI v3.10	2023
<b>Other</b>			
Epoxidized Soybean oil	market for soybean oil, refined   soybean oil, refined   Cutoff, S/GLO	EI v3.10	2023
Organic chemicals	chemical production, organic   chemical, organic   Cutoff, S/GLO	EI v3.10	2023
Acrylic polymer	acrylic filler production   acrylic filler   Cutoff, S/RoW	EI v3.10	2023
Glass Fibre	glass fibre production   glass fibre   Cutoff, S/RoW	EI v3.10	2023
IXPE; PE	polyethylene production, low density, granulate   steam, in chemical industry   Cutoff, S/RoW	EI v3.10	2023
Polyethylene Glycol	market for ethylene glycol   ethylene glycol   Cutoff, S/GLO	EI v3.10	2023
Silicon Dioxide	market for activated silica   activated silica   Cutoff, S/GLO	EI v3.10	2023
<b>PACKAGING</b>			
Cardboard	containerboard production, linerboard, kraftliner   containerboard, linerboard   Cutoff, S/RoW	EI v3.10	2023
Wrapping Film	packaging film production, low density polyethylene   packaging film, low density polyethylene   Cutoff, S/RoW	EI v3.10	2023
Wood	EUR-flat pallet production   EUR-flat pallet   Cutoff, S/RoW	EI v3.10	2023
<b>TRANSPORT</b>			
Road transport	transport, freight, lorry 16-32 metric ton, EURO4   transport, freight, lorry 16-32 metric ton, EURO4   Cutoff, S/RoW	EI v3.10	2023
Rail transport	transport, freight train, diesel   transport, freight train   Cutoff, S/RoW	EI v3.10	2023
Ship transport	transport, freight, sea, container ship   transport, freight, sea, container ship   Cutoff, S/GLO	EI v3.10	2023
<b>RESOURCES</b>			
Grid electricity <sup>1</sup>	market for electricity, medium voltage   electricity, medium voltage   Cutoff, S/VN	EI v3.10	2023
	market group for electricity, medium voltage   electricity, medium voltage   Cutoff, S/CN	EI v3.10	2023
Heat – natural gas	market for heat, central or small-scale, natural gas   heat, central or small-scale, natural gas   Cutoff, S/RoW	EI v3.10	2023
Heat – fuel oil	heat production, light fuel oil, at industrial furnace 1MW   heat, district or industrial, other than natural gas   Cutoff, S/RoW	EI v3.10	2023
Heat – diesel	diesel, burned in building machine   diesel, burned in building machine   Cutoff, S/GLO	EI v3.10	2023
Heat – biomass	heat production, wood chips from industry, at furnace 50kW   heat, central or small-scale, other than natural gas   Cutoff, S/RoW	EI v3.10	2023
Heat – steam	market for heat, from steam, in chemical industry   heat, from steam, in chemical industry   Cutoff, S/RoW	EI v3.10	2023

<sup>1</sup> The Chinese electricity resource mix consists of approximately 66% coal, 32% wind and hydropower, and 2% natural gas as represented in the ecoinvent v3.10 database. The Vietnamese electricity resource mix consists of approximately 49% coal, 30% hydropower, 18% natural gas and ~3% oil and imports. The GWP-GHG (AR6) impact of the Chinese grid electricity is ~0.9504 kg CO<sub>2</sub>e/kWh and ~0.6656 kg CO<sub>2</sub>e/kWh for Vietnam.

### 3.8 DATA QUALITY

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 11.** *Data quality assessment for the flooring product system.*

Data Quality Parameter	Data Quality Discussion
<b>Time-Related Coverage:</b> 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 5 years old. All of the data used represented an average of at least one year's worth of data collection, and up to three years in some cases. Manufacturer-supplied data (primary data) are based on annual production for 2022.
<b>Geographical Coverage:</b> Geographical area from which data for unit processes is collected to satisfy the goal of the study	The data used in the analysis provide the best possible representation available with current data. Electricity use for product manufacture is modeled using representative data for regional grid mixes. Surrogate data used in the assessment are representative of global or European operations. Data representative of European operations are considered sufficiently similar to actual processes. Data representing product disposal are based on regional statistics.
<b>Technology Coverage:</b> Specific technology or technology mix	For the most part, data are representative of the actual technologies used for processing, transportation, and manufacturing operations. Representative fabrication datasets, specific to the type of material, are used to represent the actual processes, as appropriate.
<b>Precision:</b> Measure of the variability of the data values for each data expressed	Precision of results are not quantified due to a lack of data. Data collected for operations were typically averaged for one or more years and over multiple operations, which is expected to reduce the variability of results.
<b>Completeness:</b> Percentage of flow that is measured or estimated	The LCA model included all known mass and energy flows for production of the flooring products. In some instances, surrogate data used to represent upstream and downstream operations may be missing some data which is propagated in the model. No known processes or activities contributing to more than 1% of the total environmental impact for each indicator are excluded.
<b>Representativeness:</b> Qualitative assessment of the degree to which the data set reflects the true population of interest	Data used in the assessment represent typical or average processes as currently reported from multiple data sources and are therefore generally representative of the range of actual processes and technologies for production of these materials. 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.
<b>Consistency:</b> Qualitative assessment of whether the study methodology is applied uniformly to the various components of the analysis	The consistency of the assessment is considered to be high. Data sources of similar quality and age are used; with a bias towards Ecoinvent v3.9 data where available. Different portions of the product life cycle are equally considered; however, it must be noted that final disposition of the product is based on assumptions of current average practices in Europe.
<b>Reproducibility:</b> 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.
<b>Sources of the Data:</b> Description of all primary and secondary data sources	Data representing energy use at the manufacturing facilities in Asia represent an annual average and are considered of high quality due to the length of time over which these data are collected, as compared to a snapshot that may not accurately reflect fluctuations in production. For secondary LCI datasets, Ecoinvent v3.9 LCI data are used.
<b>Uncertainty of the Information:</b> Uncertainty related to data, models, and assumptions	Uncertainty related to materials in the flooring products and packaging 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 (<10 years) but lacked geographical representativeness. Uncertainty related to the impact assessment methods used in the study are high. The impact assessment method required by the PCR includes impact potentials, which lack characterization of providing and receiving environments or tipping points.

### 3.9 PERIOD UNDER REVIEW

The period of review is calendar year 2022.

### 3.10 ALLOCATION

Manufacturing resource use was allocated to the products based on area. Impacts from transportation were allocated based on the mass of material and distance transported.

### 3.11 COMPARABILITY

The PCR this EPD was based on was not written to support comparative assertions. EPDs based on different PCRs, or different calculation models, may not be comparable. When attempting to compare EPDs or life cycle impacts of products from different companies, the user should be aware of the uncertainty in the final results, due to and not limited to, the practitioner's assumptions, the source of the data used in the study, and the specifics of the product modeled.

## 4. LCA: Scenarios and Additional Technical Information

### *Delivery and Installation stage (A4 - A5)*

Distribution of the flooring products to the point of installation is included in the assessment. Transportation parameters for modeling transport to product distribution centers are summarized in Table 12. A distance of 800 km is assumed for transport by diesel truck from the distribution center to point of installation, consistent with PCR guidance.

**Table 12.** Product distribution parameters, per 1 m<sup>2</sup>.

Parameter	Unit	Value	
<b>Truck transport</b>			
Fuel type	-	Diesel	
Liters of fuel	L/100km	18.7	
Vehicle type	-	Diesel truck	
Capacity utilization	%	76	
<b>Ocean transport</b>			
Fuel type	-	Fuel oil	
Liters of fuel	L/tkm	2.23	
Vehicle type	-	Ocean freighter	
Capacity utilization	%	70	
Product Name	Gross mass transported (kg)	Transport Distance (km)	
		Road	Ship
Rubens Rigid Core	9.20	262	21,753
Palio Rigid	7.29	407	21,753
Van Gogh Rigid Core	9.54	307	21,753

Installation of the product is accomplished using hand tools with no associated emissions and negligible impacts. Approximately 4% installation waste is assumed landfilled. The impacts associated with packaging disposal are included with the installation phase as per PCR requirements.

**Table 13.** Installation parameters for the SPC flooring products, per 1 m<sup>2</sup>.

Parameter	Rubens Rigid Core	Palio Rigid	Van Gogh Rigid Core
Ancillary materials (kg)	negligible	negligible	negligible
Net freshwater consumption (m <sup>3</sup> )	-	-	-
Electricity consumption (kWh)	-	-	-
Product loss per functional unit (kg)	0.316	0.265	0.361
Waste materials generated by product installation (kg)	0.316	0.265	0.361
Output materials resulting from on-site waste processing (kg)	n/a	n/a	n/a
Mass of packaging waste (kg)	Corrugated	1.19	0.202
	Plastic	5.15x10 <sup>-2</sup>	1.34x10 <sup>-2</sup>
	Wood	6.99x10 <sup>-2</sup>	0.282
Biogenic carbon contained in packaging (kg CO <sub>2</sub> )	2.31	1.19	0.887
Direct emissions (kg)	-	-	-

**Use stage (B1)**

No impacts are associated with the use of the product over the Reference Service Lifetime.

**Maintenance stage (B2)**

According to the manufacturer, typical maintenance involves regular sweeping and damp mopping, as well as periodic machine cleaning of the vinyl flooring. The present assessment is based on a recommended weekly cleaning schedule including sweeping and mopping with a neutral cleaner and monthly machine cleaning.

**Table 14.** Maintenance parameters for the flooring products, per 1 m<sup>2</sup>.

Parameter	Unit	Value
Maintenance cycle	Cycles / RSL	1820
Maintenance cycle	Cycles / ESL	3900
Maintenance process	-	Mopping
Net freshwater consumption	m <sup>3</sup> /m <sup>2</sup> /yr	0,0058
Cleaning agent	kg/m <sup>2</sup> /yr	0,0119
Maintenance process	-	Machine cleaning
Electricity	kWh/m <sup>2</sup> /yr	0,022
Further assumptions	-	Moderate traffic; weekly maintenance

**Repair/Refurbishment stage (B3; B5)**

Product repair and refurbishment are not relevant during the lifetime of the product.

**Replacement stage (B4)**

The materials and energy required for replacement of the product over the 75-year estimated service lifetime of the assessment are included in this stage. Modeling parameters for the product replacement stage are summarized in Table 15.

**Table 15.** Product replacement parameters for the flooring products, per 1 m<sup>2</sup>.

Parameter	Units	Rubens Rigid Core	Palio Rigid	Van Gogh Rigid Core
Reference service life	Years	35	35	35
Replacement cycle	-	1.1	1.1	1.1
Energy input	kWh	0	0	0
Freshwater consumption	m <sup>3</sup>	0	0	0
Ancillary materials	kg	Negligible	Negligible	Negligible
Replacement parts	kg	10.1	8.03	10.5
Direct emissions	kg	0	0	0

**Building operation stage (B6 – B7)**

There is no operational energy or water use associated with the use of the product.

**Disposal stage (C1 - C4)**

The disposal stage includes demolition of the products (C1); transport of the flooring products to waste treatment facilities (C2); waste processing (C3); and associated emissions as the product degrades in a landfill (C4). For the luxury vinyl flooring 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 average distance to disposal, as specified by the PCR. The recycling rates used for the product packaging are based on national waste disposal statistics regarding recycling rates for Europe as specified in the PCR. No recycling of the product materials is assumed at end-of-life. The relevant disposal statistics used for the packaging are summarized in Table 17.

**Table 16.** Recycling rates for packaging materials at end-of-life.

Material	Packaging
<b>Recycling Rates</b>	
Paper and pulp	82,8%
Plastics	40,3%
Wood	39,8%
<b>Disposal of Non-recyclables</b>	
Incineration	45%
Landfill	55%

**Table 17.** End-of-life disposal scenario parameters for the flooring products.

Parameter	Rubens Rigid Core	Palio Rigid	Van Gogh Rigid Core
Assumptions for scenario development	100% landfill	100% landfill	100% landfill
Collection process			
Collected with mixed construction waste (kg)	7.89	6.63	9.04
Recovery	n/a	n/a	n/a
Landfill disposal(kg)	7.89	6.63	9.04
Removals of biogenic carbon (kg CO <sub>2</sub> eq)	n/a	n/a	n/a

## 5. LCA: Results

Results of the Life Cycle Assessment are presented below. It is noted that LCA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. All LCA results are stated to three significant figures in agreement with the PCR for this flooring product and therefore the sum of the total values may not exactly equal 100%.

The impact indicators specified by the PCR include:

- Potential for Global Warming,
- Acidification Potential,
- Eutrophication Potential,
- Ozone Depletion Potential,
- Photochemical Ozone (smog) Creation Potential.
- Ecotoxicity,
- Human Toxicity, and
- Land Use/Land Occupation

Impact category indicators for acidification, eutrophication, ozone depletion potential and photochemical ozone creation are estimated using the characterization factors<sup>1</sup>, as prescribed by the PCR, including from CML-IA and ReCiPe methodologies as well as those defined by EN 15804 reference package based on EF 3.0. Impact indicators for Ecotoxicity and Human Toxicity are estimated using the USEtox 2.02 characterization method, while Land Occupation impacts are estimated using the ReCiPe 2016 version 1.1 methodology.

The impact category indicators included in the assessment are summarized below. Note that the use of the results of modules A1-A3 without considering the results of module C is discouraged.

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<sup>1</sup> <https://www.environdec.com/resources/indicators>





**Table 19.** Life Cycle Impact Assessment results for the **Rubens Rigid Core** flooring products over a 75-yr time horizon. Results reported in MJ are calculated using lower heating values.

Impact Category	Freshwater ecotoxicity (PAF.m <sup>3</sup> .day)	Human toxicity, cancer (cases)	Human toxicity, non-cancer (cases)	Land use (species.yr)	Resource use, fossils (MJ) <sup>1)</sup>	Resource use, minerals and metals (kg Sb eq) <sup>1)</sup>	Water use (m <sup>3</sup> depriv.) <sup>1)</sup>
<b>Other Indicators</b>							
A1	206,000	2.57x10 <sup>-6</sup>	2.14x10 <sup>-6</sup>	1.57x10 <sup>-9</sup>	201	3.17x10 <sup>-5</sup>	2.87
	12%	23%	14%	3.2%	26%	35%	11%
A2	4,370	1.83x10 <sup>-7</sup>	8.31x10 <sup>-8</sup>	2.40x10 <sup>-10</sup>	10.1	1.01x10 <sup>-6</sup>	5.64x10 <sup>-2</sup>
	0.25%	1.7%	0.54%	0.5%	1.3%	1.1%	0.22%
A3	137,000	1.03x10 <sup>-6</sup>	1.27x10 <sup>-6</sup>	1.96x10 <sup>-8</sup>	57.5	3.17x10 <sup>-6</sup>	0.874
	7.8%	9.4%	8.2%	40%	7.4%	3.5%	3.4%
A4	7,520	5.89x10 <sup>-7</sup>	1.46x10 <sup>-7</sup>	2.40x10 <sup>-10</sup>	33.4	1.55x10 <sup>-6</sup>	0.119
	0.43%	5.4%	0.94%	0.5%	4.3%	1.7%	0.46%
A5	37,700	1.93x10 <sup>-7</sup>	3.28x10 <sup>-7</sup>	8.82x10 <sup>-10</sup>	13.2	1.53x10 <sup>-6</sup>	8.56x10 <sup>-2</sup>
	2.1%	1.8%	2.1%	1.8%	1.7%	1.7%	0.33%
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	64,200	7.76x10 <sup>-7</sup>	6.16x10 <sup>-7</sup>	5.01x10 <sup>-10</sup>	67.5	8.10x10 <sup>-6</sup>	20.2
	3.7%	7.1%	4%	1%	8.6%	8.9%	78%
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	887,000	5.35x10 <sup>-6</sup>	7.78x10 <sup>-6</sup>	2.51x10 <sup>-8</sup>	374	4.36x10 <sup>-5</sup>	3.07
	50%	49%	50%	52%	48%	48%	12%
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	2,260	1.31x10 <sup>-7</sup>	6.72x10 <sup>-8</sup>	8.50x10 <sup>-11</sup>	22.9	5.44x10 <sup>-7</sup>	5.09x10 <sup>-2</sup>
	0.13%	1.2%	0.43%	0.18%	2.9%	0.6%	0.2%
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	413,000	1.72x10 <sup>-7</sup>	3.04x10 <sup>-6</sup>	2.09x10 <sup>-10</sup>	2.35	1.05x10 <sup>-7</sup>	-1.27
	23%	1.6%	20%	0.43%	0.3%	0.12%	-4.9%
D	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1)</sup> 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.

**Table 20.** Resource use for the **Rubens Rigid Core** flooring products over a 75-yr time horizon. Results reported in MJ are calculated using lower heating values.

Impact Category	Use of renewable primary energy (MJ)	Use of renewable primary energy resources used as raw materials (MJ)	Total Renewable primary energy (MJ)	Use of nonrenewable primary energy (MJ)	Use of nonrenewable primary energy resources used as raw materials (MJ)	Total Nonrenewable primary energy (MJ)	Use of secondary materials (MJ)	Use of Renewable secondary fuels (MJ)	Use of Nonrenewable secondary fuels (MJ)	Use of net fresh water (m <sup>3</sup> )
<b>Resources</b>										
A1	8.42	0.00	8.42	156	45.0	201	1.87	0.00	0.00	1.53
	6.3%	0%	6.3%	21%	48%	24%	48%	0%	0%	24%
A2	0.133	0.00	0.133	10.1	0.00	10.1	0.00	0.00	0.00	1.61x10 <sup>-2</sup>
	0.1%	0%	0.1%	1.4%	0%	1.2%	0%	0%	0%	0.25%
A3	50.7	0.00	50.7	57.5	0.00	57.5	0.00	0.00	0.00	0.665
	38%	0%	38%	7.8%	0%	6.9%	0%	0%	0%	10%
A4	0.289	0.00	0.289	33.4	0.00	33.4	0.00	0.00	0.00	3.36x10 <sup>-2</sup>
	0.22%	0%	0.22%	4.5%	0%	4%	0%	0%	0%	0.53%
A5	2.39	0.00	2.39	13.2	0.00	13.2	0.00	0.00	0.00	9.20x10 <sup>-2</sup>
	1.8%	0%	1.8%	1.8%	0%	1.6%	0%	0%	0%	1.5%
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	2.42	0.00	2.42	67.5	0.00	67.5	0.00	0.00	0.00	1.38
	1.8%	0%	1.8%	9.2%	0%	8.1%	0%	0%	0%	22%
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	68.3	0.00	68.3	374	49.5	424	2.06	0.00	0.00	2.60
	51%	0%	51%	51%	52%	51%	52%	0%	0%	41%
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	9.93x10 <sup>-2</sup>	0.00	9.93x10 <sup>-2</sup>	22.9	0.00	22.9	0.00	0.00	0.00	1.71x10 <sup>-2</sup>
	0.075%	0%	0.075%	3.1%	0%	2.8%	0%	0%	0%	0.27%
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	6.39x10 <sup>-2</sup>	0.00	6.39x10 <sup>-2</sup>	2.35	0.00	2.35	0.00	0.00	0.00	7.69x10 <sup>-3</sup>
	0.048%	0%	0.048%	0.32%	0%	0.28%	0%	0%	0%	0.12%
D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**Table 21.** Waste and outflows for the **Rubens Rigid Core** flooring products over a 75-yr time horizon. Results reported in MJ are calculated using lower heating values.

Impact Category	Hazardous waste (kg)	Nonhazardous waste (kg)	Radioactive waste (kg)	Components for re-use (kg)	Materials for recycling (kg)	Materials for energy recovery (kg)	Exported energy (MJ)
<b>Wastes &amp; Outflows</b>							
A1	3.56x10 <sup>-3</sup>	0.666	1.53x10 <sup>-4</sup>	0.00	0.00	0.00	0.00
	36%	3%	29%	0%	0%	0%	0%
A2	6.99x10 <sup>-5</sup>	0.476	2.03x10 <sup>-6</sup>	0.00	0.00	0.00	0.00
	0.71%	2.1%	0.39%	0%	0%	0%	0%
A3	1.12x10 <sup>-4</sup>	0.507	6.10x10 <sup>-5</sup>	0.00	0.00	0.00	0.00
	1.1%	2.3%	12%	0%	0%	0%	0%
A4	1.85x10 <sup>-4</sup>	0.370	4.36x10 <sup>-6</sup>	0.00	0.00	0.00	0.00
	1.9%	1.6%	0.83%	0%	0%	0%	0%
A5	1.65x10 <sup>-4</sup>	0.589	9.01x10 <sup>-6</sup>	0.00	1.55	0.00	0.00
	1.7%	2.6%	1.7%	0%	48%	0%	0%
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	9.52x10 <sup>-4</sup>	0.139	3.52x10 <sup>-5</sup>	0.00	0.00	0.00	0.00
	9.6%	0.62%	6.7%	0%	0%	0%	0%
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	4.69x10 <sup>-3</sup>	11.7	2.55x10 <sup>-4</sup>	0.00	1.71	0.00	0.00
	47%	52%	49%	0%	52%	0%	0%
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	1.60x10 <sup>-4</sup>	0.109	1.73x10 <sup>-6</sup>	0.00	0.00	0.00	0.00
	1.6%	0.48%	0.33%	0%	0%	0%	0%
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	1.53x10 <sup>-5</sup>	7.92	1.22x10 <sup>-6</sup>	0.00	0.00	0.00	0.00
	0.15%	35%	0.23%	0%	0%	0%	0%
D	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**Table 22.** Key Life Cycle Impact Assessment results for the **Palio Rigid** flooring products over a 75-yr time horizon. Results reported in MJ are calculated using lower heating values.

Impact Category	Climate change (kg CO <sub>2</sub> eq)	Climate change - Biogenic (kg CO <sub>2</sub> eq)	Climate change - Fossil (kg CO <sub>2</sub> eq)	Climate change - Land use and LU change (kg CO <sub>2</sub> eq)	GWP-GHG (IPCC AR6)	Acidification (mol H <sup>+</sup> eq)	Eutrophication, freshwater (kg P eq)	Eutrophication, marine (kg N eq)	Eutrophication, terrestrial (mol N eq)	Ozone depletion (kg CFC11 eq)	Photochemical ozone formation (kg NMVOC eq)	Particulate matter (disease inc.)
<b>Key Indicators</b>												
A1	8.75	5.11x10 <sup>-3</sup>	8.70	4.52x10 <sup>-2</sup>	8.46	3.50x10 <sup>-2</sup>	2.89x10 <sup>-3</sup>	7.06x10 <sup>-3</sup>	7.20x10 <sup>-2</sup>	4.37x10 <sup>-6</sup>	3.40x10 <sup>-2</sup>	3.30x10 <sup>-7</sup>
	20%	0.048%	22%	88%	19%	12%	0%	7.6%	9.2%	72%	12%	16%
A2	0.288	2.65x10 <sup>-5</sup>	0.288	1.13x10 <sup>-4</sup>	0.281	1.17x10 <sup>-3</sup>	2.21x10 <sup>-5</sup>	4.28x10 <sup>-4</sup>	4.66x10 <sup>-3</sup>	4.18x10 <sup>-9</sup>	1.62x10 <sup>-3</sup>	1.88x10 <sup>-8</sup>
	0.65%	0.00025%	0.73%	0.22%	0.62%	0.41%	0%	0.46%	0.6%	0.069%	0.6%	0.92%
A3	1.60	-0.551	2.14	3.00x10 <sup>-3</sup>	2.27	7.75x10 <sup>-3</sup>	1.21x10 <sup>-3</sup>	3.04x10 <sup>-3</sup>	2.39x10 <sup>-2</sup>	2.73x10 <sup>-8</sup>	7.42x10 <sup>-3</sup>	5.79x10 <sup>-8</sup>
	3.6%	-5.2%	5.5%	5.8%	5%	2.7%	0%	3.3%	3.1%	0.45%	2.7%	2.8%
A4	2.25	-3.92x10 <sup>-4</sup>	2.25	1.08x10 <sup>-3</sup>	2.20	5.02x10 <sup>-2</sup>	9.68x10 <sup>-5</sup>	1.28x10 <sup>-2</sup>	0.142	3.19x10 <sup>-8</sup>	3.91x10 <sup>-2</sup>	8.52x10 <sup>-8</sup>
	5%	-0.0037%	5.7%	2.1%	4.9%	18%	0%	14%	18%	0.53%	14%	4.2%
A5	1.06	0.428	0.627	1.99x10 <sup>-3</sup>	0.806	4.16x10 <sup>-3</sup>	1.91x10 <sup>-4</sup>	1.54x10 <sup>-3</sup>	1.15x10 <sup>-2</sup>	1.78x10 <sup>-7</sup>	4.03x10 <sup>-3</sup>	2.81x10 <sup>-8</sup>
	2.4%	4%	1.6%	3.8%	1.8%	1.5%	0%	1.7%	1.5%	3%	1.5%	1.4%
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	3.39	7.83x10 <sup>-3</sup>	3.38	1.75x10 <sup>-3</sup>	3.27	1.37x10 <sup>-2</sup>	7.76x10 <sup>-4</sup>	2.48x10 <sup>-3</sup>	2.62x10 <sup>-2</sup>	6.32x10 <sup>-8</sup>	1.68x10 <sup>-2</sup>	1.39x10 <sup>-7</sup>
	7.6%	0.074%	8.6%	3.4%	7.2%	4.8%	0%	2.7%	3.4%	1%	6.2%	6.8%
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	21.6	3.96	17.6	5.68x10 <sup>-2</sup>	19.9	0.118	5.26x10 <sup>-3</sup>	3.91x10 <sup>-2</sup>	0.324	5.10x10 <sup>-6</sup>	0.113	7.91x10 <sup>-7</sup>
	48%	37%	45%	110%	44%	41%	0%	42%	42%	84%	42%	39%
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	1.53	1.95x10 <sup>-4</sup>	1.53	1.47x10 <sup>-4</sup>	1.49	7.86x10 <sup>-3</sup>	2.79x10 <sup>-5</sup>	3.41x10 <sup>-3</sup>	3.74x10 <sup>-2</sup>	2.29x10 <sup>-8</sup>	1.49x10 <sup>-2</sup>	1.86x10 <sup>-7</sup>
	3.4%	0.0018%	3.9%	0.29%	3.3%	2.8%	0%	3.7%	4.8%	0.38%	5.5%	9.1%
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	4.15	3.72	0.432	7.78x10 <sup>-5</sup>	2.62	9.48x10 <sup>-4</sup>	3.47x10 <sup>-4</sup>	7.29x10 <sup>-3</sup>	3.11x10 <sup>-3</sup>	2.16x10 <sup>-9</sup>	1.79x10 <sup>-3</sup>	1.37x10 <sup>-8</sup>
	9.3%	35%	1.1%	0.15%	5.8%	0.33%	0%	7.8%	0.4%	0.036%	0.66%	0.67%
D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**Table 23.** Life Cycle Impact Assessment results for the **Palio Rigid** flooring products over a 75-yr time horizon. Results reported in MJ are calculated using lower heating values.

Impact Category	Freshwater ecotoxicity (PAF.m <sup>3</sup> .day)	Human toxicity, cancer (cases)	Human toxicity, non-cancer (cases)	Land use (species.yr)	Resource use, fossils (MJ) <sup>1)</sup>	Resource use, minerals and metals (kg Sb eq) <sup>1)</sup>	Water use (m <sup>3</sup> depriv.) <sup>1)</sup>
<b>Other Indicators</b>							
A1	173,000	2.17x10 <sup>-6</sup>	2.27x10 <sup>-6</sup>	1.78x10 <sup>-9</sup>	163	3.71x10 <sup>-5</sup>	2.41
	13%	26%	18%	8.3%	27%	38%	10%
A2	1,710	7.17x10 <sup>-8</sup>	3.26x10 <sup>-8</sup>	9.44x10 <sup>-11</sup>	3.94	3.98x10 <sup>-7</sup>	2.21x10 <sup>-2</sup>
	0.13%	0.87%	0.25%	0.44%	0.64%	0.41%	0.092%
A3	54,300	4.16x10 <sup>-7</sup>	5.70x10 <sup>-7</sup>	7.20x10 <sup>-9</sup>	34.3	1.45x10 <sup>-6</sup>	0.316
	4%	5.1%	4.4%	34%	5.6%	1.5%	1.3%
A4	6,870	4.92x10 <sup>-7</sup>	1.33x10 <sup>-7</sup>	2.48x10 <sup>-10</sup>	27.8	1.45x10 <sup>-6</sup>	0.105
	0.51%	6%	1%	1.2%	4.5%	1.5%	0.43%
A5	29,200	1.39x10 <sup>-7</sup>	2.67x10 <sup>-7</sup>	3.86x10 <sup>-10</sup>	10.1	1.64x10 <sup>-6</sup>	5.57x10 <sup>-2</sup>
	2.2%	1.7%	2.1%	1.8%	1.6%	1.7%	0.23%
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	64,200	7.76x10 <sup>-7</sup>	6.16x10 <sup>-7</sup>	5.01x10 <sup>-10</sup>	67.5	8.10x10 <sup>-6</sup>	20.2
	4.8%	9.5%	4.8%	2.3%	11%	8.3%	84%
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	668,000	3.89x10 <sup>-6</sup>	6.45x10 <sup>-6</sup>	1.09x10 <sup>-8</sup>	287	4.69x10 <sup>-5</sup>	2.07
	50%	47%	50%	51%	47%	48%	8.6%
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	1,900	1.10x10 <sup>-7</sup>	5.64x10 <sup>-8</sup>	7.14x10 <sup>-11</sup>	19.2	4.57x10 <sup>-7</sup>	4.28x10 <sup>-2</sup>
	0.14%	1.3%	0.44%	0.33%	3.1%	0.47%	0.18%
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	340,000	1.42x10 <sup>-7</sup>	2.54x10 <sup>-6</sup>	1.76x10 <sup>-10</sup>	1.97	8.80x10 <sup>-8</sup>	-1.07
	25%	1.7%	20%	0.82%	0.32%	0.09%	-4.4%
D	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1)</sup> 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.

**Table 24.** Resource use for the **Palio Rigid** flooring products over a 75-yr time horizon. Results reported in MJ are calculated using lower heating values.

Impact Category	Use of renewable primary energy (MJ)	Use of renewable primary energy resources used as raw materials (MJ)	Total Renewable primary energy (MJ)	Use of nonrenewable primary energy (MJ)	Use of nonrenewable primary energy resources used as raw materials (MJ)	Total Nonrenewable primary energy (MJ)	Use of secondary materials (MJ)	Use of Renewable secondary fuels (MJ)	Use of Nonrenewable secondary fuels (MJ)	Use of net fresh water (m <sup>3</sup> )
<b>Resources</b>										
A1	7.50	0.00	7.50	122	41.5	163	0.00	0.00	0.00	1.29
	13%	0%	13%	21%	48%	25%	0%	0%	0%	25%
A2	5.21x10 <sup>-2</sup>	0.00	5.21x10 <sup>-2</sup>	3.94	0.00	3.94	0.00	0.00	0.00	6.32x10 <sup>-3</sup>
	0.093%	0%	0.093%	0.69%	0%	0.6%	0%	0%	0%	0.12%
A3	16.5	0.00	16.5	34.3	0.00	34.3	0.00	0.00	0.00	0.356
	30%	0%	30%	6%	0%	5.2%	0%	0%	0%	7%
A4	0.254	0.00	0.254	27.8	0.00	27.8	0.00	0.00	0.00	2.97x10 <sup>-2</sup>
	0.46%	0%	0.46%	4.9%	0%	4.2%	0%	0%	0%	0.58%
A5	0.981	0.00	0.981	10.1	0.00	10.1	0.00	0.00	0.00	6.85x10 <sup>-2</sup>
	1.8%	0%	1.8%	1.8%	0%	1.5%	0%	0%	0%	1.3%
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	2.42	0.00	2.42	67.5	0.00	67.5	0.00	0.00	0.00	1.38
	4.3%	0%	4.3%	12%	0%	10%	0%	0%	0%	27%
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	28.0	0.00	28.0	287	45.6	332	0.00	0.00	0.00	1.95
	50%	0%	50%	50%	52%	50%	0%	0%	0%	38%
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	8.34x10 <sup>-2</sup>	0.00	8.34x10 <sup>-2</sup>	19.2	0.00	19.2	0.00	0.00	0.00	1.44x10 <sup>-2</sup>
	0.15%	0%	0.15%	3.3%	0%	2.9%	0%	0%	0%	0.28%
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	5.31x10 <sup>-2</sup>	0.00	5.31x10 <sup>-2</sup>	1.97	0.00	1.97	0.00	0.00	0.00	6.40x10 <sup>-3</sup>
	0.095%	0%	0.095%	0.34%	0%	0.3%	0%	0%	0%	0.13%
D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**Table 25.** Waste and outflows for the **Palio Rigid** flooring products over a 75-yr time horizon. Results reported in MJ are calculated using lower heating values.

Impact Category	Hazardous waste (kg)	Nonhazardous waste (kg)	Radioactive waste (kg)	Components for re-use (kg)	Materials for recycling (kg)	Materials for energy recovery (kg)	Exported energy (MJ)
<b>Wastes &amp; Outflows</b>							
A1	2.97x10 <sup>-3</sup>	0.583	1.26x10 <sup>-4</sup>	0.00	0.00	0.00	0.00
	35%	3.1%	20%	0%	0%	0%	0%
A2	2.74x10 <sup>-5</sup>	0.187	7.97x10 <sup>-7</sup>	0.00	0.00	0.00	0.00
	0.33%	1%	0.13%	0%	0%	0%	0%
A3	1.22x10 <sup>-4</sup>	0.420	1.36x10 <sup>-4</sup>	0.00	0.00	0.00	0.00
	1.4%	2.3%	22%	0%	0%	0%	0%
A4	1.58x10 <sup>-4</sup>	0.414	3.84x10 <sup>-6</sup>	0.00	0.00	0.00	0.00
	1.9%	2.2%	0.62%	0%	0%	0%	0%
A5	1.37x10 <sup>-4</sup>	0.450	1.08x10 <sup>-5</sup>	0.00	0.456	0.00	0.00
	1.6%	2.4%	1.7%	0%	48%	0%	0%
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	9.52x10 <sup>-4</sup>	0.139	3.52x10 <sup>-5</sup>	0.00	0.00	0.00	0.00
	11%	0.74%	5.7%	0%	0%	0%	0%
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	3.92x10 <sup>-3</sup>	9.68	3.07x10 <sup>-4</sup>	0.00	0.501	0.00	0.00
	46%	52%	49%	0%	52%	0%	0%
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	1.35x10 <sup>-4</sup>	9.12x10 <sup>-2</sup>	1.45x10 <sup>-6</sup>	0.00	0.00	0.00	0.00
	1.6%	0.49%	0.23%	0%	0%	0%	0%
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	1.28x10 <sup>-5</sup>	6.65	1.01x10 <sup>-6</sup>	0.00	0.00	0.00	0.00
	0.15%	36%	0.16%	0%	0%	0%	0%
D	0.00	0.00	0.00	0.00	0.00	0.00	0.00



**Table 26.** Key Life Cycle Impact Assessment results for the **Van Gogh Rigid Core** flooring products over a 75-yr time horizon. Results reported in MJ are calculated using lower heating values.

Impact Category	Climate change (kg CO <sub>2</sub> eq)	Climate change - Biogenic (kg CO <sub>2</sub> eq)	Climate change - Fossil (kg CO <sub>2</sub> eq)	Climate change - Land use and LU change (kg CO <sub>2</sub> eq)	GWP-GHG (IPCC AR6)	Acidification (mol H <sup>+</sup> eq)	Eutrophication, freshwater (kg P eq)	Eutrophication, marine (kg N eq)	Eutrophication, terrestrial (mol N eq)	Ozone depletion (kg CFC11 eq)	Photochemical ozone formation (kg NMVOC eq)	Particulate matter (disease inc.)
<b>Key Indicators</b>												
A1	9.72 19%	-1.24x10 <sup>-2</sup> -0.12%	9.72 25%	1.95x10 <sup>-2</sup> 38%	9.41 21%	4.04x10 <sup>-2</sup> 14%	2.70x10 <sup>-3</sup> 31%	7.85x10 <sup>-3</sup> 8.5%	8.38x10 <sup>-2</sup> 11%	2.64x10 <sup>-6</sup> 44%	3.65x10 <sup>-2</sup> 13%	3.86x10 <sup>-7</sup> 19%
A2	0.976 2%	7.76x10 <sup>-5</sup> 0.00073%	0.976 2.5%	3.87x10 <sup>-4</sup> 0.75%	0.953 2.1%	4.80x10 <sup>-3</sup> 1.7%	7.33x10 <sup>-5</sup> 0.85%	1.64x10 <sup>-3</sup> 1.8%	1.79x10 <sup>-2</sup> 2.3%	1.41x10 <sup>-8</sup> 0.23%	6.04x10 <sup>-3</sup> 2.2%	6.25x10 <sup>-8</sup> 3.1%
A3	-0.229 -0.46%	-0.669 -6.3%	0.438 1.1%	1.27x10 <sup>-3</sup> 2.5%	0.434 0.96%	2.52x10 <sup>-3</sup> 0.88%	1.79x10 <sup>-4</sup> 2.1%	7.89x10 <sup>-4</sup> 0.85%	7.69x10 <sup>-3</sup> 0.99%	5.41x10 <sup>-9</sup> 0.09%	2.55x10 <sup>-3</sup> 0.93%	5.93x10 <sup>-8</sup> 2.9%
A4	2.75 5.5%	-5.30x10 <sup>-4</sup> -0.005%	2.75 7%	1.34x10 <sup>-3</sup> 2.6%	2.69 6%	6.48x10 <sup>-2</sup> 23%	1.12x10 <sup>-4</sup> 1.3%	1.64x10 <sup>-2</sup> 18%	0.182 23%	3.89x10 <sup>-8</sup> 0.65%	5.00x10 <sup>-2</sup> 18%	9.90x10 <sup>-8</sup> 4.9%
A5	0.732 1.5%	0.159 1.5%	0.572 1.5%	9.03x10 <sup>-4</sup> 1.7%	0.587 1.3%	4.53x10 <sup>-3</sup> 1.6%	1.24x10 <sup>-4</sup> 1.4%	1.14x10 <sup>-3</sup> 1.2%	1.18x10 <sup>-2</sup> 1.5%	1.08x10 <sup>-7</sup> 1.8%	3.85x10 <sup>-3</sup> 1.4%	2.47x10 <sup>-8</sup> 1.2%
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	3.39 6.8%	7.83x10 <sup>-3</sup> 0.074%	3.38 8.6%	1.75x10 <sup>-3</sup> 3.4%	3.27 7.2%	1.37x10 <sup>-2</sup> 4.8%	7.76x10 <sup>-4</sup> 9%	2.48x10 <sup>-3</sup> 2.7%	2.62x10 <sup>-2</sup> 3.4%	6.32x10 <sup>-8</sup> 1%	1.68x10 <sup>-2</sup> 6.2%	1.39x10 <sup>-7</sup> 6.8%
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	24.4 49%	5.54 52%	18.8 48%	2.61x10 <sup>-2</sup> 51%	22.0 49%	0.142 50%	4.12x10 <sup>-3</sup> 48%	4.73x10 <sup>-2</sup> 51%	0.394 51%	3.13x10 <sup>-6</sup> 52%	0.134 49%	9.94x10 <sup>-7</sup> 49%
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	2.08 4.2%	2.66x10 <sup>-4</sup> 0.0025%	2.08 5.3%	2.00x10 <sup>-4</sup> 0.39%	2.03 4.5%	1.07x10 <sup>-2</sup> 3.8%	3.80x10 <sup>-5</sup> 0.44%	4.65x10 <sup>-3</sup> 5%	5.09x10 <sup>-2</sup> 6.5%	3.12x10 <sup>-8</sup> 0.52%	2.03x10 <sup>-2</sup> 7.4%	2.53x10 <sup>-7</sup> 12%
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	6.14 12%	5.56 53%	0.576 1.5%	1.11x10 <sup>-4</sup> 0.21%	3.86 8.5%	1.34x10 <sup>-3</sup> 0.47%	5.19x10 <sup>-4</sup> 6%	1.06x10 <sup>-2</sup> 11%	4.35x10 <sup>-3</sup> 0.56%	2.97x10 <sup>-9</sup> 0.049%	2.57x10 <sup>-3</sup> 0.94%	1.90x10 <sup>-8</sup> 0.93%
D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**Table 27.** Life Cycle Impact Assessment results for the **Van Gogh Rigid Core** flooring products over a 75-yr time horizon. Results reported in MJ are calculated using lower heating values.

Impact Category	Freshwater ecotoxicity (PAF.m <sup>3</sup> .day)	Human toxicity, cancer (cases)	Human toxicity, non-cancer (cases)	Land use (species.yr)	Resource use, fossils (MJ) <sup>1)</sup>	Resource use, minerals and metals (kg Sb eq) <sup>1)</sup>	Water use (m <sup>3</sup> depriv.) <sup>1)</sup>
<b>Other Indicators</b>							
A1	195,000	2.32x10 <sup>-6</sup>	2.05x10 <sup>-6</sup>	1.71x10 <sup>-9</sup>	175	3.22x10 <sup>-5</sup>	2.94
	12%	27%	15%	8.3%	28%	37%	12%
A2	5,680	2.42x10 <sup>-7</sup>	1.08x10 <sup>-7</sup>	3.10x10 <sup>-10</sup>	13.3	1.32x10 <sup>-6</sup>	7.36x10 <sup>-2</sup>
	0.35%	2.8%	0.78%	1.5%	2.1%	1.5%	0.3%
A3	7,630	1.54x10 <sup>-7</sup>	9.74x10 <sup>-8</sup>	6.56x10 <sup>-9</sup>	5.95	6.10x10 <sup>-7</sup>	0.153
	0.47%	1.8%	0.7%	32%	0.95%	0.69%	0.62%
A4	7,850	5.96x10 <sup>-7</sup>	1.52x10 <sup>-7</sup>	2.63x10 <sup>-10</sup>	33.8	1.63x10 <sup>-6</sup>	0.123
	0.49%	6.8%	1.1%	1.3%	5.4%	1.9%	0.5%
A5	8,720	1.34x10 <sup>-7</sup>	1.05x10 <sup>-7</sup>	3.57x10 <sup>-10</sup>	9.17	1.44x10 <sup>-6</sup>	0.113
	0.54%	1.5%	0.76%	1.7%	1.5%	1.6%	0.46%
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	64,200	7.76x10 <sup>-7</sup>	6.16x10 <sup>-7</sup>	5.01x10 <sup>-10</sup>	67.5	8.10x10 <sup>-6</sup>	20.2
	4%	8.8%	4.4%	2.4%	11%	9.2%	83%
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	808,000	4.19x10 <sup>-6</sup>	6.93x10 <sup>-6</sup>	1.05x10 <sup>-8</sup>	293	4.18x10 <sup>-5</sup>	2.20
	50%	48%	50%	51%	47%	48%	9%
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	2,590	1.50x10 <sup>-7</sup>	7.68x10 <sup>-8</sup>	9.73x10 <sup>-11</sup>	26.2	6.22x10 <sup>-7</sup>	5.83x10 <sup>-2</sup>
	0.16%	1.7%	0.55%	0.47%	4.2%	0.71%	0.24%
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	507,000	2.06x10 <sup>-7</sup>	3.72x10 <sup>-6</sup>	2.40x10 <sup>-10</sup>	2.72	1.22x10 <sup>-7</sup>	-1.46
	32%	2.4%	27%	1.2%	0.44%	0.14%	-6%
D	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<sup>1)</sup> 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.

**Table 28.** Resource use for the **Van Gogh Rigid Core** flooring products over a 75-yr time horizon. Results reported in MJ are calculated using lower heating values.

Impact Category	Use of renewable primary energy (MJ)	Use of renewable primary energy resources used as raw materials (MJ)	Total Renewable primary energy (MJ)	Use of nonrenewable primary energy (MJ)	Use of nonrenewable primary energy resources used as raw materials (MJ)	Total Nonrenewable primary energy (MJ)	Use of secondary materials (MJ)	Use of Renewable secondary fuels (MJ)	Use of Nonrenewable secondary fuels (MJ)	Use of net fresh water (m <sup>3</sup> )
<b>Resources</b>										
A1	7.93	0.00	7.93	140	34.9	175	1.81	0.00	0.00	1.38
	16%	0%	16%	24%	48%	26%	48%	0%	0%	29%
A2	0.174	0.00	0.174	13.3	0.00	13.3	0.00	0.00	0.00	2.10x10 <sup>-2</sup>
	0.34%	0%	0.34%	2.2%	0%	2%	0%	0%	0%	0.45%
A3	13.6	0.00	13.6	5.95	0.00	5.95	0.00	0.00	0.00	5.63x10 <sup>-2</sup>
	27%	0%	27%	1%	0%	0.9%	0%	0%	0%	1.2%
A4	0.298	0.00	0.298	33.8	0.00	33.8	0.00	0.00	0.00	3.47x10 <sup>-2</sup>
	0.59%	0%	0.59%	5.7%	0%	5.1%	0%	0%	0%	0.74%
A5	0.879	0.00	0.879	9.17	0.00	9.17	0.00	0.00	0.00	5.99x10 <sup>-2</sup>
	1.7%	0%	1.7%	1.6%	0%	1.4%	0%	0%	0%	1.3%
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	2.42	0.00	2.42	67.5	0.00	67.5	0.00	0.00	0.00	1.38
	4.8%	0%	4.8%	11%	0%	10%	0%	0%	0%	29%
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	25.3	0.00	25.3	293	38.4	331	1.99	0.00	0.00	1.74
	50%	0%	50%	49%	52%	50%	52%	0%	0%	37%
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	0.114	0.00	0.114	26.2	0.00	26.2	0.00	0.00	0.00	1.96x10 <sup>-2</sup>
	0.22%	0%	0.22%	4.4%	0%	3.9%	0%	0%	0%	0.42%
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	7.61x10 <sup>-2</sup>	0.00	7.61x10 <sup>-2</sup>	2.72	0.00	2.72	0.00	0.00	0.00	9.10x10 <sup>-3</sup>
	0.15%	0%	0.15%	0.46%	0%	0.41%	0%	0%	0%	0.19%
D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**Table 29.** Waste and outflows for the **Van Gogh Rigid Core** flooring products over a 75-yr time horizon. Results reported in MJ are calculated using lower heating values.

Impact Category	Hazardous waste (kg)	Nonhazardous waste (kg)	Radioactive waste (kg)	Components for re-use (kg)	Materials for recycling (kg)	Materials for energy recovery (kg)	Exported energy (MJ)
<b>Wastes &amp; Outflows</b>							
A1	3.46x10 <sup>-3</sup>	0.629	1.35x10 <sup>-4</sup>	0.00	0.00	0.00	0.00
	36%	2.7%	37%	0%	0%	0%	0%
A2	9.18x10 <sup>-5</sup>	0.613	2.65x10 <sup>-6</sup>	0.00	0.00	0.00	0.00
	0.95%	2.6%	0.73%	0%	0%	0%	0%
A3	4.46x10 <sup>-5</sup>	8.93x10 <sup>-2</sup>	4.75x10 <sup>-6</sup>	0.00	0.00	0.00	0.00
	0.46%	0.38%	1.3%	0%	0%	0%	0%
A4	1.89x10 <sup>-4</sup>	0.418	4.49x10 <sup>-6</sup>	0.00	0.00	0.00	0.00
	2%	1.8%	1.2%	0%	0%	0%	0%
A5	1.52x10 <sup>-4</sup>	0.189	5.88x10 <sup>-6</sup>	0.00	0.286	0.00	0.00
	1.6%	0.81%	1.6%	0%	48%	0%	0%
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	9.52x10 <sup>-4</sup>	0.139	3.52x10 <sup>-5</sup>	0.00	0.00	0.00	0.00
	9.9%	0.59%	9.7%	0%	0%	0%	0%
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	4.55x10 <sup>-3</sup>	12.2	1.71x10 <sup>-4</sup>	0.00	0.315	0.00	0.00
	47%	52%	47%	0%	52%	0%	0%
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	1.83x10 <sup>-4</sup>	0.124	1.98x10 <sup>-6</sup>	0.00	0.00	0.00	0.00
	1.9%	0.53%	0.55%	0%	0%	0%	0%
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	1.76x10 <sup>-5</sup>	9.06	1.46x10 <sup>-6</sup>	0.00	0.00	0.00	0.00
	0.18%	39%	0.4%	0%	0%	0%	0%
D	0.00	0.00	0.00	0.00	0.00	0.00	0.00

## 6. LCA: Interpretation

The contributions to total impact indicator results are dominated by the product replacement phase (B4) of the assessment. Of the remaining life cycle phases, the raw material extraction and processing (A1) and product manufacturing (A3) phases are generally the largest contributors to indicator impact results followed by product distribution (A4) and disposal (C4). Other life cycle phase contributions are minimal.

## 7. Additional Environmental Information

### 7.1 ENVIRONMENT AND HEALTH DURING MANUFACTURING

The Designflooring manufacturing facilities are certified to ISO 14001 – Environmental management systems.

### 7.2 ENVIRONMENT AND HEALTH DURING INSTALLATION

The Designflooring luxury vinyl flooring products meet the requirements of the following:

- FloorScore®
- Indoor Air Comfort Gold

### 7.3 EXTRAORDINARY EFFECTS

#### Fire

The Designflooring products achieve a reaction to fire classification of B<sub>f1</sub>-s1 according to EN 13501-1:2002: Fire classification of construction products and building elements. Classification using test data from reaction to fire tests.

### 7.4 ENVIRONMENTAL ACTIVITIES AND CERTIFICATIONS

Designflooring products are REACH compliant. For more information on Designflooring's certifications and environmental initiatives please view our Environmental Statement [www.designflooring.com/environmentalpolicy](http://www.designflooring.com/environmentalpolicy).

## 8. References

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