Environmental Product Declaration

In accordance with ISO 14025:2006 and ISO 21930:2017 for:

Natural Creations® with Diamond 10® Technology

from

ArmstrongFlooring®

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
Licensee:	EPD North America (www.epdna.com)
EPD registration number:	EPD-IES-0025533:001
Publication date:	2025-11-05
Valid until:	2030-11-05

This EPD was done in accordance with ISO 14025 and ISO 21930.
This EPD does not comply with EN15804+A2.

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

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 Number[1]	General Programme Instructions for the International EPD® System. Version 5.0. 2024-06-19
EPD Owner The EPD owner has the sole ownership, liability, and responsibility for the EPD.	AHF Products 3840 Hempland Road Mountville, PA 17554
Declaration Number	EPD-IES-0025533:001
Declared Product and Functional Unit	Natural Creations® with Diamond 10® Technology 1 m^2 of installed flooring with a building service life of 75 years
Reference PCR and Version Number[2]	UL Part A: Life Cycle Assessment Calculation Rules and Report Requirements, Version 4.0 UL Part B: Flooring EPD Requirements. UL 10010-7, September 28, 2018
Product's intended Application and Use	Commercial Flooring Applications
Product RSL	30 years
Markets of Applicability	North America
Date of Issue	2025-11-05
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	2024
LCA Software and Version Number	LCA FE 10.7 (formerly GaBi)
LCI Database and Version Number	MLC Database 2025.1 (formerly GaBi Database)
LCIA Methodology and Version Number	TRACI 2.1 CML 2001-Jan 2016 IPCC AR6
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.	☐EPD Process Certification ☒ EPD Verification ☐ 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) **☐ Internal ☒ 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:	☐ Yes ☒ No

[1]Not all requirements in the GPI are fulfilled, particularly the requirement, for construction products, to follow EN 15804 for certain aspects of the LCA method.
[2]This 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.

Limitations:
Environmental declarations from different programs (ISO 14025) may not be comparable.
The declared environmental performance in the EPD shall not be compared with EN 15804-compliant EPDs developed under PCR 2019:14 in the International EPD System.
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.

Information about EPD Owner

EPD Owner	AHF Products 3840 Hempland Road Mountville, PA 17554
LCA Practitioner	WAP Sustainability Consulting 103 Powell Ct, Suite 200 Brentwood, TN 37027
An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com.	

Company Description

AHF Products is a leader in the design and manufacturing of LVT and other resilient flooring. Its brand, Armstrong Flooring®, offers Natural Creations® with Diamond 10®, a 3.2mm LVT collection featuring hardwood, textile, travertine and stone inspired designs to enhance commercial spaces in education, retail, hospitality, healthcare, and corporate. For more information about Armstrong Flooring's Natural Creations® 3.2mm LVT solutions, please visit our website at ArmstrongFlooring.com.

Product Information

Product Description

Armstrong Flooring® Natural Creations® with Diamond 10® Technology features hardwood, textile, travertine and stone inspired designs in a wide array of tile and plank sizes. Natural Creations® with Diamond 10® Technology combines the best of durability, technology, and design for floors that look newer, longer. It features a layered construction consisting of a tough, clear rigid, vinyl wear layer protecting a high-fidelity print layer on a solid vinyl backing. Diamond 10® Technology, available on Natural Creations®, provides legendary scratch, stain, and scuff resistance for floors that look newer, longer.

Armstrong Flooring® Natural Creations® with Diamond 10® Technology is within UNCPC 36910 Floor coverings of plastics, in rolls or in the form of tiles; wall or ceiling coverings of plastics, under CSI division 09 65 19: Resilient Tile Flooring.

Table 1: Natural Creations® with Diamond 10® Technology Technical Data

Name		Value		Unit
Wear layer thickness		0.50		mm
Total thickness		3.20		mm
Product weight		6.15		kg/m^2
Product form	Tile	4 x 36	12 x 12	in
		6 x 36	12 x 24	
		8 x 36	16 x 16	
		6 x 48	18 x 18	

Application

Natural Creations® with Diamond 10® Technology is a widely used commercial resilient flooring option and is routinely used with great success in healthcare, education, retail, and corporate segments. Properly installed and maintained, the product provides decades of proven performance across all commercial segments.

Properties of Declared Product as Delivered

Armstrong Flooring®'s Natural Creations® with Diamond 10® Technology is delivered to the building site in tile format, packaged in cardboard boxes. The cardboard boxes are stacked on a wooden pallet and wrapped with plastic film for shipment.

Manufacturing

The manufacturing process for Natural Creations® with Diamond 10® Technology takes place in Lancaster, PA. The product is floor tile and planks used in residential and commercial flooring applications and is comprised mostly of limestone in a vinyl binder matrix. The manufacturing process involves the hot mixing of the raw materials milled and calendered into a hot sheet which is then laminated with different layers by a hot press machine. The sheet is coated and then slowly cooled or annealed to make it stronger, before being cut into tiles.

Reference Service Life and Estimated Building Service Life

The reference service life of the Natural Creations® with Diamond 10® Technology product is assumed to be 30 years given that the product is installed per manufacturer guidelines. Therefore, after initial installation in a building with an estimated service life (ESL) of 75 years, 1.5 replacements are required.

Content Declaration

The total mass of 1 m^2 of flooring product is equivalent to 6.15 kg. The installed product plus any installation adhesives and flooring installation waste is equivalent to 6.21 kg.

Table 2: Product Composition

Material	Quantity (%, by weight)
Limestone	35.44
Plasticizer	3.40
Stabilizer	0.20
Pigment	0.07
Acrylic	0.05
Resin	9.76
Film	11.03
UV Coating	0.19
Regrind	39.86
Total	100.00

Table 3: Packaging details

Material	Value (kg / m^2)	Biogenic Material (kg C / m^2)
Wood Pallets	1.20E-03	4.91E-04
Cardboard	1.54E-03	6.63E-04
Plastic film	4.48E-04	0.00E+00

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.

Life Cycle Assessment Information

Declaration of Methodological Framework

The LCA follows an attributional approach.

Functional Unit

The functional unit of the product is one (1) m^2 of installed flooring, with a total thickness of 3.2mm.

System Boundary

This EPD is a Cradle-to-Grave study. The system boundaries studied as part of this life cycle assessment include the following stages which are shown in the table below:

- Production stage – Modules A1 to A3 which include the extraction, manufacture, and transportation of raw materials, flooring production.
- Construction Stage – Modules A4-A5 which include the transportation to job site and installation.
- Use Stage – Includes on Modules B2 (Use) and B4 (Replacement) as the other modules B1, B3 and B5-B7 are declared as having zero impact as no repair or refurbishment is expected once the product is installed. The use stage accounts for cleaning of the floor.
- End-of-Life – Modules C1-C4 which includes disposal of the product.

Each module includes provisions of all relevant materials, products, and energy. Potential impacts and waste are considered in the module in which they occur. Per the PCR, capital goods and infrastructure flows are assumed to not significantly affect LCA results or conclusions and thus are excluded from the analysis.

Table 4: Life Cycle Stages Included in the Study

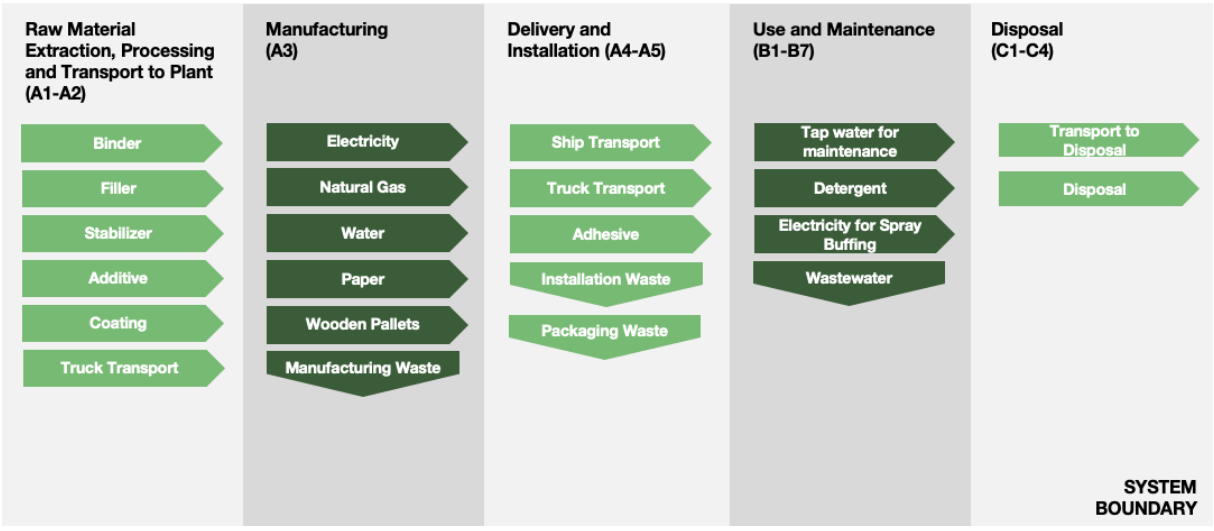
	Production			Construction		Use							End of Life				Benefits & Loads Beyond System Boundary
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
	Raw Material Supply	Transport	Manufacturing	Transport to Site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational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

Table 5: System Boundary and Modules

Module Name	Description	Analysis Period	Summary of Included Elements
A1	Product Stage: Raw Material Supply	2024	Raw Material sourcing and processing as defined by secondary data.
A2	Product Stage: Transport	2024	Shipping from supplier to manufacturing site. Fuel use requirements estimated based on product weights and estimated distance.

Module Name	Description	Analysis Period	Summary of Included Elements
A3	Product Stage: Manufacturing	2024	Energy and water inputs required for manufacturing products from raw materials. Packaging materials and manufacturing waste are included as well.
A4	Construction Process Stage: Transport	2024	Shipping from manufacturing site to project site. Fuel use requirements estimated based on product weights and mapped distance.
A5	Construction Process Stage: Installation	2024	Installation materials, installation waste and packaging material waste.
B1	Use Stage: Use	2024	Use of the product.
B2	Use Stage: Maintenance	2024	Cleaning energy, water, and materials, including refinishing the product.
B3	Use Stage: Repair	2024	Product typically not repaired during use.
B4	Use Stage: Replacement	2024	Total materials and energy required to manufacture a replacement.
B5	Use Stage: Refurbishment	2024	Product typically not refurbished during use.
B6	Operational Energy Use	2024	Operational Energy Use of Building Integrated System During Product Use
B7	Operational Water Use	2024	Operational Water Use of Building Integrated System During Product Use
C1	EOL: Deconstruction	2024	No inputs required for deconstruction.
C2	EOL: Transport	2024	Shipping from project site to waste disposal.
C3	EOL: Waste Processing	2024	Waste processing if incineration as chosen disposal pathway per Part A of the PCR.
C4	EOL: Disposal	2024	Disposal modeled by region as per Part A of the PCR.
D	Benefits beyond system	MND	Credits from energy or material capture.

Process Flow Diagram:



Estimates and Assumptions

All estimates and assumptions are within the requirements of ISO 14040/44. Per the PCR, a distance of 800 km (497 miles) by diesel-powered truck is used to represent the distribution of product from the port of entry into the United States to the installation site. Inbound transportation from overseas by cargo ship is also included. Additionally, transportation is assumed to be 161 km (100 miles) by diesel-powered truck for installation waste and product at end-of-life to disposal.

Cut-Off Criteria

All known material inputs (based on total mass of the final product) were included within the scope of analysis. No known flows were deliberately excluded. The manufacturing impact of lab-grown diamonds used in the UV-coating, which are produced via the high pressure high temperature (HPHT) process using solar electricity, was evaluated and determined to fall below the cut-off threshold. Cut-off rules are consistent with the PCR.

Software

Sphera LCA for Experts 10.9.0.31

Data Sources

Primary data were collected by facility personnel and was used for all manufacturing processes. Secondary data for material production, energy generation, transport, and waste disposal were sourced from the Sphera Managed LCA Content Database 2025.1.

Table 6: Declaration of data sources and share of primary data

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP GHG results for A1-A3[1]
Production of PVC	Database	Sphera LCA for experts 2025.1	2024	Secondary	0%
Production of DOTP	Database	Sphera LCA for experts 2025.1	2024	Secondary	0%
Generation of electricity used in manufacturing product	Database	Sphera LCA for experts 2025.1	2024	Primary	12%
Total share of primary data, of GWP-GHG results for A1-A3					**12%**

[1]The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that do not capture all relevant aspects of data quality. The indicator is not comparable across product categories.

Period Under Review

The period under review is calendar year 2024.

Allocation

General principles of allocation were based on ISO 14040/44. There are no products other than the products under study that are produced as part of the manufacturing processes. Since there are no co-products, no allocation based on co-products is required. To derive a per-unit value for manufacturing inputs and outputs such as energy, packaging, and waste, allocation based on total production by mass was utilized.

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 flooring 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.

Installation

Natural Creations® with Diamond 10® Technology must be installed in strict accordance with the Armstrong Flooring® installation instructions. This comprehensive guide to installation provides all the information needed to properly install Natural Creations® with Diamond 10® Technology to ensure it will look great and perform exactly as it should. Visit ArmstrongFlooring.com for more information.

Natural Creations® with Diamond 10® Technology is installed using a spread adhesive. Adhesive is applied manually, and no use of electricity is required. The installation tools are considered multi-use tools and the manufacturing and impacts per functional unit are considered negligible. Packaging and installation waste disposal have been modeled as per guidelines in section 2.8.5 of the PCR Part A.

Table 7: Transport to Building Site Details (A4)

Name	Truck	Unit
Vehicle Type	Truck-trailer	-
Fuel Efficiency	43	L/100km
Fuel Type	Diesel	-
Distance	800	km
Capacity Utilization	78	%
Weight of products transported**	3.00	kg
Capacity utilization volume factor	1	-
Gross density of product transported	1,922	m^3

Table 8: Installation Scenario Details (A5)

Name	Value	Unit
Adhesive	5.60E-02	kg
Product loss per functional unit [%]	5	%
Waste materials at the construction site before waste processing, generated by product installation	0	kg
Installation waste to Landfill	3.10E-01	kg
Packaging Waste to Landfill	8.52E-04	kg
Packaging Waste to Incineration	2.13E-04	kg
Packaging Waste to Recycling	1.90E-03	kg
VOC Emissions	0	µg/m3

Table 9: Reference Service Life

Name	Value	Unit
Reference Service Life	30	Years
Declared product properties (at the gate) and finishes, etc.	See Table 1 for technical details	
Assumed quality of work, when installed in accordance with 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 for maintenance instructions	

Use

Maintenance is required for Natural Creations® with Diamond 10® Technology. Actual maintenance schedules and procedures may vary based on the product installation type and location. As such, average cleaning and maintenance procedures from the Resilient Floor Covering Institute (RFCI) Luxury Vinyl Tile EPD (RFCI, 2024) are used in this EPD. Per RFCI, it is assumed that a typical maintenance procedure consists of weekly sweeping and damp mopping with a neutral cleaner.

Table 10: Maintenance Procedure

Level of Use	Cleaning Process	Cleaning Frequency	Consumption of energy and resources
Commercial	**Sweeping**	Weekly	None
	Damp mop / neutral cleaner	Weekly	Water, neutral detergent

Table 11: Maintenance Details (B2)

Name	Value	Unit
Maintenance Cycles	1,560	Cycles/RSL
	3,900	Cycles/ESL
Water use (source: tap water; fate: WWTP)	0.00580	m^3/m^2-year
Detergent	0.0119	kg/m^2-year
Other resources	0	kg/m^2-year
Electricity	0.0220	kWh/m^2-year
Direct emissions	0	kg/m^2-RSL

Reuse, Recycling and Energy Recovery

At the end of its life, the flooring is removed from the building manually (i.e., no equipment or energy required), transported via truck to a landfill, and disposed.

Disposal

At the end of life, this product is assumed to be disposed per PCR requirements. 100% of the product is assumed to be landfilled at end-of-life. Waste classification is based on the Resource Conservation and Recovery Act). Disposal in municipal landfill or commercial incineration facilities is permissible and should be done in accordance with local, state, and federal regulations.

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

Name	Value	Unit
Collected as mixed construction waste	6.21	kg
Waste to Landfill	6.21	kg
Distance to Landfill	161	km

Environmental Performance

All results are given per functional unit, which is 1 m^2 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 AR6, 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.

The results of the end-of-life stage (module C) should be considered when using the results of the production stage (modules A1-A3). All results are presented per functional unit, which is 1 m^2 of flooring over a 75-year building ESL. Results for life cycle stages B1, B3, B5, B6, B7, C1, and C3 are zero and are excluded from the following tables for readability.

Table 13: LCIA Results for Natural Creations® with Diamond 10® Technology

Indicator	A1 – A3	A4	A5	B2	B4	C2	C4	Total
GWPi [kg CO_2 eq]	7.51E+00	3.82E-01	4.48E-01	1.45E+00	1.28E+01	7.72E-02	1.37E-01	2.28E+01
GWPe [kg CO_2 eq]	7.50E+00	3.80E-01	4.56E-01	2.33E+00	1.28E+01	7.70E-02	1.37E-01	2.27E+01
AP [kg SO_2 eq]	1.08E-02	1.88E-03	7.77E-04	2.79E-03	2.16E-02	2.34E-04	7.03E-04	3.88E-02
EP [kg N eq]	1.03E-03	1.44E-04	1.30E-04	4.99E-03	3.64E-03	1.97E-05	1.10E-03	1.10E-02
ODP [kg CFC 11 eq]	1.06E-10	1.71E-14	5.30E-12	1.97E-13	1.67E-10	3.46E-15	2.90E-14	2.78E-10
SFP [kg O_3 eq]	2.46E-01	4.30E-02	1.71E-02	2.73E-02	4.86E-01	5.24E-03	1.26E-02	8.38E-01
ADP-fossil* [MJ]	1.56E+02	4.84E+00	9.29E+00	1.60E+01	2.60E+02	9.82E-01	2.01E+00	4.49E+02

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Table 14: Additional Indicators for Natural Creations® with Diamond 10® Technology

Indicator	A1 – A3	A4	A5	B2	B4	C2	C4	Total
Resource Use Indicators								
RPR_E [MJ]	1.04E+01	2.03E-01	7.95E-01	4.66E+00	1.77E+01	4.12E-02	2.95E-01	3.41E-01
RPR_M [MJ]	4.89E-02	0.00E+00	2.44E-03	0.00E+00	7.69E-02	0.00E+00	0.00E+00	1.28E-01
$NRPR_E$ [MJ]	1.07E+02	4.89E+00	6.88E+00	2.03E+01	1.83E+02	9.92E-01	2.08E+00	3.25E+02
$NRPR_M$ [MJ]	3.29E+01	0.00E+00	1.64E+00	0.00E+00	5.18E+01	0.00E+00	0.00E+00	8.63E+01
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
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
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
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
FW [m^3]	3.37E-02	2.19E-04	1.94E-03	8.37E-03	5.42E-02	4.45E-05	2.26E-04	9.88E-02
Waste and Output Flow Indicators								
HWD [kg]	2.37E-07	8.10E-10	3.44E-07	1.00E-08	8.73E-07	1.64E-10	4.97E-10	1.47E-06
NHWD [kg]	4.94E-01	5.00E-04	3.35E-01	4.71E-01	1.05E+01	1.01E-04	6.18E+00	1.80E+01
HLRW [kg]	7.10E-06	1.99E-08	3.72E-07	1.81E-06	1.13E-05	4.05E-09	2.60E-08	2.06E-05
ILLRW [kg]	5.94E-03	1.68E-05	3.15E-04	1.51E-03	9.45E-03	3.40E-06	2.28E-05	1.73E-02
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
MR [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
MER [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
EEE [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
EET [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
Biogenic Uptake and Emissions								
BCRP [kg CO2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP [kg CO2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK [kg CO2]	4.23E-03	0.00E+00	2.11E-04	0.00E+00	6.66E-03	0.00E+00	0.00E+00	1.11E-02
BCEK [kg CO2]	0.00E+00	0.00E+00	4.44E-03	0.00E+00	6.66E-03	0.00E+00	0.00E+00	1.11E-02
BCEW [kg CO2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE [kg CO2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR [kg CO2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR [kg CO2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Life Cycle Assessment Interpretation

Replacements (B4) drive impacts across all TRACI 2.1 impact categories, due to the 30-year service life of the product. The 30-year product service life means that 1.5 replacements of the flooring will occur over the estimated 75-year service life of a building. Each replacement includes A1-A5 and C1-C4 lifecycle stages, explaining its impact on the results. Maintenance (B2) is the primary contributor to EP, as it includes all maintenance inputs across the 75-year service life. The use of water and detergent during maintenance contribute to eutrophication impacts, which are primarily driven by the nutrients from wastewater entering the aquatic systems.

Additional Environmental Information

Environment and Health During Manufacturing

Armstrong Flooring® has a robust internal Quality Assurance process that is based on industry-accepted best practices and is led by a team of quality professionals who have been certified by the American Society for Quality. The process involves several hundred different measures made throughout the manufacturing processes.

Environment and Health During Installation and Use

All Armstrong Flooring® products are tested and certified by FloorScore® to comply with the requirements of the California Department of Public Health Standard for the Testing and Evaluation of VOC emissions (CDPH v1.2).

Abbreviations

Table 15: LCIA Indicators

Abbreviation	Parameter	Unit
IPCC AR6		
GWPi	Global warming potential (100 years, including biogenic CO_2)	kg CO_2 eq
GWPe	Global warming potential (100 years, excluding 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		
ADP_f	Abiotic depletion potential, fossil resources	MJ

Table 16: 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 17: Resource Use, Waste, and Output Flow Indicators

Abbreviation	Parameter	Unit
Resource Use Parameters		
RPR_E	Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net calorific value (LHV)
RPR_M	Use of renewable primary energy resources used as raw materials	MJ, net calorific value
$NRPR_E$	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ, net calorific value
$NRPR_M$	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
EEE	Recovered electrical energy exported from the product system	MJ
EET	Recovered thermal energy exported from the product system	MJ

References

CML - Department of Industrial Ecology. (2016, September 05). *CML-IA Characterisation Factors*. Retrieved from https://www.universiteitleiden.nl/en/research/research-output/science/cml-ia-characterisation-factors

General Programme Instructions of the International EPD® System. Version 5.0.

IPCC, 2023: *Climate Change 2023: Synthesis Report.* Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 35-115, doi: 10.59327/IPCC/AR6-9789291691647.

ISO. (2006). *ISO 14025: Environmental labels and declarations - Type III environmental declarations - Principles and procedures.* Geneva: International Organization for Standardization.

ISO. (2006). *ISO 14040/Amd 1:2020: Environmental management - Life cycle assessment - Principles and framework.* Geneva: International Organization for Standardization.

ISO. (2006). *ISO 14044/Amd 1:2017/Amd 2:2020: Environmental Management - Life cycle assessment - Requirements and Guidelines.* Geneva: International Organization for Standardization.

ISO. (2017). *ISO 21930: Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services.* Geneva: International Organization for Standardization.

RFCI. (2024). *Luxury Vinyl Tile - Gluedown Flooring Industry-Wide Environmental Product Declaration.* UL Environment.

UL Environment. (2022). *Part A: Life Cycle Assessment Calculation Rules and Report Requirements, UL 10010, V4.0.*

UL Environment. (2018). *Part B: Flooring EPD Requirements.*

US EPA. (2012). *TRACI: The Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts. Version 2.1 - User Guide*. Retrieved from https://nepis.epa.gov/Adobe/PDF/P100HN53.pdf

WAP Sustainability Consulting. (2024). *Life Cycle Assessment for AHF Products.*