



BENTLEY®

Environmental Product Declaration 5 mm LVT, 5 mm LVT Acoustic, and 5 mm LVT Click

Programme: The International EPD® System

Programme operator: EPD International AB

EPD registration number: S-P-09264

Publication Date: November 2, 2023

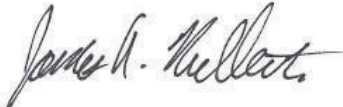
Valid Until: November 2, 2028

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In accordance with:

■ ISO 14025 ■ ISO 21930 □ EN 15804



Programme and Programme Operator	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com info@environdec.com as provided by EPD North America
General Program instructions and Version Number¹	General Programme Instructions for the International EPD® System. Version 4.0. 2021-03-29
Manufacturer Name and Address	Bentley Mills 1461 Don Julian Rd. City of Industry, CA, 91746
Declaration Number	S-P-09264
Declared Product and Functional Unit	5 mm LVT 5 mm LVT Acoustic 5 mm LVT Click 1 m ² of installed flooring and with a building service life of 75 years
Reference PCR and Version Number²	UL Part A: Life Cycle Assessment Calculation Rules and Report Requirements, Version 4.0 UL Part B: Flooring EPD Requirements. UL 10010-7, Version 2.0
Product's intended Application and Use	Commercial Flooring Applications
Product RSL	30 years
Markets of Applicability	North America
Date of Issue	November 2, 2023
Period of Validity	5 years from date of issue
EPD Type	Product Specific
Range of Dataset Variability	N/A
EPD Scope	Cradle-to-Grave
Year of reported manufacturer primary data	2021
LCA Software and Version Number	Sphera Managed LCA Content Database 2023.1 (formerly GaBi Database)
LCI Database and Version Number	Sphera LCA for Experts 10.7 (formerly GaBi)
LCIA Methodology and Version Number	TRACI 2.1, CML 2001-Jan 2016, IPCC AR5
Part A PCR review was conducted by:	Lindita Bushi, PhD, Chair Hugues Imbeault-Tétreault, Eng., M.A.Sc. Jack Geibig
The sub-category PCR review was conducted by:	Jack Geibig (Chair) Thomas Gloria, PhD Thaddeus Owen
Independent third-party verification of the declaration and data, according to ISO 14025:2008.	<input type="checkbox"/> EPD Process Certification <input checked="" type="checkbox"/> EPD Verification <input type="checkbox"/> Pre-Verified Tool
This declaration was independently verified in accordance with ISO 14025: 2006. The UL Environment "Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report," v4.0, based on CEN Norm EN 15804 (2012) and ISO 21930:2017, serves as the core PCR, with additional considerations from the USGBC/UL Environment Part A Enhancement (2017) <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External	 James Mellentine, Thrive ESG
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	WAP Sustainability Consulting
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	James Mellentine, Thrive ESG
The procedure for follow-up of data during EPD validity, as defined by the GPI, involves third party verifier:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<p>¹Not all requirements in the GPI are fulfilled, particularly the requirement, for construction products, to follow EN 15804 for certain aspects of the LCA method. ²This EPD is based on a PCR that satisfies procurement rules at the federal, state, and municipal levels which call for EPDs based on the UL Part B PCR. The UL Part B PCR was used to meet regulatory (example: Buy Clean California Act, etc.) and market expectations (example: Building Transparency EC3 comparisons, LEED and existing vendor procurement requirements, product scoring programs, etc.). The EPD should not be used outside of this context.</p> <p>Limitations: Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance of Flooring Products using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the building energy use phase as instructed under this PCR. Full conformance with the PCR for Products allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible". Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared. The EPD owner has the sole ownership, liability, and responsibility of the EPD.</p>	

Product Definition and Information

Company Description

For more than 40 years, Bentley Mills, Inc. has defined design, color, quality, and customer service in the commercial flooring industry. Our California-based brand manufactures and markets award-winning broadloom, carpet tile, area rug, and luxury vinyl tile products for interiors across the globe. With luxury, timelessness and crafted quality at the forefront of our product design, Bentley is consistently recognized for leadership in design, performance, and customer service to the architecture and interior design community. And as a California-based company, we are committed to sustainable commerce and social responsibility. We continue to evolve our product lines to mirror our eco-conscious philosophy and achieve top industry certifications. We proudly operate our headquarters in a LEED-EBOM® Gold manufacturing facility.

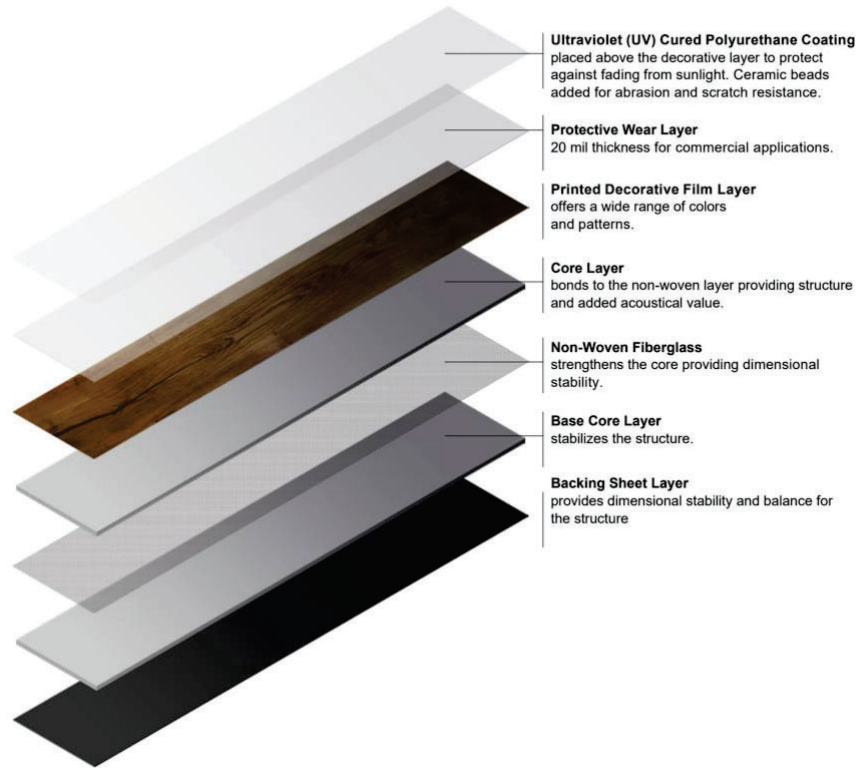


Figure 1: Product Construction (5 mm LVT, 5 mm LVT Click)

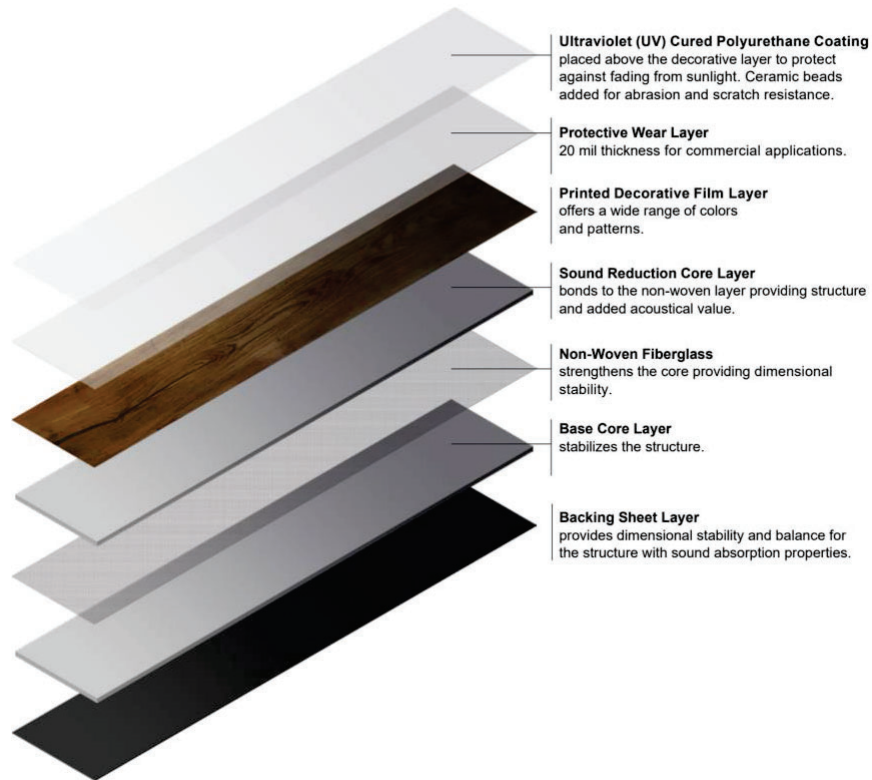


Figure 2: Product Construction (5 mm LVT Acoustic)

Product Description

This EPD covers 3 products: 5 mm LVT, 5 mm LVT Acoustic, and 5 mm LVT Click. Data are presented separately for each product. Results are provided for 5 mm LVT in the main body of this EPD, with conversion factors for 5 mm LVT Acoustic and 5 mm LVT Click appended to the end of the EPD.

5 mm LVT

The 5mm Luxury Vinyl Tile (LVT) from Bentley is a highly durable flooring product. It features several layers that contribute to its performance and longevity. With a wide range of colors available, it offers both durability and aesthetic versatility. The product is FloorScore® certified, indicating that it meets stringent indoor air quality (IAQ) standards. With its exceptional durability and FloorScore® certification, Bentley's 5mm LVT is an excellent option for commercial environments.

5 mm LVT Acoustic

The 5mm Luxury Vinyl Tile (LVT) from Bentley is a highly durable flooring product. It features several layers that contribute to its performance, longevity, and provide excellent sound absorption properties. With a wide range of colors available, it offers both durability and aesthetic versatility. The product is FloorScore® certified, indicating that it meets stringent indoor air quality (IAQ) standards. With its exceptional durability and FloorScore® certification, Bentley's 5mm LVT is an excellent option for commercial environments.

5 mm LVT Click

The 5mm Luxury Vinyl Tile (LVT) Click from Bentley is a highly durable flooring product. It features several layers that contribute to its performance and longevity. With a wide range of colors available, it offers both durability and aesthetic versatility. The product is FloorScore® certified, indicating that it meets stringent indoor air quality (IAQ) standards. Additionally, the LVT features a tongue and groove component, allowing the planks to be installed without adhesive. Bentley's 5mm LVT Click is an excellent choice for commercial environments seeking both reliability and ease of installation.

Bentley Mills 5 mm LVT, 5 mm LVT Acoustic, and 5 mm LVT Click are within CSI MasterFormat section 09 65 19 and UN CPC 36910.

Application

Bentley Mills LVT products are used as interior flooring in medium to high traffic areas in commercial settings, among others.

Properties of Declared Product as Delivered

Bentley Mills LVT products are delivered packaged in a cardboard box with plastic airbags to protect the tiles during transportation to the customer. Multiple boxes are then stacked on a wooden pallet with cover boards, corner protectors, plastic wrap, and plastic strapping for shipment.

Technical data for 5 mm LVT, 5 mm LVT Acoustic, and 5 mm LVT Click are listed in Table 1.

Table 1: Technical Data

Parameter	Standard	Value
Tile Size	-	18" x 36" (457 mm x 914 mm)
Plank Size	-	6" x 48" (152 mm x 1,219 mm) 9" x 48" (229 mm x 1,219 mm)
Wear Layer Thickness	ISO 24340	0.5 mm
Overall Thickness	ISO 24346	5 mm
Flexibility	ASTM F137	No cracks or breaks
Chemical Resistance	ASTM F925	Slight change maximum
Resistance to Heat	ASTM F1514	$\Delta E \leq 8$
Resistance to Light	ASTM F1515	$\Delta E \leq 8$
Squareness	ASTM F2055/F2421	≤ 0.10 in.
Dimensional Stability	ASTM F2199	≤ 0.020 in/lin ft
Flooring Radiant Panel	ASTM E648	> 0.45 W/cm ²
Smoke Density	ASTM E662	≤ 450 dmc flaming
Slip Resistance	ASTM D2047 Dry	≥ 0.50

Flow Diagram

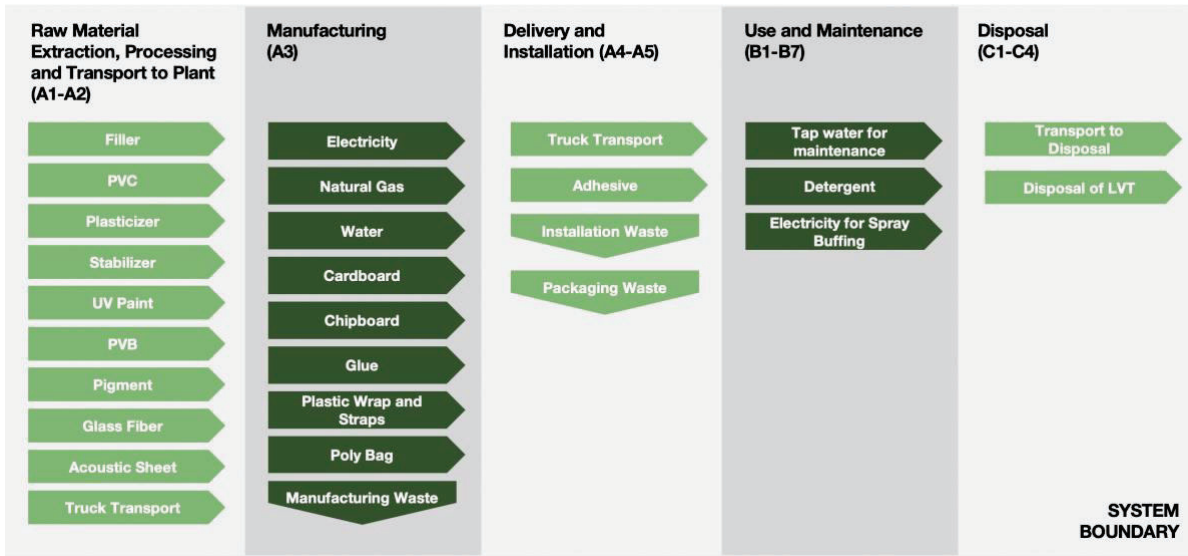


Figure 2: Process Flow Diagram

Manufacturing

All Bentley Mills LVT products are manufactured by a supplier in South Korea and sent to City of Industry, California, to be distributed by Bentley Mills. The manufacturing process begins with heating and mixing raw materials for the bottom layer, calendering materials into a thin sheet, cooling them, and winding them into rolls. Middle layers are also mixed and calendered. The top layer is printed into sheets and adhered to the middle and bottom layers. The assembly is laminated and coated with a UV coating. Following the coating process, the LVT is annealed, cut, and packaged before being shipped from the supplier to Bentley Mills for distribution. Packaging materials are either recycled, landfilled, or incinerated based on waste classification mentioned in Sections 2.8.5 and 2.8.6 in Part A of the reference PCR.

Table 2: Product Composition

Material	5 mm LVT	5 mm LVT Acoustic	5 mm LVT Click
Filler	66%	53%	57%
PVC	26%	20%	27%
Plasticizer	7%	10%	13%
Acoustic Sheet	-	13%	-
Glass Fiber	<1%	2%	3%
Stabilizers and Pigments	<1%	<1%	<1%
Other materials	<1%	<1%	<1%

Table 3: Product Packaging, per m² of installed product

Material	5 mm LVT	5 mm LVT Acoustic	5 mm LVT Click	Unit
Cardboard	2.37E-01	2.37E-01	2.36E-01	kg
Chipboard	9.49E-03	9.49E-03	9.44E-03	kg
Corner Protectors	4.75E-03	4.75E-03	4.72E-03	kg
Hotmelt Adhesive	2.37E-03	2.37E-03	2.36E-03	kg

Material	5 mm LVT	5 mm LVT Acoustic	5 mm LVT Click	Unit
Pallet	1.61E-01	1.61E-01	1.60E-01	kg
Plastic Wrap	7.11E-04	7.11E-04	7.07E-04	kg
Plastic Strapping	2.37E-03	2.37E-03	2.36E-03	kg
Poly Bag	2.37E-03	2.37E-03	2.36E-03	kg

Transportation

It is assumed that all raw materials are delivered to the supplier manufacturing facility in South Korea via truck, based on global region. Distances were calculated using the supplier location and the location of manufacturing.

The product is delivered from the manufacturing facility in South Korea to Bentley Mills in California, USA, via truck and ship, then distributed to customers in North America via truck. Distribution distance to customers is based on the PCR Part B: Flooring EPD Requirements UL 10010-7.

Product Installation

Bentley Mills LVT products should be installed according to manufacturer instructions on the Bentley Mills website at <https://www.bentleymills.com/technical/>.

Bentley Mills 5 mm LVT and 5 mm LVT Acoustic are installed with application of adhesive to the prepared subfloor. A hand trowel and acrylic spread adhesive are required for installation, but manufacturing of these tools are not included in the study as these are multi-use tools and the impacts per functional unit is considered negligible. The recommended coverage rate of the adhesive identified by Bentley Mills is used for this study.

Bentley Mills 5 mm LVT Click can be applied directly to a prepared subfloor with no adhesives or additional installation materials.

All waste generated during installation, including packaging waste, is disposed of according to the tables found in Section 2.8.5 of *Part A: Life Cycle Assessment Calculation Rules and Report Requirements* from UL Environment.

Use

The table below shows the parameters for the use phase scenario undergoing study while Table 9 shows the total material and energy inputs required in the study. These inputs were taken from Resilient Floor Coverings Institute's (RFCi) maintenance guidelines indicated in its industry wide EPD for vinyl tile. Excluded from this model is the use of finish and finish remover, as specified by the RFCi industry average EPD for vinyl tile. This is because Bentley Mills products do not require finishes and thus are not relevant. Vinyl tile products are typically not repaired or refurbished and are only replaced if the product fails or a new look is desired. Detailed maintenance instructions for Bentley Mills LVT are provided on the Bentley Mills website: <https://www.bentleymills.com/technical/>.

Table 4: Maintenance Procedure

Level of Use	Cleaning Process	Cleaning Frequency	Consumption of energy and resources
	Dust mop	Daily	None

Level of Use	Cleaning Process	Cleaning Frequency	Consumption of energy and resources
Commercial/ residential/ industrial	Damp mop/ neutral cleaner	Weekly	Hot water, neutral detergent
	Spray buff	Monthly	Electricity

Reference Service Life and Estimated Building Service Life

The reference service life of Bentley Mills 5 mm LVT, 5 mm LVT Acoustic, and 5 mm LVT Click is assumed to be 30 years given that the product is installed as per manufacturer guidelines. This product has a reference service life (RSL) of 30 years, consistent with the average LVT lifetime used in the Resilient Floor Covering Institute LCA and EPD for vinyl tile (RFCi, 2018). Therefore, after initial installation in a building with an estimated service life (ESL) of 75 years, 1.5 replacements are required.

Reuse, Recycling and Energy Recovery

Reuse, recycling, and energy recovery are not applicable for this product currently. Bentley Mills is an active member of the Resilient Floor Covering Institute. Through their membership with RFCI and their own research and innovation, Bentley is continually working to develop reuse and recycling solutions for their LVT.

Disposal

The product is assumed to be 100% landfilled as specified in Sections 2.8.5 and 2.8.6 of Part A: Life Cycle Assessment Calculation Rules and Report Requirements from UL Environment.

Life Cycle Assessment Background Information

Declaration of Methodological Framework

The LCA follows an attributional approach.

Functional Unit

The functional unit of the flooring product is one (1) m² of installed flooring. The mass per product and per functional unit for the products are presented in the table below.

Table 5: Functional Unit Details

Product	Product Weight	Functional Unit Weight	Unit
5 mm LVT	8.83	9.62	kg
5 mm LVT Acoustic	8.83	9.62	kg
5 mm LVT Click	8.78	9.22	kg

System Boundary

This EPD is a Cradle-to-Grave study.

Table 6: System Boundary and Modules

Module Name	Description	Analysis Period	Summary of Included Elements
A1	Product Stage: Raw Material Supply	2021	Raw Material sourcing and processing as defined by secondary data.
A2	Product Stage: Transport	2021	Shipping from supplier to manufacturing site. Fuel use requirements estimated based on product weights and estimated distance.
A3	Product Stage: Manufacturing	2021	Energy inputs required for manufacturing products from raw materials. Packaging materials and manufacturing waste are included as well.
A4	Construction Process Stage: Transport	2021	Shipping from manufacturing site to project site. Fuel use requirements estimated based on product weights and mapped distance.
A5	Construction Process Stage: Installation	2021	Installation materials, installation waste and packaging material waste.
B1	Use Stage: Use	2021	Use of the product.
B2	Use Stage: Maintenance	2021	Cleaning energy, water, and materials, including refinishing the product.
B3	Use Stage: Repair	2021	Product typically not repaired during use.
B4	Use Stage: Replacement	2021	Total materials and energy required to manufacture a replacement.
B5	Use Stage: Refurbishment	2021	Product typically not refurbished during use.
B6	Operational Energy Use	2021	Operational Energy Use of Building Integrated System During Product Use
B7	Operational Water Use	2021	Operational Water Use of Building Integrated System During Product Use

Module Name	Description	Analysis Period	Summary of Included Elements
C1	EOL: Deconstruction	2021	No inputs required for deconstruction.
C2	EOL: Transport	2021	Shipping from project site to waste disposal.
C3	EOL: Waste Processing	2021	Waste processing if incineration as chosen disposal pathway per Part A of the PCR.
C4	EOL: Disposal	2021	Disposal modeled by region as per Part A of the PCR.
D	Benefits beyond system	MND	Credits from energy or material capture.

Estimates and Assumptions

All estimates and assumptions are within the requirements of ISO 14040/44. The majority of the estimations are within the primary data. The primary data was collected as annual totals for electricity usage and production volume. For the LCA, the utility usage information was divided by the production to find a utility consumption per unit mass. Another assumption is that the installation tools are used enough times that the per square meter impacts are negligible.

Cut-Off Criteria

A cut-off rule of 1% has been applied to this assessment, meaning the included inventory data must account for greater than 99% of the total material and energy inputs into the system. Furthermore, greater than 99% of the environmental impacts from the product system must be accounted for in the assessment. No known material or manufacturing inputs or outputs are deliberately excluded from this EPD. Cumulative excluded inputs within the life cycle account for less than 1% of the total mass inputs, energy inputs, and environmental impacts.

Data Sources

Primary data were collected by facility personnel and from utility bills and was used for all manufacturing processes. Whenever available, supplier data was used for raw materials used in the production process. When primary data did not exist, secondary data for raw material production was utilized from Sphera Managed LCA Content Database 2023.1.

Data Quality

The geographical scope of the manufacturing portion of the life cycle is South Korea. All primary data were collected from the manufacturer. The geographic coverage of primary data is considered good. The primary data provided by the manufacturer represent all information for calendar year 2021. Time coverage of this data is considered good. Primary data provided by the manufacturer is specific to the technology used in manufacturing their product. It is site-specific and considered of good quality. Data necessary to model cradle-to-gate unit processes was sourced from Sphera Managed LCA Content LCI datasets. Improved life cycle data from suppliers would improve technological coverage.

Period Under Review

The period under review is calendar year 2021.

Allocation

General principles of allocation were based on ISO 14040/44. To derive a per-unit value for manufacturing electricity, allocation based on total production by mass was adopted. As a default, secondary Sphera Managed LCA Content datasets use a physical basis for allocation.

Of relevance to the defined system boundary is the method in which recycled materials were handled. Throughout the study recycled materials were accounted for via the cut-off method. Under this method, impacts and benefits associated with the previous life of a raw material from recycled stock are excluded from the system boundary. Additionally, impacts and benefits associated with secondary functions of materials at end of life are also excluded (i.e., production into a third life or energy generation from the incineration plant). The study does include the impacts associated with reprocessing and preparation of recycled materials that are part of the bill of materials of the products under study.

Comparability and Benchmarking

The user of the EPD should take care when comparing EPDs from different companies. Assumptions, data sources, and assessment tools may all impact the uncertainty of the final results and make comparisons misleading. Without understanding the specific variability, the user is therefore, not encouraged to compare EPDs. Even for similar products, differences in use and end-of-life stage assumptions, and data quality may produce incomparable results. Comparison of the environmental performance of Flooring Products using EPD information shall be based on the product’s use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the building energy use phase as instructed under this PCR. Full conformance with the PCR for Products allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

Comparison of the environmental performance of construction works and construction products using EPD information shall be based on the product’s use and impacts at the construction works level. In general, EPDs may not be used for comparability purposes when not considered in a construction works context. Given this PCR ensures products meet the same functional requirements, comparability is permissible provided the information given for such comparison is transparent and the limitations of comparability explained.

Table 7: Life Cycle Stages Included in the Study

Production			Construction		Use							End of Life				Benefits & Loads Beyond System Boundary
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw Material Supply	Transport	Manufacturing	Transport to Site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction	Transport	Waste Processing	Disposal	Reuse, Recovery, Recycling Potential
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	MND

X = Module Included in LCA Report, MND = Module not Declared

Life Cycle Assessment Scenarios

All data reported in the tables below apply to 5 mm LVT, 5 mm LVT Acoustic, and 5 mm LVT Click unless otherwise stated.

Table 8: Transportation to Building Site (A4)

	Transportation by Ship	Transportation by Truck
Weight of Products Transported [kg]	5 mm LVT: 9.84 5 mm LVT Acoustic: 9.84 5 mm Click: 9.43	
Volume of Products Transported [m ³]	0.0108	
Vehicle Type	Bulk commodity carrier, 1,000 to 250,000 dwt payload capacity, deep sea	Truck - Heavy Heavy-duty Diesel Truck / 53,333 lb payload - 8b
Fuel Efficiency [L/100km]	15,134	42
Fuel Type	Heavy fuel oil	Diesel
Distance [km]	10,400	850
Capacity Utilization [%]	53%	68%
Capacity Utilization Volume Factor	1	

Table 9: Reference Service Life

Name	Value
RSL [years]	30
Declared product properties (at the gate) and finishes, etc.	See Table 1 for technical details
An assumed quality of work, when installed in accordance with the manufacturer's instructions	Per industry standards
Indoor environment	Can be installed in any typical indoor environment, assuming manufacturer's installation instructions and recommendations are followed
Maintenance	See Use section above for maintenance instructions

Table 10: Installation at building site (A5)

	5 mm LVT	5 mm LVT Acoustic	5 mm LVT Click
Adhesive [kg]*	3.50E-01	3.50E-01	0.00E+00
Product Loss During Installation	5%		
Installation Waste Sent to Landfill	4.42E-01	4.42E-01	4.39E-01
Packaging Waste to Landfill [kg]	1.73E-01	1.73E-01	1.73E-01
Packaging Waste to Incineration [kg]	4.80E-02	4.80E-02	4.77E-02
Packaging Waste to Recycling [kg]	1.94E-01	1.94E-01	1.93E-01

	5 mm LVT	5 mm LVT Acoustic	5 mm LVT Click
Biogenic Carbon Contained in Packaging [kg]	6.25E-01	6.25E-01	6.28E-01
<p><i>No freshwater, electricity, or fuels are used in installation.</i></p> <p><i>*Emissions from the adhesive during installation were considered for this assessment. However, no emissions were modeled due to the manufacturer-recommended adhesives having low- to no-VOC content.</i></p>			

Table 11: Maintenance (B2)

Name	Value	Unit
Maintenance process information	Industry wide EPD by RFCi	-
Maintenance cycle	1,560 (weekly)	Cycles/ RSL
Maintenance cycle	3,900 (weekly)	Cycles/ ESL
Net freshwater consumption	0.435	m ³ / ESL
Detergent	8.90	kg/ ESL
Finish	Not required	kg/ ESL
Finish Remover	Not required	kg/ ESL
Electricity (for spray buffing)	1.70	kWh/ ESL
Power output of equipment	1.10	kW
<i>No waste or direct emissions occur during regular maintenance</i>		

Table 12: End-of-Life Scenario Details (C1-C4)

	5 mm LVT	5 mm LVT Acoustic	5 mm LVT Click
Collected as mixed construction waste [kg]	9.18	9.18	8.78
Waste to Landfill [kg]	9.18	9.18	8.78
Distance to Landfill [km]	161		
Waste to Incineration [kg]	0	0	0
Distance to Incineration [km]	0	0	0
Waste to Recycling [kg]	0	0	0
Distance to Recycling [km]	0	0	0

Life Cycle Assessment Results

All results are given per functional unit, which is 1 m² of installed flooring over an estimated building life of 75 years. Environmental Impacts were calculated using the Sphera LCA for Experts software platform. Impact results have been calculated using IPCC AR5, TRACI 2.1, and CML 2001-Jan 2016 characterization factors. LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. The Impact Category Key tables give definitions of relevant acronyms.

The LCIA impact categories referenced below are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined and LCA should continue making advances in their development. However, the EPD users shall not use additional measures for comparative purposes.

Table 13: Impact Category Key – LCIA Indicators

Abbreviation	Parameter	Unit
IPCC AR5		
GWP	Global warming potential (100 years, includes biogenic CO ₂)	kg CO ₂ eq
TRACI 2.1		
AP	Acidification potential of soil and water	kg SO ₂ eq
EP	Eutrophication potential	kg N eq
ODP	Depletion of stratospheric ozone layer	kg CFC 11 eq
SFP	Smog formation potential	kg O ₃ eq
CML 2001-Jan 2016		
ADPF	Abiotic depletion potential for fossil resources	MJ, net calorific value

Table 14: Impact Category Key – Biogenic Carbon Indicators

Abbreviation	Parameter	Unit
BCRP	Biogenic Carbon Removal from Product	[kg CO ₂]
BCEP	Biogenic Carbon Emission from Product	[kg CO ₂]
BCRK	Biogenic Carbon Removal from Packaging	[kg CO ₂]
BCEK	Biogenic Carbon Emission from Packaging	[kg CO ₂]
BCEW	Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes	[kg CO ₂]
CCE	Calcination Carbon Emissions	[kg CO ₂]
CCR	Carbonation Carbon Removals	[kg CO ₂]
CWNR	Carbon Emissions from Combustion of Waste from Non- Renewable Sources used in Production Processes	[kg CO ₂]

Table 15: Impact Category Key – Resource Use, Waste, and Output Flow Indicators

Abbreviation	Parameter	Unit
Resource Use Parameters		
RPRE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net calorific value (LHV)

Abbreviation	Parameter	Unit
RPRM	Use of renewable primary energy resources used as raw materials	MJ, net calorific value
NRPRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ, net calorific value
NRPRM	Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value
SM	Use of secondary materials	kg
RSF	Use of renewable secondary fuels	MJ, net calorific value
NRSF	Use of non-renewable secondary fuels	MJ, net calorific value
RE	Recovered energy	MJ, net calorific value
FW	Net use of fresh water	m ³
Waste Parameters and Output Flows		
HWD	Disposed-of-hazardous waste	kg
NHWD	Disposed-of non-hazardous waste	kg
HLRW	High-level radioactive waste, conditioned, to final repository	kg
ILLRW	Intermediate- and low-level radioactive waste, conditioned, to final repository	kg
CRU	Components for reuse	kg
MR	Materials for recycling	kg
MER	Materials for energy recovery	kg
EE	Exported energy	MJ



Bentley Mills 5 mm LVT – Results

Table 16: LCIA results for 5 mm LVT, per m² of installed flooring

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
IPCC AR5															
GWP [kg CO ₂ eq]	1.14E+01	1.07E+00	1.13E+00	0.00E+00	2.31E+00	0.00E+00	2.08E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.40E-04	0.00E+00	1.97E-01	MND
TRACI LCIA Impacts															
AP [kg SO ₂ eq]	2.00E-02	1.34E-02	2.73E-03	0.00E+00	3.05E-03	0.00E+00	5.57E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.05E-06	0.00E+00	1.02E-03	MND
EP [kg N eq]	1.70E-03	6.25E-04	3.75E-04	0.00E+00	3.28E-04	0.00E+00	6.50E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.15E-07	0.00E+00	1.63E-03	MND
ODP [kg CFC 11 eq]	2.94E-12	2.51E-15	1.76E-13	0.00E+00	1.21E-13	0.00E+00	4.70E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.90E-18	0.00E+00	9.44E-15	MND
SFP [kg O ₃ eq]	4.19E-01	2.65E-01	4.83E-02	0.00E+00	6.14E-02	0.00E+00	1.13E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.69E-05	0.00E+00	1.86E-02	MND
CML 2001-Jan 2016															
ADPF [MJ]	2.80E+02	1.42E+01	2.21E+01	0.00E+00	4.69E+01	0.00E+00	4.79E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E-02	0.00E+00	2.98E+00	MND
Carbon Emissions and Uptake															
BCRP [kg CO ₂]	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	MND
BCEP [kg CO ₂]	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	MND
BCRK [kg CO ₂]	6.28E-01	0.00E+00	3.14E-02	0.00E+00	0.00E+00	0.00E+00	9.89E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
BCEK [kg CO ₂]	0.00E+00	0.00E+00	6.36E-01	0.00E+00	0.00E+00	0.00E+00	9.55E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
BCEW [kg CO ₂]	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	MND
CCE [kg CO ₂]	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	MND
CCR [kg CO ₂]	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	MND
CWNR [kg CO ₂]	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	MND



Table 17: Resource use, waste, and output flow results for 5 mm LVT, per m² of installed flooring.

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Resource Use Indicators															
RPR _E [MJ]	2.52E+01	4.08E-01	3.03E+00	0.00E+00	4.84E+00	0.00E+00	4.36E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.12E-04	0.00E+00	3.60E-01	MND
RPR _M [MJ]	6.35E+00	0.00E+00	3.17E-01	0.00E+00	0.00E+00	0.00E+00	1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
NRPR _E [MJ]	1.93E+02	1.43E+01	1.80E+01	0.00E+00	5.20E+01	0.00E+00	3.42E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E-02	0.00E+00	3.07E+00	MND
NRPR _M [MJ]	5.04E+01	0.00E+00	2.52E+00	0.00E+00	0.00E+00	0.00E+00	7.93E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
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	MND
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	MND
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	MND
RE [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	MND
FW [m ³]	5.82E-02	1.34E-03	4.60E-03	0.00E+00	4.58E-01	0.00E+00	9.68E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-06	0.00E+00	3.81E-04	MND
Output Flows and Waste Categories															
HWD [kg]	4.22E-05	3.96E-11	4.29E-06	0.00E+00	1.30E-09	0.00E+00	6.98E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.97E-14	0.00E+00	7.66E-11	MND
NHWD [kg]	3.61E-01	1.05E-03	6.33E-01	0.00E+00	1.52E-01	0.00E+00	1.52E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.00E-07	0.00E+00	9.14E+00	MND
HLRW [kg]	5.55E-06	4.66E-08	3.68E-07	0.00E+00	2.16E-06	0.00E+00	9.00E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.52E-11	0.00E+00	3.80E-08	MND
ILLRW [kg]	4.67E-03	3.91E-05	3.27E-04	0.00E+00	1.81E-03	0.00E+00	7.60E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.96E-08	0.00E+00	3.40E-05	MND
CRU [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	MND
MR [kg]	4.37E-03	0.00E+00	2.18E-04	0.00E+00	0.00E+00	0.00E+00	6.88E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
MER [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	MND
EE [MJ]	7.54E-02	0.00E+00	2.46E-01	0.00E+00	0.00E+00	0.00E+00	4.82E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND



Bentley Mills 5 mm LVT Acoustic – Results

Table 18: LCIA results for 5 mm LVT Acoustic, per m² of installed flooring

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
IPCC AR5															
GWP [kg CO ₂ eq]	1.17E+01	1.07E+00	1.15E+00	0.00E+00	2.31E+00	0.00E+00	2.12E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.40E-04	0.00E+00	1.97E-01	MND
TRACI LCIA Impacts															
AP [kg SO ₂ eq]	2.02E-02	1.34E-02	2.74E-03	0.00E+00	3.05E-03	0.00E+00	5.60E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.05E-06	0.00E+00	1.02E-03	MND
EP [kg N eq]	1.72E-03	6.25E-04	3.77E-04	0.00E+00	3.28E-04	0.00E+00	6.53E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.15E-07	0.00E+00	1.63E-03	MND
ODP [kg CFC 11 eq]	2.32E-12	2.51E-15	1.45E-13	0.00E+00	1.21E-13	0.00E+00	3.72E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.90E-18	0.00E+00	9.44E-15	MND
SFP [kg O ₃ eq]	4.27E-01	2.65E-01	4.87E-02	0.00E+00	6.14E-02	0.00E+00	1.14E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.69E-05	0.00E+00	1.86E-02	MND
CML 2001-Jan 2016															
ADPF [MJ]	2.89E+02	1.42E+01	2.26E+01	0.00E+00	4.69E+01	0.00E+00	4.94E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E-02	0.00E+00	2.98E+00	MND
Carbon Emissions and Uptake															
BCRP [kg CO ₂]	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	MND
BCEP [kg CO ₂]	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	MND
BCRK [kg CO ₂]	6.28E-01	0.00E+00	3.14E-02	0.00E+00	0.00E+00	0.00E+00	9.89E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
BCEK [kg CO ₂]	0.00E+00	0.00E+00	6.36E-01	0.00E+00	0.00E+00	0.00E+00	9.55E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
BCEW [kg CO ₂]	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	MND
CCE [kg CO ₂]	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	MND
CCR [kg CO ₂]	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	MND
CWNR [kg CO ₂]	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	MND



Table 19: Resource use, waste, and output flow results for 5 mm LVT Acoustic, per m² of installed flooring.

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Resource Use Indicators															
RPR _E [MJ]	2.52E+01	4.08E-01	3.03E+00	0.00E+00	4.84E+00	0.00E+00	4.35E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.12E-04	0.00E+00	3.60E-01	MND
RPR _M [MJ]	6.35E+00	0.00E+00	3.17E-01	0.00E+00	0.00E+00	0.00E+00	1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
NRPR _E [MJ]	2.03E+02	1.43E+01	1.86E+01	0.00E+00	5.20E+01	0.00E+00	3.59E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E-02	0.00E+00	3.07E+00	MND
NRPR _M [MJ]	4.95E+01	0.00E+00	2.47E+00	0.00E+00	0.00E+00	0.00E+00	7.79E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
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	MND
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	MND
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	MND
RE [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	MND
FW [m ³]	5.97E-02	1.34E-03	4.67E-03	0.00E+00	4.58E-01	0.00E+00	9.92E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-06	0.00E+00	3.81E-04	MND
Output Flows and Waste Categories															
HWD [kg]	3.33E-05	3.96E-11	3.84E-06	0.00E+00	1.30E-09	0.00E+00	5.57E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.97E-14	0.00E+00	7.66E-11	MND
NHWD [kg]	3.42E-01	1.05E-03	6.32E-01	0.00E+00	1.52E-01	0.00E+00	1.52E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.00E-07	0.00E+00	9.14E+00	MND
HLRW [kg]	5.54E-06	4.66E-08	3.68E-07	0.00E+00	2.16E-06	0.00E+00	8.98E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.52E-11	0.00E+00	3.80E-08	MND
ILLRW [kg]	4.66E-03	3.91E-05	3.26E-04	0.00E+00	1.81E-03	0.00E+00	7.59E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.96E-08	0.00E+00	3.40E-05	MND
CRU [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	MND
MR [kg]	4.37E-03	0.00E+00	2.18E-04	0.00E+00	0.00E+00	0.00E+00	6.88E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
MER [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	MND
EE [MJ]	7.54E-02	0.00E+00	2.46E-01	0.00E+00	0.00E+00	0.00E+00	4.82E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND



Bentley Mills 5 mm LVT Click – Results

Table 20: LCIA results for 5 mm LVT Click, per m² installed flooring

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
IPCC AR5															
GWP [kg CO ₂ eq]	1.07E+01	1.06E+00	8.56E-01	0.00E+00	2.31E+00	0.00E+00	1.92E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.08E-04	0.00E+00	1.89E-01	MND
TRACI LCIA Impacts															
AP [kg SO ₂ eq]	1.72E-02	1.34E-02	2.02E-03	0.00E+00	3.05E-03	0.00E+00	5.03E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.96E-06	0.00E+00	9.74E-04	MND
EP [kg N eq]	1.61E-03	6.21E-04	2.65E-04	0.00E+00	3.28E-04	0.00E+00	6.08E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.05E-07	0.00E+00	1.56E-03	MND
ODP [kg CFC 11 eq]	2.71E-12	2.50E-15	1.36E-13	0.00E+00	1.21E-13	0.00E+00	4.28E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.82E-18	0.00E+00	9.03E-15	MND
SFP [kg O ₃ eq]	3.92E-01	2.63E-01	3.61E-02	0.00E+00	6.14E-02	0.00E+00	1.06E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-05	0.00E+00	1.78E-02	MND
CML 2001-Jan 2016															
ADPF [MJ]	2.65E+02	1.41E+01	1.43E+01	0.00E+00	4.69E+01	0.00E+00	4.44E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.81E-03	0.00E+00	2.85E+00	MND
Carbon Emissions and Uptake															
BCRP [kg CO ₂]	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	MND
BCEP [kg CO ₂]	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	MND
BCRK [kg CO ₂]	6.25E-01	0.00E+00	3.12E-02	0.00E+00	0.00E+00	0.00E+00	9.84E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
BCEK [kg CO ₂]	0.00E+00	0.00E+00	6.33E-01	0.00E+00	0.00E+00	0.00E+00	9.50E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
BCEW [kg CO ₂]	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	MND
CCE [kg CO ₂]	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	MND
CCR [kg CO ₂]	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	MND
CWNR [kg CO ₂]	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	MND



Table 21: Resource use, waste, and output flow results for 5 mm LVT Click, per m² of installed flooring.

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Resource Use Indicators															
RPR _E [MJ]	2.44E+01	4.06E-01	1.27E+00	0.00E+00	4.84E+00	0.00E+00	3.97E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.94E-04	0.00E+00	3.44E-01	MND
RPR _M [MJ]	6.31E+00	0.00E+00	3.16E-01	0.00E+00	0.00E+00	0.00E+00	9.94E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
NRPR _E [MJ]	1.78E+02	1.42E+01	9.97E+00	0.00E+00	5.20E+01	0.00E+00	3.08E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.89E-03	0.00E+00	2.94E+00	MND
NRPR _M [MJ]	4.94E+01	0.00E+00	2.47E+00	0.00E+00	0.00E+00	0.00E+00	7.79E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
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	MND
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	MND
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	MND
RE [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	MND
FW [m ³]	5.46E-02	1.34E-03	3.01E-03	0.00E+00	4.58E-01	0.00E+00	8.90E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.35E-06	0.00E+00	3.64E-04	MND
Output Flows and Waste Categories															
HWD [kg]	3.90E-05	3.94E-11	1.95E-06	0.00E+00	1.30E-09	0.00E+00	6.14E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.84E-14	0.00E+00	7.33E-11	MND
NHWD [kg]	3.19E-01	1.04E-03	6.21E-01	0.00E+00	1.52E-01	0.00E+00	1.45E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.61E-07	0.00E+00	8.74E+00	MND
HLRW [kg]	5.19E-06	4.63E-08	2.66E-07	0.00E+00	2.16E-06	0.00E+00	8.30E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.37E-11	0.00E+00	3.63E-08	MND
ILLRW [kg]	4.37E-03	3.89E-05	2.24E-04	0.00E+00	1.81E-03	0.00E+00	6.99E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.83E-08	0.00E+00	3.25E-05	MND
CRU [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	MND
MR [kg]	4.35E-03	0.00E+00	2.17E-04	0.00E+00	0.00E+00	0.00E+00	6.85E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
MER [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	MND
EE [MJ]	7.49E-02	0.00E+00	2.45E-01	0.00E+00	0.00E+00	0.00E+00	4.79E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND

Life Cycle Assessment Interpretation

For global warming impacts, the replacements stage (B4) is the greatest contributor. This follows the fact that with a reference service life of 30 years, there are 1.5 replacements that need to occur during the 75 years of building operation, apart from the initial product installation. This includes raw material extraction, manufacturing, distribution, install and end of life (for replaced product) for every replacement.

If the impacts from maintenance are set aside to observe impacts from other phases, the product stage (A1-A3) is the greatest contributor to the global warming impacts. Within raw the product stage, raw material extraction drives impact, specifically PVC in the main construction for all products and, for 5 mm LVT Acoustic, in the acoustic sheet. This is a fossil-based materials, which makes up the majority of the product based on weight, explaining its presence as top contributors within the product stage.

The maintenance stage (B2) is also an important contributor following the product stage. This is primarily due to the consumption of energy and resources used to maintain LVT over the course of its lifetime.

Trends for all other TRACI impact categories follow the trends of global warming, where replacements and raw materials contribute the most to life cycle impacts. For eutrophication and smog formation potential, distribution to customer (A4) is also a significant contributor.

Additional Environmental Information

Mandatory Environmental Information

No substances required to be reported as hazardous per the EPA's Resource Conservation and Recovery Act (US EPA, 2023) were identified during the LCA associated with the production of this product.

Environmental and Health During Manufacturing

Information on Bentley Mills' sustainability programs, sustainability resources, and sustainability certifications can be found at Bentley Mills' sustainability website at <https://www.bentleymills.com/sustainability/>

Environment and Health During Installation

All recommended personal protective equipment (PPE) should be utilized during installation, as indicated on the SDS and installation guidelines, found online at <https://www.bentleymills.com/technical/>.

Extraordinary Effects

Fire

5 mm LVT, 5 mm LVT Acoustic, and 5 mm LVT Click flooring have received a Class I critical radiant flux, ≥ 0.45 W/cm², ASTM E648.

Water

There are no environmental impacts associated with the product being flooded.

Mechanical Destruction

Should the product become flooded, the water should be removed through means of extraction and drying and the product should behave as originally intended. There are no environmental impacts associated with the product being flooded.

Environmental Activities and Certifications

5 mm LVT, 5 mm LVT Acoustic, and 5 mm LVT Click share the following environmental certifications. These certifications can be accessed with the links below:

- Material Ingredient Disclosure via Health Product Declaration (HPD): [HPD](#)
- VOCs via FloorScore® (CDPH V1.2-2017): [FloorScore Certification](#)

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