ENVIRONMENTAL PRODUCT DECLARATION

RUBBER FLOORING

AMERICAN BILTRITE ABPURE®
ENVIRONMENTAL PRODUCT DECLARATION

AmericanBiltrite

Driven by an innovation-based culture, American Biltrite has pioneered advances in rubber flooring for more than 100 years. Our products meet the highest demands of today's facilities. All ABPURE® rubber flooring is safe from slipping, quiet and comfortable underfoot, improves indoor air quality, is highly stain resistant, durable, requires very low maintenance and is "Occupancy-Ready" due to Nfuse™ technology. ABPURE products are FloorScore® certified and classified Declare (Red List Free) and Mindful Materials registered for product transparency.

Certified ISO 14001 and 9001, the manufacturing facility employs an on-going commitment to ISO practices ensuring continual improvement of products, manufacturing, installation & maintenance through to end of product life. ABPURE is a people-friendly flooring solution and an ideal choice for today's interiors. For more information visit

www.american-biltrite.com

UL CERTIFIED ENVIRONMENTAL PRODUCT DECLARATION UL.COM/EPD

ENVIRONMENTAL PRODUCT DECLARATION

AmericanBiltrite

ABPURE SHEET AND TILE
RUBBER FLOORING

According to ISO 14025, EN 15804, and ISO 21930:2017

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL Environment 333 Pfingsten Road Northbrook, IL 60611 https://www.ul.com/ https://spot.ul.com
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	General Program Instructions v.2.4 July 2018
MANUFACTURER NAME AND ADDRESS	American Biltrite | 200 Bank Street | Sherbrooke, Quebec, Canada J1H 4K30
DECLARATION NUMBER	47891108930.101.1
DECLARED PRODUCT & FUNCTIONAL UNIT OR DECLARED UNIT	Rubber Flooring, 1 m^2
REFERENCE PCR AND VERSION NUMBER	Part B: Flooring EPD requirements [UL Environment], v.2.0 September 2018
DESCRIPTION OF PRODUCT APPLICATION/USE	Commercial and residential flooring
PRODUCT RSL DESCRIPTION (IF APPL.)	35 years
MARKETS OF APPLICABILITY	North America
DATE OF ISSUE	January 1, 2020
PERIOD OF VALIDITY	5 Years
EPD TYPE	Product-specific, single-company
RANGE OF DATASET VARIABILITY	Not applicable
EPD SCOPE	Cradle-to-grave
YEAR(S) OF REPORTED PRIMARY DATA	2018
LCA SOFTWARE & VERSION NUMBER	GaBi ts, 9.2
LCI DATABASE(S) & VERSION NUMBER	GaBi 2018 (service pack 36)
LCIA METHODOLOGY & VERSION NUMBER	TRACI 2.1

This PCR review was conducted by:	UL Environment, PCR Review Panel Jack Geibig, Chair jgeibig@ecoform.com
This declaration was independently verified in accordance with ISO 14025: 2006. ☐ INTERNAL ☒ EXTERNAL	Grant R. Martin Grant R. Martin, UL Environment
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Thomas P. Gloria Thomas P. Gloria, Industrial Ecology Consultants

LIMITATIONS

Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc.

Accuracy of Results: EPDs regularly rely on estimations of impacts; the level of accuracy in estimation of effect differs for any particular product line and reported impact.

Comparability: EPDs from different programs may not be comparable. Full conformance with a PCR 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.

1. Product Definition and Information

1.1. Description of Company/Organization

American Biltrite is a leading innovator and manufacturer of rubber flooring for more than 100 years and continues to bring to the market cutting-edge products that are safe, durable and meet the needs of interior spaces. With this innovation-based culture, American Biltrite has pioneered advances such as: a non-SBR based compound (ABPURE®), "Occupancy-Ready" (Nfuse™ technology), and color stable rubber flooring solutions.

In 1996 American Biltrite was the first flooring manufacturer to be ISO 9001 certified in North America and later certified ISO 14001. The on-going commitment to ISO practices ensures continual improvement of products, manufacturing, installation & maintenance through to end of product life cycle. Both ISO registrations and FloorScore® are certified by a third party and our ABPURE products are classified Declare (Red List Free) and Mindful Materials registered for product transparency.

1.2. Product Description

Product Identification

This Environmental Product Declaration (EPD) covers ABPURE sheet and tile rubber flooring available in a wide range of colors and thicknesses.

All ABPURE sheet and tile products are manufactured from a unique "patent-pending" formulation composed of synthetic rubbers, naturally sourced mineral fillers, color pigments and processing aids that are vulcanized into a homogeneous floor covering and are made "Occupancy-Ready" by the unique Nfuse technology process. All ABPURE rubber flooring products are FloorScore certified for low VOC emissions by SCS Global Services, and are Declare Red List Free and registered with Mindful Materials for product transparency. Further, they are in compliance with the California "Department of Public Health Section 01350 Standard".

The manufacturing process results in either single layer or multi- layer products.

Product Specification

ABPURE homogeneous sheet and tile rubber flooring meets the performance requirements as outlined in:

- ASTM F 1859, Type 1 (Homogeneous) Standard Specification for Rubber Sheet Floor Covering Without Backing.
- ASTM F 1344 Type 1 A or B (Homogeneous) Standard Specification for Rubber Floor Tile.

Delivery Status

- Delivery of rolled sheet rubber flooring nominal 60 inches (1.5 m) wide and 50 feet (15.2 m) in length.
- Delivery of tile rubber flooring is in nominal sizes of either 18" x 18" or 36" x 36" with square edges.

The entire surface of the sheet and tile rubber flooring is infused with Nfuse technology, a unique (patent-pending) system used for making the floor "Occupancy-Ready". The back of the sheet and tile is sanded over the entire surface with arrows indicating the direction of installation.

Initial cleaning can be performed after the product is fully bonded to the sub-floor, a minimum of 72 hours after installation. Due to the unique Nfuse technology system the floor does not require any coating with floor finishes or waxes and requires only damp mopping before use.

Flow Diagram

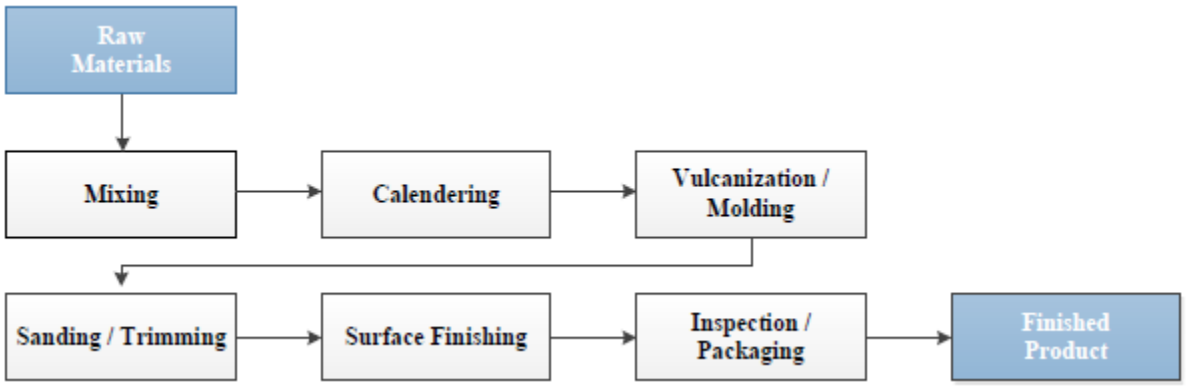

Figure 1: Diagram of production process

1.3. Application

ABPURE sheet and tile rubber flooring was developed for use in high-traffic commercial spaces such as: healthcare, health sciences, education and hospitality. The products meet the highest needs of those facilities by offering safety from slipping, comfort underfoot, improved acoustics, better indoor air quality, greater stain resistance, durability, “Occupancy-Ready” flooring and low maintenance due to Nfuse technology.

1.4. Declaration of Methodological Framework

The EPD analysis uses a cradle-to-grave system boundary. As such, all relevant life cycle stages and modules are included. To calculate product use and replacement over a 75-year estimated service life of the building, a 35-year reference service life is assumed for rubber flooring, which results in a total of 2.2 m^2 of flooring needed over the building’s lifetime. Additional details on cut-off and allocation procedures are found in sections 2.5 and 2.9, respectively.

1.5. Technical Requirements

Table 1: Flooring technical data

RUBBER FLOORING		VALUE	UNIT
Product thickness	Tiles	2 – 3	mm
	Roll	2 – 3	mm
Wear layer thickness		0	mm
Product weight		4.73	kg/m^2
Product form	Tiles	457 x 457; 914 x 914	mm
	Roll width	1.5	m
	Roll length	15.2	m

1.6. Market Placement / Application Rules

The product considered EPD meet or exceed at least one of the following technical specifications:

- ASTM F 1344 – Standard Specification for Rubber Floor Tile
- ASTM F 1859 – Standard Specification for Rubber Sheet Floor Covering Without Backing

Fire testing:

- Class 1 when tested in accordance with ASTM E 648/NFPA 253, Standard Test Method for Critical Radiant Flux if applicable
- FSCI-150; SD-150 when tested in accordance with CAN/ULC S102.2, Standard Test Method for Flame Spread Rating and Smoke Development if applicable

1.7. Properties of Declared Product as Delivered

Refer to Table 1 for properties of products as delivered for installation.

1.8. Material Composition

Table 2: Material composition

COMPONENT	MASS %
Fillers	57%
Resin	26%
Recycled material	10%
Additives	5%
Curing agent	1%
Pigment	1%
Other	< 1%

1.9. Manufacturing

Rubber flooring is produced in several stages beginning with the mixing of the raw materials. After thorough mixing of the raw materials, the resulting compound is calendared into sheets, typically referred to as “preforms”. The preforms are then placed in heated molds where they are pressed into flooring. After the molding operation, the product is finished where their backs are sanded to obtain the correct thickness, as well as to enhance adhesion, and then cut to their finished size for packaging.

Production of rubber sheet product is carried out at American Biltrite’s Sherbrooke, Quebec, Canada facility. Floor production follows the flow diagram shown in Figure 1.

1.10. Packaging

Polyethylene wrap, corrugated cardboard, and wood pallets are used to package rubber flooring. Disposal is modeled in conformance with PCR Part A (UL, 2018) requirements (see Table 6). Landfill emissions from paper, plastic, and wood packaging are allocated to installation. Electricity generated from landfill gas (produced from the decomposition of bio-based packaging) is declared as an output from module A5 (installation).

1.11. Product Installation

This study includes transportation to the construction site by truck and flooring installation in the building.

Installation of this product primarily involves hand tools for measuring and cutting floor materials. Approximately 4.5% of the total material is assumed to be trimmed and discarded as waste. While some of this waste could be recycled, this scrap is modeled as being disposed of in a landfill. Hand trowels are used to spread appropriate adhesive (300 g/sqm) which adheres flooring to subfloor. Normal procedure after installation is to let rooms with installed flooring ventilate well for a minimum of 72 hours prior to occupancy.

1.12. Use

The service life of rubber flooring will vary depending on the amount of floor traffic and the type and frequency of maintenance. The level of maintenance is also dependent on the actual use and desired appearance of the floor. 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 is presented based on typical installations. This EPD accounts for three cleaning processes within the use phase: dust mop, damp mop, and spray buffing, as detailed in Table 4 and Table 5 and summarized in Table 10.

1.13. Reference Service Life and Estimated Building Service Life

The reference service life (RSL) for rubber flooring is 35 years, meaning that the product will meet its functional requirements for an average of 35 years before replacement. Estimated building service life is 75 years, as specified by the PCR. Additional information is provided in Table 9.

1.14. Reuse, Recycling, and Energy Recovery

Rubber flooring is typically not reused or recycled following its removal from a building. Thus, reuse, recycling, and energy recovery are not applicable for this product.

1.15. Disposal

At the end-of-life, the product is assumed to be disposed per PCR requirements (UL, 2018) (see Table 6). Waste classification is based on the Resource Conservation and Recovery Act (RCRA) (EPA, n.d.).

1.16. Further Information

No further information on rubber flooring is provided.

2. Life Cycle Assessment Background Information

A full life cycle assessment has been carried out according to ISO 14040 (ISO, 2009) and 14044 (ISO, 2006), per the product category rules (PCR) for Flooring as published by UL Environment (UL, 2018).

2.1. Functional or Declared Unit

The declaration refers to the functional unit of 1m² installed floor covering. Rubber flooring is assumed to have a

reference service life of 35 years and installation losses of 5%. Therefore, over the 75-year building estimated service life, 1.2 replacements take place and an additional 0.11 m^2 of product is needed to compensate for installation losses.

Table 3: Functional unit information

NAME	VALUE
Functional unit	1 m^2
Mass	4.7 kg / m^2
Reference flow	2.3 m^2 @ 10.1 kg

2.2. System Boundary

The system boundary of the EPD is “cradle-to-grave”. As such, the analysis includes the following modules:

- Product stage: modules A1 to A3
- Construction stage: modules A4 and A5
- Use stage: modules B1 to B5, B6, and B7
- End-of-life stage: modules C1 to C4
- Benefits and loads beyond the system boundary: module D

Each module includes provision of all relevant materials, products and energy. Potential impacts and aspects related to wastage (i.e. production, transport and waste processing and end-of-life stage of lost waste products and materials) are considered in the module in which the wastage occurs.

The use stage modules B1, B3, B5, B6, and B7 are declared as having zero impact as there are no direct emissions from resilient flooring once it is installed nor is any repair or refurbishment requirements expected. The other use stage modules account for cleaning the floor (i.e., maintenance, which consists of dust mopping, damp mopping, and spray buffing), and replacing the floor to match building service life.

Module D is considered in the analysis. It represents the benefits/loads beyond the system boundary—in particular, credits from capturing methane gas from landfilling of biodegradable materials which is used for electricity generation.

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.

2.3. Product-specific Calculations for Use Phase

Table 4 and Table 5 detail cleaning process assumptions and cleaning process inputs as calculated based on the assumptions.

Table 4: Cleaning process assumptions

LEVEL OF USE	CLEANING PROCESS	CLEANING FREQUENCY	CONSUMPTION OF ENERGY AND RESOURCES
Commercial / residential / industrial	Dust mop	Daily	None
	Damp mop / neutral cleaner	Weekly	Hot water, neutral detergent, electricity

Table 5: Cleaning inputs

COMPONENT	AMOUNT	UNITS
Detergent	119	mL / m^2 / yr.
Electricity	0.022	kWh / m^2 / yr.
Finish	0	L / m^2 / yr.
Finish remover	0	L / m^2 / yr.
Water	5.8	L / m^2 / yr.

2.4. Estimates and Assumptions

Per the PCR (UL, 2018), a distance of 800 km (497 miles) by diesel-powered truck is used to represent the distribution of product to the installation site within the US. For products manufactured outside of the US, inbound transportation by cargo ship is also included.

Product transport from building site to waste processing is assumed to be 161 km (100 miles) by diesel-powered truck. The same assumption is used for transporting deconstructed product at end-of-life. Lastly, product and packaging disposal assumptions are consistent with PCR requirements (Table 6).

Table 6: End-of-life assumptions

COMPONENT	RECYCLED	LANDFILLED	INCINERATED
Product	0%	100%	0%
Paper packaging	75%	20%	5%
Plastic packaging	15%	68%	17%

2.5. Cut-off Criteria

Cut-off criteria were applied to a small number of raw materials representing less than 1% of input material mass in order to facilitate handling the wide variety of additives and other raw material inputs to resilient flooring.

2.6. Data Sources

As a general rule, specific data derived from specific production processes or average data derived from specific production processes were the first choice as a basis for calculating LCA results.

For life cycle modeling of the considered products, the GaBi Software System for Life Cycle Engineering, developed and maintained by thinkstep AG, was used to model the product systems considered in this assessment. All relevant background datasets were taken from the GaBi 2018 software database (service pack 36). The datasets from the GaBi database are documented in the online documentation (thinkstep, 2018). To maximize comparability of results within the LCA, GaBi background data were used for energy, transportation and auxiliary materials.

2.7. Data Quality

A variety of tests and checks were performed throughout the project to ensure high quality of the completed LCA. Checks included an extensive review of project-specific LCA models as well as the background data used.

Temporal Coverage

Foreground data represent a continuous 12-month period over the 2018 calendar year. Background datasets are all based on data from the last 5 years, with the majority of datasets based on data from 2014 or later.

Geographical Coverage

To satisfy cut-off criteria, proxy datasets were used as needed for raw material inputs to address lack of data for a specific material or for a specific geographical region. These proxy datasets were chosen for their representativeness of the actual product. Additionally, European data or global data were used when North American data (for raw materials sourced in the US) were not available.

Technological Coverage

The primary data represent production of the products under evaluation. Secondary data were chosen to be specific to the technologies in question (or appropriate proxy data used where necessary).

2.8. Period under Review

Primary data were collected for production during 2018. This analysis is intended to represent production in 2018.

2.9. Allocation

Given that raw materials are key contributors to environmental performance, mass-based allocation was applied for the production facility, as it produced more than one flooring product. No allocation is required for products at end-of-life: plastic is assumed to be inert in landfills, so no landfill gas is produced from product waste. Bio-based packaging waste, however, may decompose and produce landfill gas, which is assumed to be collected and used to generate electricity. Under the polluter-pays principle, the product system carries the burden of landfilling.

2.10. Comparability

No comparisons or benchmarking is included in this EPD. LCA results across EPDs can be calculated with different background databases, modeling assumptions, geographic scope and time periods, all of which are valid and acceptable according to the Product Category Rules (PCR) and ISO standards. Caution should be used when attempting to compare EPD results.

3. Life Cycle Assessment Scenarios

Scenario assumptions are provided in Table 7 through Table 16. Items that are excluded from these tables (c.f., PCR Part B: Flooring EPD requirements (UL, 2018)) are assumed to be zero. (For example, electricity consumption is not listed in Table 8 because electricity is not need to install resilient flooring.) Furthermore, modules B1, B3, B5, B6, and B7 are not associated with any activity. The tables for these modules are thus limited to a couple rows each to indicate that the modules are included within the system boundary but that there are no inputs or outputs associated with them.

Table 7. Transport to the building site (A4)

NAME	VALUE	UNIT
Fuel type	Diesel	
Liters of fuel	35	l/100km

Vehicle type	Truck (trailer)	
Transport distance	800	km
Capacity utilization (including empty runs, mass based	78%	%
Gross density of products transported	4.73	kg/m^2
Capacity utilization volume factor (factor: =1 or <1 or ≥ 1 for compressed or nested packaging products)	1	-

Table 8. Installation into the building (A5)

NAME	VALUE	UNIT
Ancillary materials	0.3	kg
Product loss per functional unit	0.24	kg
Waste materials at the construction site before waste processing, generated by product installation (incl. product loss)	0.45	kg
Biogenic carbon contained in packaging	0.26	kg CO_2

Table 9. Reference Service Life

NAME	VALUE	UNIT
RSL	35	years

Table 10. Maintenance (B2)

NAME	VALUE	UNIT
Maintenance process information (cite source in report)	See section 2.3	-
Maintenance cycle (reference service life)	1,820 (weekly)	Number/ RSL
Maintenance cycle (estimated service life)	3,900 (weekly)	Number/ ESL
Net freshwater consumption: municipal water to POTW	0.44	m^3 / ESL
Ancillary materials Detergent Finish Finish remover	 0.89 0 0	kg / ESL
Electricity input for spray buffing	1.7	kWh / ESL
Power output of equipment	1.1	kW

Table 11. Repair (B3)

NAME	VALUE	UNIT
Repair cycle (reference service life)	0	Number/ RSL
Repair cycle (estimated service life)	0	Number/ ESL

Table 12. Replacement (B4)

NAME	VALUE	UNIT
Replacement cycle (reference service lifetime)	0	Number/ RSL

Replacement cycle (estimated service lifetime)	1.2	Number/ ESL
Ancillary materials specified by type (e.g. cleaning agent)	0.36	kg / ESL
Replacement of worn parts, specify parts/materials	5.4	kg / ESL
Further assumptions for scenario development, e.g. frequency and time period of use	N/A	As appropriate

Table 13. Refurbishment (B5)

NAME	VALUE	UNIT
Refurbishment cycle (reference service life)	0	Number/ RSL
Refurbishment cycle (estimated service life)	0	Number/ ESL

Table 14. Operational energy use (B6) and operational water use (B7)

NAME	VALUE	UNIT
Net freshwater consumption specified by water source and fate	0	m^3
Energy input, specified by activity, type and amount	0	kWh

Table 15. End of life (C1-C4)

NAME		VALUE	UNIT
Assumptions for scenario development (description of deconstruction, collection, recovery, disposal method and transportation)			
Collection process (specified by type)	Collected separately	4.73	kg
	Collected with mixed construction waste	0	kg
Recovery (specified by type)	Reuse	0	kg
	Recycling	0	kg
	Landfill	4.73	kg
	Incineration	0	kg
	Incineration with energy recovery	0	kg
	Energy conversion efficiency rate	0	
Disposal (specified by type)	Product or material for final deposition	4.73	kg
Removals of biogenic carbon (excluding packaging)		0	kg CO_2

Table 16. Reuse, recovery and/or recycling potentials (D), relevant scenario information

NAME	VALUE	UNIT
Net energy benefit from energy recovery from waste treatment of packaging from A5	0.11	MJ
Net energy benefit from energy recovery from waste treatment of packaging from B4	0.14	MJ

4. Life Cycle Assessment Results

Table 18 through Table 20 contain cradle-to-grave results for 1m^2 of flooring over the 75-year building estimated service life. Modules B1, B3, B5, B6, and B7 are not associated with any impact and are therefore declared as zero. Furthermore, module C1 is likewise not associated with any impact as the floor is manually deconstructed. In interest of space and table readability, these modules are not included in the results below. Table 17, below, depicts the modules that are included within the system boundary of this study.

Table 17. Description of the system boundary modules

	PRODUCT STAGE			CONSTRUCT-ION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				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 supply	Transport	Manufacturing	Transport from gate to site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Building Operational Energy Use During Product Use	Building Operational Water Use During Product Use	Deconstruction	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling Potential
EPD Type: Cradle-to-grave	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

4.1. Life Cycle Impact Assessment Results

Table 18. North American impact assessment results for 1m^2 of flooring over 75 years

TRACI v2.1	A1-A3	A4	A5	B2	B4	C2	C4	D
GWP 100 [kg CO_2 eq]	1.22E+01	6.66E-01	1.09E+00	5.22E+00	1.71E+01	5.39E-02	2.12E-01	-3.40E-02
ODP [kg CFC-11 eq]	1.37E-11	2.44E-14	1.16E-12	2.56E-12	1.79E-11	1.97E-15	3.83E-14	-4.03E-14
AP [kg SO_2 eq]	3.29E-02	1.55E-03	3.22E-03	1.66E-02	4.66E-02	1.25E-04	9.62E-04	-9.05E-05
EP [kg N eq]	1.92E-03	1.58E-04	4.39E-04	1.66E-02	3.10E-03	1.28E-05	4.88E-05	-3.82E-06
SFP [kg O_3 eq]	4.17E-01	4.76E-02	3.75E-02	1.83E-01	6.31E-01	3.85E-03	1.91E-02	-8.06E-04
ADP_{fossil} [MJ, surplus]	3.55E+01	1.35E+00	3.09E+00	1.28E+01	4.85E+01	1.09E-01	4.17E-01	-3.71E-02

4.2. Life Cycle Inventory Results

Table 19. Resource use for 1m² of flooring over 75 years

PARAMETER	A1-A3	A4	A5	B2	B4	C2	C4	D
RPR_E [MJ, LHV]	4.52E+01	2.50E-01	3.60E+00	4.21E+00	5.91E+01	2.02E-02	2.35E-01	-5.57E-02
RPR_M [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
$NRPR_E$ [MJ, LHV]	2.25E+02	1.01E+01	2.08E+01	1.06E+02	2.29E+02	8.16E-01	3.33E+00	-5.34E-01
$NRPR_M$ [MJ, LHV]	6.58E+01	0.00E+00	3.29E+00	0.00E+00	8.29E+01	0.00E+00	0.00E+00	0.00E+00
SM [kg]	5.90E-01	0.00E+00	2.95E-02	0.00E+00	7.44E-01	0.00E+00	0.00E+00	0.00E+00
RSF [MJ, LHV]	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, LHV]	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, LHV]	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]	1.65E-01	1.22E-03	9.67E-03	3.71E-02	2.12E-01	9.82E-05	4.03E-04	-1.59E-04

Table 20. Output flows and waste categories for 1m² of flooring over 75 years

PARAMETER	A1-A3	A4	A5	B2	B4	C2	C4	D
HWD [kg]	-6.76E-09	7.85E-08	1.86E-08	5.13E-08	1.30E-07	6.35E-09	1.15E-08	-2.37E-10
NHWD [kg]	1.80E+00	3.79E-04	4.37E-01	1.34E+00	8.38E+00	3.07E-05	4.74E+00	-1.61E-04
HLRW [kg]	1.23E-05	2.68E-08	7.18E-07	2.85E-06	1.57E-05	2.16E-09	4.32E-08	-4.49E-08
ILLRW [kg]	1.01E-02	2.22E-05	5.80E-04	2.38E-03	1.29E-02	1.79E-06	3.42E-05	-3.75E-05
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	5.21E-02	0.00E+00	6.25E-02	0.00E+00	0.00E+00	0.00E+00
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
EE, electrical [MJ, LHV]	0.00E+00	0.00E+00	8.03E-02	0.00E+00	9.64E-02	0.00E+00	0.00E+00	0.00E+00
EE, thermal [MJ, LHV]	0.00E+00	0.00E+00	3.40E-02	0.00E+00	4.08E-02	0.00E+00	0.00E+00	0.00E+00

Biogenic carbon is not reported in GWP as resilient flooring products do not typically contain bio-based materials. As such, carbon emissions and removals are not declared.

5. LCA Interpretation

Under the 75-year building service life assumption, product manufacturing (A1-A3) and recommended maintenance (B2) are the two largest contributors to most impact categories considered. Both production of raw materials and product manufacturing represent substantial fractions of potential impact, even over the life of a building. The potential impacts of flooring maintenance add up over time and are relevant contributors to the life cycle. Transportation of the flooring product from the manufacturing facility to the installation site (A4) is a relatively minor contributor to all impact categories. Replacement (B4), however, is a key contributor because it represents the production, installation, and disposal of replacement products needed to satisfy the 75-year building service life.

6. Additional Environmental Information

6.1. Mandatory Environmental Information

No substances required to be reported as hazardous, as defined under the Resource Conservation and Recovery Act (RCRA) (EPA, n.d.), are associated with the production of this product.

6.2. Extraordinary Effects

Prevention of Structural Damage

Heavy furniture and equipment should be kept off the floor for a minimum of 72 hours after floor installation to allow the adhesive to set. Damage from wheeled vehicles, castered furniture and dollies can be prevented by using proper furniture rests, wheels or casters with suitable widths and diameters for the loads to be carried.

Moisture in subfloors is an important consideration for the successful installation of rubber flooring. To avoid damage from moisture, recommended guidelines in ASTM F 710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring and ASTM F 1482 Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring should be followed.

6.3. Environmental Activities and Certifications

ABPURE rubber flooring products EPD comply with the VOC emissions requirements in the California Department of Public Health (CDPH) Standard Method v1.1 as certified by the FloorScore Certification Program for Indoor Air Quality. Low VOC cleaning materials are available for use in maintaining rubber flooring.

7. References

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8. Contact Information

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