

ENVIRONMENTAL PRODUCT DECLARATION

CARPET TILE: SDN 6/6.6 ECO-ACE BAC

VOXFLOr INDUSTRIAL PARK CO., LTD

SDN 6/6.6 VOXFLOr CARPET TILE WITH ECOACE-BAC COLLECTION



EcoAce-Bac, SDN6
EcoAce-Bac, SDN6.6
EcoAce-Bac Pro, SDN 6
EcoAce-Bac Pro, SDN 6.6
EcoAce-Bac Max, SDN 6
EcoAce-Bac Max, SDN 6.6

VOXFLOr®

Voxflor is a leading manufacturer of carpet tiles, established in 1997. Our design-centric approach combines creativity and innovation, with products crafted in our Milano Creative Studio and produced across three state-of-the-art facilities in Asia. Serving over 50 countries, we take pride in delivering high-quality, sustainable carpet solutions that reflect our commitment to both design and functionality.

At Voxflor, we operate with a clear vision driven by our slogan, "Passion & Purpose." Our purpose is to create beautiful spaces while minimizing our environmental impact. We are dedicated to fostering a sustainable future through our innovative practices, ensuring that every product we make contributes positively to the world around us.

We strive for excellence in sustainability, evidenced by our ISO 14001 certification, which underscores our commitment to environmental management. Our business decisions are guided by a core belief that sustainability is integral to our operations, influencing everything from sourcing materials to energy use. We are proud to lead our industry towards a more sustainable future, ensuring that passion for design goes hand in hand with a purposeful commitment to our planet.

For more information, visit www.voxflor.com.



ENVIRONMENTAL PRODUCT DECLARATION

VOXFLO[®]



SDN 6/6.6 VOXFLO[®] CARPET TILE WITH ECOACE-BAC COLLECTION

According to ISO 14025,
and ISO21930:2017

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL Environment 333 Pfingsten Road, Northbrook, IL 60611 https://www.ul.com https://www.spot.ul.com
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	General Program Instructions Version 2.7 March 2022
MANUFACTURER NAME AND ADDRESS	VOXFLO [®] Industrial Park Co., Ltd. Dongxing Road, Hi-tech Development District, Xinyu, Jiangxi Province, China FLOOR MASTERS (THAILAND) Co., Ltd. 475/28 M.7 Khlong Kaeo, Ban Bung, Chon Buri, Thailand
DECLARATION NUMBER	4791269444.101.1
DECLARED PRODUCT & FUNCTIONAL UNIT OR DECLARED UNIT	SDN 6/6.6 VOXFLO [®] Carpet Tile with EcoAce-Bac Collection, 1m ² with RSL of 15 years
REFERENCE PCR AND VERSION NUMBER	Product Category Rules for Building-Related Products and Services Part A: Life Cycle Assessment Calculation Rules and Report Requirements, Standard 10010, September 2018, Version 3.2 Part B: Flooring EPD Requirements, UL 10010-7, September 2018, Version 2.0
DESCRIPTION OF PRODUCT APPLICATION/USE	Carpet tiles for commercial use
PRODUCT RSL DESCRIPTION (IF APPL.)	15 Years
MARKETS OF APPLICABILITY	Global
DATE OF ISSUE	January 15, 2025
PERIOD OF VALIDITY	5 Years
EPD TYPE	Product-specific
RANGE OF DATASET VARIABILITY	N/A
EPD SCOPE	Cradle-to-grave
YEAR(S) OF REPORTED PRIMARY DATA	2023
LCA SOFTWARE & VERSION NUMBER	SimaPro 9.6
LCI DATABASE(S) & VERSION NUMBER	Ecoinvent 3.10
LCIA METHODOLOGY & VERSION NUMBER	CML-IA (baseline) & TRACI
The PCR review was conducted by:	UL Environment - PCR Peer Review Panel
This declaration was independently verified in accordance with ISO 14025: 2006. ☐ INTERNAL ☒ EXTERNAL	Skye Tang, UL Solutions <i>Skye Tang</i>
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	Ecovane Environmental Co., Ltd
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Jack Geibig, Ecoform <i>Jack Geibig</i>

ENVIRONMENTAL PRODUCT DECLARATION

VOXFLOOR®



SDN 6/6.6 VOXFLOOR CARPET TILE WITH ECOACE-BAC COLLECTION

According to ISO 14025,
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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

Voxfloor is a leading manufacturer of carpet tiles, established in 1997. Our design-centric approach combines creativity and innovation, with products crafted in our Milano Creative Studio and produced across three state-of-the-art facilities in Asia. Serving over 50 countries, we take pride in delivering high-quality, sustainable carpet solutions that reflect our commitment to both design and functionality.

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1.2. Product Description

1.2.1 Product Identification

The declaration covers six types of carpet tiles with EcoAce-Bac produced by VOXFLOOR and FLOOR MASTERS, and each following type consists a range of styles and colours.

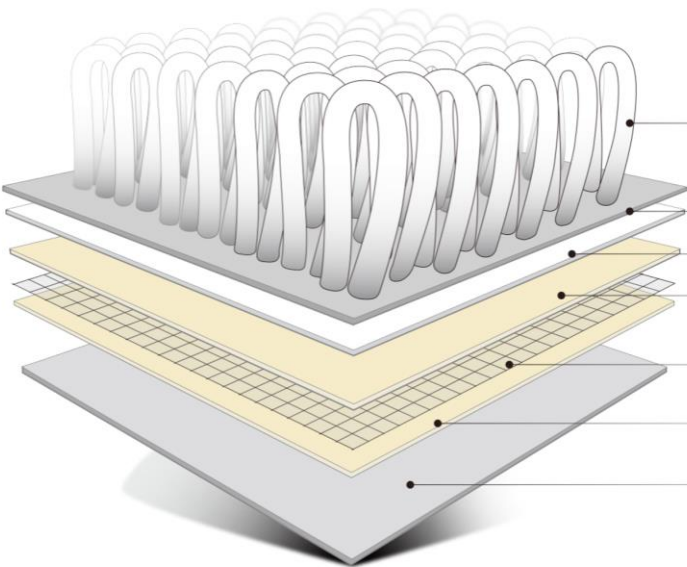
- EcoAce-Bac, SDN6, by VOXFLOOR and FLOOR MASTERS
- EcoAce-Bac, SDN6.6, by VOXFLOOR
- EcoAce-Bac Pro, SDN 6, by VOXFLOOR and FLOOR MASTERS
- EcoAce-Bac Pro, SDN 6.6, by VOXFLOOR
- EcoAce-Bac Max, SDN 6, by VOXFLOOR
- EcoAce-Bac Max, SDN 6.6, by VOXFLOOR

1.2.2 Product specification

Voxfloor carpet tiles with EcoAce-Bac collection consist of nylon yarn and EcoAce back, the following figure shows the structure of EcoAce-Bac carpet tile, from bottom up, the tile is composed of seven layers, i.e. yarn, primary backing, pre-coat, thermoplastic compounds, fiberglass, thermoplastic compounds, felt.

The main physical difference between EcoAce-Bac, EcoAce-Bac Pro, and EcoAce-Bac Max lies in density of secondary backing:

- Density of secondary backing for EcoAce-Bac 100g/m²
- Density of secondary backing for EcoAce-Bac Pro 450g/m²
- Density of secondary backing for EcoAce-Bac Max 800g/m²



**Product Structure
with EcoAce-Bac**

Yarn	VOXFLOOR® provides a wide range of high-quality commercial yarns
Primary Backing	Constructed of PET, it stabilizes the yarn and increases the dimensional stability of the product.
Pre-coat	A high-performance pre-coating improves tuft cohesion, ensures yarn stays in place and reduces yarn pullout.
Thermoplastic Compounds	Bonding the carpet surface to the backing with excellent delamination resistance.
Reinforcement	Glass fiber creates unparalleled stability.
Thermoplastic Compounds	Bonding the carpet surface to the backing with excellent delamination resistance.
Felt	Enhancing the stability of finish products, meanwhile the non-woven structure gives more breathability

Figure 1 EcoAce-Bac carpet tile product structure

Table 1 Technical specification of Voxflor carpet tiles with EcoAce-Bac collection

European standards	American standards
EN 13501 FIRE TEST	ASTM E648 RADIANT PANE
EN986 DIMENSIONAL STABILITY	ASTM E662 SMOKE DENSITY
EN1307 CLASSIFICATION OF PILE	AACHEN DIMENSIONAL STABILITY
ISO105 COLOR FASTNESS TO LIGHT	ASTM D5252 HEXAPOD DRUM
ISO105 COLOR FASTNESS TO WATER	AATCC 16E COLORFASTNESS TO LIGHT
ISO105 COLOR FASTNESS TO RUBBING	AATCC 107 COLORFASTNESS TO WATER
ISO6356 ELECTRICAL PROPENSITY	AATCC 165 COLORFASTNESS TO CROCKING
EN ISO 354 SOUND ABSORPTION COEFFICIENT	AATCC 134 ELECTROSTATIC
EN ISO 10140 IMPACT SOUND INSULATION	





1.2.3 Product Specific EPD

This declaration covers six types of EcoAce-Bac carpet tiles. The differences among the products lies in the raw material yarn and the density of secondary backing. The main manufacturing process is totally the same. However, each product was analyzed individually and the LCA results are presented separately in this declaration.

While allocating energy and auxiliary materials within the production site, allocation was carried out based on either mass or size of the product produced on a yearly average.

1.3. Application

The products covered in this declaration are for application in corporate/commercial office spaces, in store spaces, hospitality & leisure spaces, education & healthcare spaces, government/institutional spaces and transport spaces.

1.4. Declaration of Methodological Framework

In this project, a full LCA approach is considered with some simplification on data modeling using generic data for most background system. The EPD analysis uses a cradle-to-grave system boundary. No known flows are deliberately excluded from this EPD.

To calculate product use and replacement, a 15-year reference service life was assumed for the declared products.

1.5. Technical Requirements

The Voxflor carpet tiles with EcoAce-Bac collection cover various types and colors. Therefore, the following technical data provides a range of values for some parameters.

Table 2 Technical data of Voxflor carpet tiles with EcoAce-Bac collection

Name	EcoAce-Bac, SDN6	EcoAce-Bac, SDN6.6	EcoAce-Bac Pro, SDN 6	EcoAce-Bac Pro, SDN 6.6	EcoAce-Bac Max, SDN 6	EcoAce-Bac Max, SDN 6.6	Unit
Yarn type	Nylon 6	Nylon 6.6	Nylon 6	Nylon 6.6	Nylon 6	Nylon 6.6	
Primary backing type	PET	PET	PET	PET	PET	PET	
Secondary backing type	PET	PET	PET	PET	PET	PET	
CRI rating	2.5-3.5	2.5-3.5	2.5-3.5	2.5-3.5	2.5-3.5	2.5-3.5	
Total thickness	6-11	6-11	6-11	6-11	6-11	6-11	mm
Product weight	2750-4900	2750-4900	3100-5250	3100-5250	3450-5600	3450-5600	g/m ²
Surface pile thickness	3-7	3-7	3-7	3-7	3-7	3-7	mm
Surface pile weight	440-1200	440-1200	440-1200	440-1200	440-1200	440-1200	g/m ²

Note that the average pile weight range for Voxflor carpet tiles with EcoAce-Bac collection is between 13-33 oz/yd². In this report, a common value for this type of product: 18 oz/yd² (approximately 610 g/m²) is taken as the subject for calculation.



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VOXFLO®



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1.6. Material Composition

Table 3 Material composition

Raw Material		EcoAce-Bac, SDN 6	EcoAce-Bac, SDN6.6	EcoAce-Bac Pro, SDN6	EcoAce-Bac Pro, SDN6.6	EcoAce-Bac Max, SDN6	EcoAce-Bac Max, SDN6.6
Face Yarn	Nylon 6	18.1%	/	16.4%	/	15.0%	/
	Nylon 66	/	18.1%	/	16.4%	/	15.0%
Primary Backing	PET	3.0%	3.0%	2.7%	2.7%	2.5%	2.5%
Precoating Layer	Aluminium Hydroxide	14.9%	14.9%	13.4%	13.4%	12.3%	12.3%
	Vinyl Acetate Ethylene						
	Calcium carbonate						
Thermoplastic Compound	Calcium carbonate	59.2%	59.2%	53.8%	53.8%	49.0%	49.0%
	Poly(propylene-co-ethylene)						
	Hydrocarbon Resin						
	Mineral Oil						
Stabilization	Fiberglass	1.8%	1.8%	1.6%	1.6%	1.5%	1.5%
Secondary Backing	PET	3.0%	3.0%	12.1%	12.1%	19.7%	19.7%

Solution dyed yarn is made of either nylon 6 or nylon 66. After post-spinning, it can meet the carpet performance and design requirements. Polyester non-woven fabric is used as the base layer (primary backing) for yarn tufting and secondary backing as well. Secondary backing provides support for the carpet and guarantees dimensional stability, sound absorption and use comfort. As an important part of the backing, thermoplastic component is used to bond pre-coated carpet surface to the backing.

1.7. Manufacturing

The manufacturing process of Voxflor carpet tiles with EcoAce-Bac collection mainly includes yarn treatment, tufting process, pre-coating, backing, cutting and packaging.

The yarn is first processed to meet the carpet performance and design requirements, and then tufted on the primary backing by tufting equipment to form a tuft cloth. Afterwards, the pre-coating process will be applied to the back of the carpet surface to fasten off the yarn and finish the backing process. In the end, the finished product will be cut and packaged.

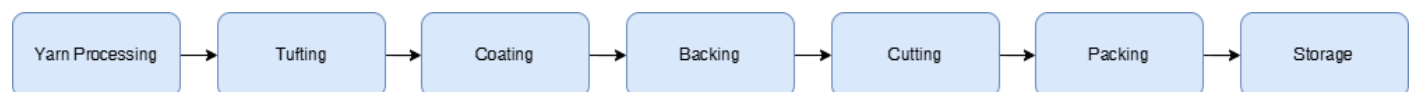


Figure 2 Production process flowchart of Voxflor carpet tiles with EcoAce-Bac collection



Xinyu factory produces all six EcoAce-Bac collections, and Chon Buri factory only produces EcoAce-Bac and EcoAce-Bac Pro collections. The manufacturing process of both factories are the same.

1.8. Packaging

Packaging materials consist of corrugated paper box, paper gasket, wood pallet, wood separator, wrapping film, thermal contraction film, thin plastic film, paper corner and hot melt glue. According to VOXFLOOR, in VOXFLOOR Industrial Park Co., Ltd., 55.7% of Voxfloor carpet tiles with EcoAce-Bac collection are consumed in China and 44.3% are consumed overseas, in FLOOR MASTERS (THAILAND) Co., Ltd., 18.8% of Voxfloor carpet tiles with EcoAce-Bac collection are consumed in Thailand and 81.2% are consumed overseas. In the calculation model, the disposal of packaging materials adopts a rough country and region weighted average disposal mode following the UL PCR for Building-Related Products and Services Part A Section 2.8.5. Note that no reusable packaging is used.

1.9. Transportation

According to VOXFLOOR, in VOXFLOOR Industrial Park Co., Ltd., 55.7% of Voxfloor carpet tiles with EcoAce-Bac collection are consumed in China and 44.3% are consumed overseas, in FLOOR MASTERS (THAILAND) Co., Ltd., 18.8% of Voxfloor carpet tiles with EcoAce-Bac collection are consumed in Thailand and 81.2% are consumed overseas.

Oceanic and road transportation distance for product delivery was estimated with reference to external resources.

Table 7 demonstrates the data used for stage A4 in the LCA modelling.

1.10. Product Installation

Installation of Voxfloor carpet tiles with EcoAce-Bac collection is a relatively simple task. Only a few tools are necessary for installation and only one consumable product i.e. glue is required. Tools like cutting instruments (knife, scissors) and steam rollers are necessary for installation of carpet tile.

As tools are reusable, the production and disposal stage of tools is omitted in this study. The amount of glue used is 65 gram per square meter according to estimation by VOXFLOOR and study of comparative product's installation data.

1.11. Use Condition

Carpet tile is a passive product after installation, and very little effort is required in order to use Voxfloor carpet tiles with EcoAce-Bac collection. However, cleaning is required for regular maintenance and upkeep of the product. The cleaning schedule depends on several factors: weight capacity, terminal function, dust amount entering into the building, etc. Full vacuuming twice a week, extraction cleaning twice annually, were assumed.

1.12. Reference Service Life and Estimated Building Service Life

Voxfloor carpet tiles with EcoAce-Bac collection will be used for commercial purpose with a RSL of 15 years. An ESL of 75 years was applied in the LCA study.

1.13. Reuse, Recycling, and Energy Recovery

Waste yarn, waste carpet tiles (not pre-coated) generated from mass production, and scraps left over from cutting process are sold to specialized recycling manufacturers for plastic granulation.





1.14. Disposal

According to VOXFLOOR, in VOXFLOOR Industrial Park Co., Ltd., 55.7% of Voxfloor carpet tiles with EcoAce-Bac collection are consumed in China and 44.3% are consumed overseas, in FLOOR MASTERS (THAILAND) Co., Ltd., 18.8% of Voxfloor carpet tiles with EcoAce-Bac collection are consumed in Thailand and 81.2% are consumed overseas.

For the model calculation, the disposal of the used carpet tile adopts a country and region weighted average disposal mode. End of life disposal treatment process (C4) from Ecoinvent was used in this LCA calculation. In accordance with disposal routes and waste classification referenced in PCR part A section 2.8.5 and 2.8.6, for Chinese market, the disposal scenario was modelled with 5% recycle, 95% landfill and 0% incineration. For carpet tiles in overseas market, the disposal scenario (20% recycle, 70% landfill, 10% incineration) was taken as an average of the countries representing overseas market.

2. Life Cycle Assessment Background Information

2.1. Functional or Declared Unit

In this study the functional unit is defined as one square meter of Voxfloor carpet tiles with EcoAce-Bac collection, with RSL of 15 years.

2.2. System Boundary

The life cycle stages considered in this LCA study are from cradle to grave.

The product stage for carpet tiles includes extraction and processing of raw materials, transportation to the factory and manufacturing processes with packaging and etc. The construction process stage includes transportation of carpet to the building site from the factory and the installation phase. The use stage includes maintenance of carpet. And the end of life stage includes deconstruction, transportation of waste products to final disposition site, disposal and etc.

Over through the life cycle stages of products, all energy and material inputs have been traced back to the extraction of resources, emissions from the whole system have been quantified and waste management scenarios have also been included.

2.3. Product for Use Phase (Module B1-B7)

For the calculations for use phase the following cleaning routine was considered:

Table 4 Cleaning and maintenance

Cleaning Process	Cleaning Frequency	Consumption of Energy and Resources
Vacuuming	Twice Weekly	Electricity
Extraction Cleaning	Twice Annually	Water and Detergent



Table 5 Inputs in maintenance stage

Input component	Amount	Unit	Scenario
Water	1.93	L/m2/a	Based on full vacuuming twice weekly, extraction cleaning twice annually
Electricity	0.45	kWh/m2/a	
Detergent	0.007	g/m2/a	

2.4. Estimates and Assumptions

The key assumptions of this LCA study are as follows:

- Transport assumptions are made where it is not possible to obtain the specific data. When this occurs, it is clearly stated in the report and a sensitivity analysis is conducted;
- Consumption of glue used for product installation is based on assumption, and a sensitivity analysis was conducted;
- Electricity and consumption data were not obtained for certain processes in maintenance stage, so assumptions were made, which was clearly stated in the report, and a sensitivity analysis was conducted.
- As the distribution of products in foreign markets is unavailable, disposal scenario was developed in the disposal stage for foreign markets, which was clearly stated in the report, and a sensitivity analysis was also performed for disposal scenarios.
- During the end of life stage, the transportation of the waste carpet tiles from the operation site to treatment facilities such as dismantling site and disposal facilities is assumed to be 100km for simplification and a sensitivity analysis is conducted;
- Waste to energy was not considered in this modelling.

2.5. Cut-off Criteria

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

- Production and disposal of the infrastructure and capital equipment (buildings, machines, transport media, roads, etc.) and their maintenance during product assembly, installation and maintenance.
- The load and benefit of recycling waste Voxflor carpet tiles with EcoAce-Bac collection is excluded from the analysis.
- Storage phases and sales of Voxflor carpet tiles with EcoAce-Bac collection due to minor contribution.
- Tile product losses due to abnormal damage such as natural disasters or fire accidents. These losses would mostly be accidental.
- Recycling process of defective products.
- Handling operations at the distribution centre and retail outlet due to small contribution and negligible impact.
- Transport from distribution warehouse to retail outlet and from retail outlet to consumer household or commercial centre.

The following procedure was followed for the exclusion of inputs and outputs:

- All inputs and outputs to a (unit) process will be included in the calculation for which data is available. Data gaps may be filled by conservative assumptions with average or generic data. Any assumptions for such choices will be documented;
- In case of insufficient input data or data gaps for a unit process, according to the PCR requirement, the cut-off criteria chosen is 1% of renewable and non-renewable primary energy usage and 1% of the total mass of that unit process. The total neglected input flows of the cradle to grave stage, e.g. per module A1-A3, A4-A5, B1-B5, B6-B7, C1-C4 and module D shall be a maximum of 5% of energy usage and mass, in this study, the neglected flow is demonstrated in table below.
- Regarding the environmental impact, the cut-off rules is no more than 1%.

2.6. Data Sources

Generic data from various sources was used, including literature review, public source, database like Ecoinvent, ELCD, Chinese LCI and etc.

For all the major material and energy used for the manufacturing of VOXFLOOR carpet tile, Chinese energy, raw material data was used to the best extent to reflect the accuracy and representativeness of results.

2.7. Data Quality

Steps were taken to ensure that the LCI data were reliable and representative. The type of data that was used is clearly stated in the Inventory Analysis, be it measured or calculated from primary sources or whether data are from the LCI databases. In this study, generic data for certain processes were sourced from the databases in SimaPro 9.6. Due to confidentiality reason, information received from supplier and confirmed by VOXFLOOR are only used for supporting modelling and not revealed in any other circumstance.

SimaPro is the world's most widely used LCA software and the data in it comes predominantly from Ecoinvent and some other datasets, with the world's most complete and widely used set of data on industrial processes, material production, packaging production, transport and so on.

The data quality requirements for this study were as follows:

- Data shall be recent. Datasets used for calculations should be based on 1-year averaged data, they should have been updated within the past 10 years for generic data and within the past 5 years for producer specific data;
- The time period over which inputs to and outputs from the system shall be accounted for is 100 years from the year for which the data set is deemed representative. A longer time period should be used if relevant;
- The technological coverage shall reflect the physical reality for the reference product or product family;
- Geographic coverage shall reflect operational reality of the different life cycle stages;
- Data sets shall be aligned with the system boundaries defined.

All the above data quality requirements are met.

2.8. Period under Review

Primary data used was derived for the year of 2023.



2.9. Allocation

Allocation refers to partitioning of input or output flows of a process or a product system between the product systems under study and one or more other product systems.

In this report, in plant recycling for production is assumed as a close loop, meaning all of the environment impact from recycling of carpe from production and benefit of using recycled material to avoid waste treatment for production are allocated to the process of carpet tiles production.

For recycling process at the end of life stage, to be conservative, the benefit of recycling is not included in the product system, and the waste to energy benefit from incineration of waste is not declared in the study.

For process-related allocations, a distinction is made between multi-input and multi-output processes.

Multi-input processes

For data sets in this study, the allocation of the inputs from coupled processes is generally carried out via the mass. For literature data, the source is generally referred to. Specially in allocating the energy within the production site i.e. electricity, natural gas and etc and some other raw material such as water and etc, allocation is via both mass or size of the product produced on a yearly average. The principle for choosing the mass and size is based on the relationship of the input to the output (of product), in most cases, the input is in linear with the mass of product produced, with exception for pre-coating processes, which is in proportion to size of the product produced, hence the allocation of energy and material related to this kind of process are following size instead of mass quantity.

Multi-output processes

Multi-Output allocation is based on a quantitative calculation of the resource consumption and the emissions for example in relation to the distribution of functions, physical properties or economic aspects. Physical properties, such as mass, net calorific values, etc., shall be preferred, otherwise economic aspects, such as man-hours, operating hours or product assembly cost may be used.

In this study, there are no other by-products produced from the production line, hence there is quite little occasion that requires allocation for multi-output processes. One allocation occurs on the environmental emissions allocation, especially in the area of waste treatment. Relevant processes can be apportioned in a causal way. In the end of life stage, the allocation within the disposal scenario follows mass allocation.

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. 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.

Comparison of the environmental performance of carpet tiles 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.

3. Life Cycle Assessment Scenarios

According to the production site in Xinyu, the raw materials are sourced from China, Taiwan, and Singapore. Most of the raw materials are sourced from China and Thailand and delivered by lorry. The rest material are delivered by ship.

Table 6 Transportation of raw materials

Raw materials		Source	Distance/km	Vehicle
Face Yarn	Nylon 6	Changzhou	500	Lorry
		Yuhang	710	Lorry
		Taichang	870	Lorry
		Jiaxing	780	Lorry
	Nylon 66	Changzhou	500	Lorry
		Taichang	870	Lorry
Primary Backing	PET	Taiwan	1250	Ship
Precoating Layer	Vinyl Acetate Ethylene	Nanjing	750	Lorry
	Aluminium Hydroxide	Zibo	1280	Lorry
	Calcium carbonate	Xinyu	105	Lorry
105			Lorry	
Thermoplastic Compound	Poly(propylene-co-ethylene)	Guangzhou	700	Lorry
	Hydrocarbon Resin	Singapore	3200	Ship
	Mineral Oil	Xiaoshan	690	Lorry
Stabilization	Fiberglass	Changshu	884	Lorry
Secondary Backing	PET	Yizheng	800	Lorry

Table 7 Transportation of packaging materials

Factory location	Packaging materials	Source	Distance/km	Vehicle
Xinyu, China	Corrugated paper box	Xinyu	5	Lorry
	Paper gasket	Xinyu	5	Lorry
	Wood Pallet	Shanghai	870	Lorry
	Wood separator	Shanghai	870	Lorry
	Wrapping film	Nanchang	150	Lorry
	Thermal contraction film	Jiashan	797	Lorry
	Thin plastic film	Jiashan	797	Lorry
	Paper corner	Shanghai	810	Lorry
	Hot melt glue	Suzhou	800	Lorry

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According to ISO 14025,
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Chon Buri, Thailand	Corrugated paper box	Chon Buri	15	Lorry
	Paper gasket	Chon Buri	15	Lorry
	Wood Pallet	Chon Buri	15	Lorry
	Wood separator	Chon Buri	15	Lorry
	Wrapping film	Chon Buri	15	Lorry
	Thermal contraction film	Xinyu	5132	Ship
	Thin plastic film	Xinyu	5132	Ship
	Paper corner	Samut Sakhon	140	Lorry
	Hot melt glue	Xinyu	5132	Ship

According to VOXFLO, in VOXFLO Industrial Park Co., Ltd., 55.7% of Voxflo carpet tiles with EcoAce-Bac collection are consumed in China and 44.3% are consumed overseas, in FLOOR MASTERS (THAILAND) Co., Ltd., 18.8% of Voxflo carpet tiles with EcoAce-Bac collection are consumed in Thailand and 81.2% are consumed overseas. Oceanic and road transportation distance for product delivery was estimated with reference to external resources.

Table 8 Transport to the building site (A4)

Factory location	Market location	Ratio	Distance (km)	Vehicle
VOXFLO Industrial Park Co., Ltd. Xinyu, China	China	55.7%	100	Lorry
	Overseas	44.3%	10000	Ship
FLOOR MASTERS (THAILAND) Co., Ltd. Chon Buri, Thailand	Thailand	18.8%	100	Lorry
	Overseas	81.2%	10000	Ship

Table 9 Additional technical information of transportation

Name		Value		Unit
		Road	Ocean	
Fuel type		Diesel	Heavy oil	-
Liters of fuel		31.11L/100km	10.175t/100km	L/100km or t/100km
Vehicle type		Lorry	Ship	-
Transport distance		100	10000	
Capacity Utilization		50	100	%
Gross density of product transported	EcoAce-Bac, SDN 6	337	337	kg/m3
	EcoAce-Bac, SDN 6	337	337	
	EcoAce-Bac, SDN 6	372	372	
	EcoAce-Bac, SDN 6	372	372	
	EcoAce-Bac, SDN 6	407	407	
	EcoAce-Bac, SDN 6	407	407	
Capacity utilization volume factor		0.4	0.4	-



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SDN 6/6.6 VOXFLO CARPET TILE WITH ECOACE-BAC COLLECTION

According to ISO 14025,
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Table 10 Scenario and additional technical information of Installation(A5)

Name	Value	Unit
Ancillary materials	0.065	kg
Net freshwater consumption specified by water source and fate (e.g., X m3 river water evaporated, X m3 city water disposed to sewer)	-	m3
Other resources	-	kg
Electricity consumption	-	kWh
Other energy carriers	-	MJ
Product loss per functional unit	0.015	m ² /m ²
Waste materials at the construction site before waste processing, generated by product installation	0.015	m ² /m ²
Output materials resulting from on-site waste processing (specified by route; e.g. for recycling, energy recovery and/or disposal)	-	kg
Mass of packaging waste specified by type	Pulp:0.1435 Wood:0.0067 Plastics:0.0160	kg
Biogenic carbon contained in packaging	0.312	kg CO ₂
Direct emissions to ambient air, soil and water	-	kg
VOC emissions	N/A	µg/m ³

Table 11 Reference Service Life

Name	Value	Unit
RSL	15	years
ESL	75	years
Declared product properties (at the gate) and finishes, etc.	Carpet tile	m ²
Design application parameters (if instructed by the manufacturer), including references to the appropriate practices and application codes)	-	-
An assumed quality of work, when installed in accordance with the manufacturer's instructions	-	-
Outdoor environment, (if relevant for outdoor applications), e.g. weathering, pollutants, UV and wind exposure, building orientation, shading, temperature	-	-
Indoor environment, (if relevant for indoor applications), e.g. temperature, moisture, chemical exposure)	Temperature 15.5°C- 29.5°C; Humidity 40% - 65%; Concrete slab moisture ≤8%; Concrete alkalinity 5 - 9	-

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Use conditions, e.g. frequency of use, mechanical exposure.	Commercial use	-
Maintenance, e.g. required frequency, type and quality of replacement components	Full vacuuming twice a week, extraction cleaning twice annually	-

Table 12 Maintenance (B2)

Name	Value	Unit
Maintenance process information (cite source in report)	Full vacuuming twice a week, extraction cleaning twice annually	-
Maintenance cycle	Full vacuuming 2/ week Extraction cleaning 2/ year	Cycles/ESL
Net freshwater consumption specified by water source and fate (amount evaporated, amount disposed to sewer)	0.00193 m ³ city water disposed to sewer	m ³ /a
Ancillary materials specified by type (e.g. cleaning agent)	0.007 (cleaning agent)	g/m ² /a
Other resources	-	kg
Energy input, specified by activity, type and amount	Electricity consumption 0.45	kWh/m ² /a
Other energy carriers specified by type	-	kWh
Power output of equipment	-	kW
Waste materials from maintenance (specify materials)	-	kg
Direct emissions to ambient air, soil and water	-	kg
Further assumptions for scenario development (e.g. frequency and time period of use, number of occupants);	-	-

Table 13 Replacement (B4)

Name	Value	Unit
Reference service life	15	Years
Replacement cycle	4	(ESL/RSL)-1
Energy input, specified by activity, type and amount	-	kWh
Net freshwater consumption specified by water source and fate (amount evaporated, amount disposed to sewer)	-	m ³
Ancillary materials specified by type (e.g. cleaning agent)	-	kg
Replacement of worn parts, specify parts/materials	-	kg
Direct emissions to ambient air, soil and water	-	kg
Further assumptions for scenario development, e.g. frequency and time period of use	-	As appropriate

As mention above, the VOXFLO carpet tiles are sold in China and overseas. For Chinese market, the disposal scenario was modelled with 5% recycle, 95% landfill and 0% incineration. For overseas market, the disposal scenario (20%



recycle, 70% landfill, 10% incineration) was taken as an average of the countries representing overseas market.

For the waste scenario, 100km of road transportation (C2) distance from home to MSW treatment site was assumed, which is moderate among China and overseas market. And zero input and output were assumed for deconstruction of the tile (C1) and waste processing (C3). The table below demonstrates the data used for stage C1-C4 in the LCA modelling.

Table 14 End of Life (C1-C4)

Name		Value		Unit
Assumptions for scenario development (description of deconstruction, collection, recovery, disposal method and transportation)		See description and table above		
Collection process (specified by type)	Collected separately	-		kg
	Collected with mixed construction waste	EcoAce-Bac, SDN 6	3.37	kg
		EcoAce-Bac, SDN6.6	3.37	
		EcoAce-Bac Pro, SDN6	3.72	
		EcoAce-Bac Pro, SDN6.6	3.72	
		EcoAce-Bac Max, SDN6	4.07	
		EcoAce-Bac Max, SDN6.6	4.07	
Recovery (specified by type)	Reuse	-		kg
	Recycling	EcoAce-Bac, SDN 6	0.39	kg
		EcoAce-Bac, SDN6.6	0.39	
		EcoAce-Bac Pro, SDN6	0.43	
		EcoAce-Bac Pro, SDN6.6	0.43	
		EcoAce-Bac Max, SDN6	0.47	
		EcoAce-Bac Max, SDN6.6	0.47	
	Landfill	EcoAce-Bac, SDN 6	2.83	kg
		EcoAce-Bac, SDN6.6	2.83	
		EcoAce-Bac Pro, SDN6	3.12	
		EcoAce-Bac Pro, SDN6.6	3.12	
		EcoAce-Bac Max, SDN6	3.42	
		EcoAce-Bac Max, SDN6.6	3.42	
	Incineration	EcoAce-Bac, SDN 6	0.15	kg
		EcoAce-Bac, SDN6.6	0.15	
		EcoAce-Bac Pro, SDN6	0.16	
		EcoAce-Bac Pro, SDN6.6	0.16	
		EcoAce-Bac Max, SDN6	0.18	

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		EcoAce-Bac Max, SDN6.6	0.18	
	Incineration with energy recovery	-		kg
	Energy conversion efficiency rate	-		
Disposal (specified by type)	Product or material for final deposition	0		kg
Removals of biogenic carbon (excluding packaging)		0		kg CO ₂

4. Life Cycle Assessment Results

Table 15 Description of the system boundary modules

	PRODUCT STAGE			CONSTRUCTION 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	MND

4.1 Life Cycle Impact Assessment Results

Note that LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

ENVIRONMENTAL PRODUCT DECLARATION

VOXFLOOR®



SDN 6/6.6 VOXFLOOR CARPET TILE WITH ECOACE-BAC COLLECTION

According to ISO 14025,
and ISO 21930:2017

Table 16 North American Impact Assessment Results for EcoAce-BAac, SDN 6

Impact category	Unit	Total	Production	Transport of product	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction	Transport of waste	Waste processing	Disposal
			A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Ozone depletion	kg CFC-11 eq	2.42 E-06	1.97E-06	1.12 E-08	6.63E-09	0	7.11E-08	0	3.55E-07	0	0	0	0	1.06 E-09	0	1.03 E-09
Global warming	kg CO ₂ eq	4.53 E+01	1.23E+01	6.90 E-01	4.06E-01	0	5.22E+00	0	2.61E+01	0	0	0	0	6.45 E-02	0	5.85 E-01
Smog	kg O ₃ eq	2.61 E+00	6.92E-01	1.23 E-01	1.61E-02	0	2.94E-01	0	1.47E+00	0	0	0	0	6.26 E-03	0	7.68 E-03
Acidification	kg SO ₂ eq	1.95 E-01	4.73E-02	5.87 E-03	1.09E-03	0	2.33E-02	0	1.16E-01	0	0	0	0	2.45 E-04	0	3.04 E-04
Eutrophication	kg N eq	3.00 E-01	2.39E-02	7.39 E-04	3.49E-03	0	2.45E-02	0	1.23E-01	0	0	0	0	6.65 E-05	0	1.25 E-01
Carcinogenics	CT Uh	1.34 E-05	7.45E-06	1.80 E-07	6.22E-08	0	9.50E-07	0	4.75E-06	0	0	0	0	1.74 E-08	0	2.95 E-08
Non carcinogenics	CT Uh	1.55 E-05	2.54E-06	1.37 E-07	2.05E-07	0	1.73E-06	0	8.63E-06	0	0	0	0	1.55 E-08	0	2.25 E-06
Respiratory effects	kg PM _{2.5} eq	4.97 E-02	7.33E-03	5.14 E-04	1.63E-04	0	6.93E-03	0	3.47E-02	0	0	0	0	3.40 E-05	0	3.63 E-05
Ecotoxicity	CT Ue	1.03 E+03	1.87E+02	7.40 E+00	4.81E+00	0	1.16E+02	0	5.81E+02	0	0	0	0	7.78 E-01	0	1.33 E+02
Fossil fuel depletion	MJ surplus	4.68 E+01	2.18E+01	1.28 E+00	6.50E-01	0	3.81E+00	0	1.90E+01	0	0	0	0	1.22 E-01	0	1.02 E-01

ENVIRONMENTAL PRODUCT DECLARATION

VOXFLOOR®



SDN 6/6.6 VOXFLOOR CARPET TILE WITH ECOACE-BAC COLLECTION

According to ISO 14025,
and ISO 21930:2017

Table 17 North American Impact Assessment Results for EcoAce-Bac, SDN 6.6

Impact category	Unit	Total	Production	Transport of product	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction	Transport of waste	Waste processing	Disposal
			A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Ozone depletion	kg CFC-11 eq	1.91 E-06	1.47E-06	1.12 E-08	6.63E-09	0	7.11E-08	0	3.55E-07	0	0	0	0	1.06 E-09	0	1.03 E-09
Global warming	kg CO ₂ eq	4.24 E+01	9.32E+00	6.90 E-01	4.06E-01	0	5.22E+00	0	2.61E+01	0	0	0	0	6.45 E-02	0	5.85 E-01
Smog	kg O ₃ eq	2.39 E+00	4.78E-01	1.23 E-01	1.61E-02	0	2.94E-01	0	1.47E+00	0	0	0	0	6.26 E-03	0	7.68 E-03
Acidification	kg SO ₂ eq	1.84 E-01	3.66E-02	5.87 E-03	1.09E-03	0	2.33E-02	0	1.16E-01	0	0	0	0	2.45 E-04	0	3.04 E-04
Eutrophication	kg N eq	2.98 E-01	2.13E-02	7.39 E-04	3.49E-03	0	2.45E-02	0	1.23E-01	0	0	0	0	6.65 E-05	0	1.25 E-01
Carcinogenics	CT Uh	8.62 E-06	2.63E-06	1.80 E-07	6.22E-08	0	9.50E-07	0	4.75E-06	0	0	0	0	1.74 E-08	0	2.95 E-08
Non carcinogenics	CT Uh	1.45 E-05	1.53E-06	1.37 E-07	2.05E-07	0	1.73E-06	0	8.63E-06	0	0	0	0	1.55 E-08	0	2.25 E-06
Respiratory effects	kg PM _{2.5} eq	4.68 E-02	4.40E-03	5.14 E-04	1.63E-04	0	6.93E-03	0	3.47E-02	0	0	0	0	3.40 E-05	0	3.63 E-05
Ecotoxicity	CT Ue	9.52 E+02	1.09E+02	7.40 E+00	4.81E+00	0	1.16E+02	0	5.81E+02	0	0	0	0	7.78 E-01	0	1.33 E+02
Fossil fuel depletion	MJ surplus	4.55 E+01	2.05E+01	1.28 E+00	6.50E-01	0	3.81E+00	0	1.90E+01	0	0	0	0	1.22 E-01	0	1.02 E-01

ENVIRONMENTAL PRODUCT DECLARATION

VOXFLOOR®



SDN 6/6.6 VOXFLOOR CARPET TILE WITH ECOACE-BAC COLLECTION

According to ISO 14025,
and ISO 21930:2017

Table 18 North American Impact Assessment Results for EcoAce-Bac Pro, SDN 6

Impact category	Unit	Total	Production	Transport of product	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction	Transport of waste	Waste processing	Disposal
			A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Ozone depletion	kg CFC-11 eq	1.92E-06	1.48E-06	1.23E-08	6.63E-09	0	7.11E-08	0	3.55E-07	0	0	0	0	1.16E-09	0	1.13E-09
Global warming	kg CO ₂ eq	4.39E+01	1.07E+01	7.61E-01	4.06E-01	0	5.22E+00	0	2.61E+01	0	0	0	0	7.11E-02	0	6.39E-01
Smog	kg O ₃ eq	2.52E+00	5.91E-01	1.36E-01	1.61E-02	0	2.94E-01	0	1.47E+00	0	0	0	0	6.91E-03	0	8.43E-03
Acidification	kg SO ₂ eq	1.88E-01	3.97E-02	6.48E-03	1.09E-03	0	2.33E-02	0	1.16E-01	0	0	0	0	2.71E-04	0	3.32E-04
Eutrophication	kg N eq	3.07E-01	1.93E-02	8.16E-04	3.49E-03	0	2.45E-02	0	1.23E-01	0	0	0	0	7.34E-05	0	1.37E-01
Carcinogenics	CT Uh	8.87E-06	2.85E-06	1.98E-07	6.22E-08	0	9.50E-07	0	4.75E-06	0	0	0	0	1.92E-08	0	3.12E-08
Non carcinogenics	CT Uh	1.49E-05	1.90E-06	1.51E-07	2.05E-07	0	1.73E-06	0	8.63E-06	0	0	0	0	1.71E-08	0	2.31E-06
Respiratory effects	kg PM _{2.5} eq	4.76E-02	5.22E-03	5.67E-04	1.63E-04	0	6.93E-03	0	3.47E-02	0	0	0	0	3.75E-05	0	3.99E-05
Ecotoxicity	CT Ue	9.87E+02	1.32E+02	8.17E+00	4.81E+00	0	1.16E+02	0	5.81E+02	0	0	0	0	8.59E-01	0	1.45E+02
Fossil fuel depletion	MJ surplus	4.58E+01	2.07E+01	1.41E+00	6.50E-01	0	3.81E+00	0	1.90E+01	0	0	0	0	1.35E-01	0	1.13E-01

ENVIRONMENTAL PRODUCT DECLARATION

VOXFLOOR®



SDN 6/6.6 VOXFLOOR CARPET TILE WITH ECOACE-BAC COLLECTION

According to ISO 14025,
and ISO 21930:2017

Table 19 North American Impact Assessment Results for EcoAce-Bac Pro, SDN 6.6

Impact category	Unit	Total	Production	Transport of product	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction	Transport of waste	Waste processing	Disposal
			A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Ozone depletion	kg CFC-11 eq	1.92E-06	1.48E-06	1.23E-08	6.63E-09	0	7.11E-08	0	3.55E-07	0	0	0	0	1.16E-09	0	1.13E-09
Global warming	kg CO ₂ eq	4.31E+01	9.91E+00	7.61E-01	4.06E-01	0	5.22E+00	0	2.61E+01	0	0	0	0	7.11E-02	0	6.39E-01
Smog	kg O ₃ eq	7.93E+00	6.00E+00	1.36E-01	1.61E-02	0	2.94E-01	0	1.47E+00	0	0	0	0	6.91E-03	0	8.43E-03
Acidification	kg SO ₂ eq	3.74E-01	2.26E-01	6.48E-03	1.09E-03	0	2.33E-02	0	1.16E-01	0	0	0	0	2.71E-04	0	3.32E-04
Eutrophication	kg N eq	3.23E-01	3.50E-02	8.16E-04	3.49E-03	0	2.45E-02	0	1.23E-01	0	0	0	0	7.34E-05	0	1.37E-01
Carcinogenics	CT Uh	8.86E-06	2.85E-06	1.98E-07	6.22E-08	0	9.50E-07	0	4.75E-06	0	0	0	0	1.92E-08	0	3.12E-08
Non carcinogenics	CT Uh	1.49E-05	1.89E-06	1.51E-07	2.05E-07	0	1.73E-06	0	8.63E-06	0	0	0	0	1.71E-08	0	2.31E-06
Respiratory effects	kg PM _{2.5} eq	5.11E-02	8.66E-03	5.67E-04	1.63E-04	0	6.93E-03	0	3.47E-02	0	0	0	0	3.75E-05	0	3.99E-05
Ecotoxicity	CT Ue	9.87E+02	1.32E+02	8.17E+00	4.81E+00	0	1.16E+02	0	5.81E+02	0	0	0	0	8.59E-01	0	1.45E+02
Fossil fuel depletion	MJ surplus	4.63E+01	2.11E+01	1.41E+00	6.50E-01	0	3.81E+00	0	1.90E+01	0	0	0	0	1.35E-01	0	1.13E-01

ENVIRONMENTAL PRODUCT DECLARATION

VOXFLOOR®



SDN 6/6.6 VOXFLOOR CARPET TILE WITH ECOACE-BAC COLLECTION

According to ISO 14025,
and ISO 21930:2017

Table 20 North American Impact Assessment Results for EcoAce-Bac Max, SDN 6

Impact category	Unit	Total	Production	Transport of product	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction	Transport of waste	Waste processing	Disposal
			A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Ozone depletion	kg CFC-11 eq	1.93 E-06	1.48E-06	1.35 E-08	6.63E-09	0	7.11E-08	0	3.55E-07	0	0	0	0	1.27 E-09	0	1.23 E-09
Global warming	kg CO ₂ eq	4.46 E+01	1.13E+01	8.33 E-01	4.06E-01	0	5.22E+00	0	2.61E+01	0	0	0	0	7.78 E-02	0	6.93 E-01
Smog	kg O ₃ eq	2.57 E+00	6.28E-01	1.49 E-01	1.61E-02	0	2.94E-01	0	1.47E+00	0	0	0	0	7.56 E-03	0	9.19 E-03
Acidification	kg SO ₂ eq	1.90 E-01	4.20E-02	7.09 E-03	1.09E-03	0	2.33E-02	0	1.16E-01	0	0	0	0	2.96 E-04	0	3.59 E-04
Eutrophication	kg N eq	3.23 E-01	2.32E-02	8.93 E-04	3.49E-03	0	2.45E-02	0	1.23E-01	0	0	0	0	8.03 E-05	0	1.48 E-01
Carcinogenics	CT Uh	9.11 E-06	3.07E-06	2.17 E-07	6.22E-08	0	9.50E-07	0	4.75E-06	0	0	0	0	2.10 E-08	0	3.29 E-08
Non carcinogenics	CT Uh	1.54 E-05	2.26E-06	1.65 E-07	2.05E-07	0	1.73E-06	0	8.63E-06	0	0	0	0	1.87 E-08	0	2.36 E-06
Respiratory effects	kg PM _{2.5} eq	4.84 E-02	5.91E-03	6.21 E-04	1.63E-04	0	6.93E-03	0	3.47E-02	0	0	0	0	4.11 E-05	0	4.35 E-05
Ecotoxicity	CT Ue	1.02 E+03	1.55E+02	8.93 E+00	4.81E+00	0	1.16E+02	0	5.81E+02	0	0	0	0	9.40 E-01	0	1.57 E+02
Fossil fuel depletion	MJ surplus	4.66 E+01	2.13E+01	1.54 E+00	6.50E-01	0	3.81E+00	0	1.90E+01	0	0	0	0	1.47 E-01	0	1.23 E-01

ENVIRONMENTAL PRODUCT DECLARATION

VOXFLOOR®



SDN 6/6.6 VOXFLOOR CARPET TILE WITH ECOACE-BAC COLLECTION

According to ISO 14025,
and ISO 21930:2017

Table 21 North American Impact Assessment Results for EcoAce-Bac Max, SDN 6.6

Impact category	Unit	Total	Production	Transport of product	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction	Transport of waste	Waste processing	Disposal
			A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Ozone depletion	kg CFC-11 eq	1.93 E-06	1.48E-06	1.35 E-08	6.63E-09	0	7.11E-08	0	3.55E-07	0	0	0	0	1.27 E-09	0	1.23 E-09
Global warming	kg CO ₂ eq	4.38 E+01	1.05E+01	8.33 E-01	4.06E-01	0	5.22E+00	0	2.61E+01	0	0	0	0	7.78 E-02	0	6.93 E-01
Smog	kg O ₃ eq	2.49 E+00	5.51E-01	1.49 E-01	1.61E-02	0	2.94E-01	0	1.47E+00	0	0	0	0	7.56 E-03	0	9.19 E-03
Acidification	kg SO ₂ eq	1.90 E-01	4.12E-02	7.09 E-03	1.09E-03	0	2.33E-02	0	1.16E-01	0	0	0	0	2.96 E-04	0	3.59 E-04
Eutrophication	kg N eq	3.29 E-01	2.91E-02	8.93 E-04	3.49E-03	0	2.45E-02	0	1.23E-01	0	0	0	0	8.03 E-05	0	1.48 E-01
Carcinogenics	CT Uh	9.11 E-06	3.07E-06	2.17 E-07	6.22E-08	0	9.50E-07	0	4.75E-06	0	0	0	0	2.10 E-08	0	3.29 E-08
Non carcinogenics	CT Uh	1.54 E-05	2.26E-06	1.65 E-07	2.05E-07	0	1.73E-06	0	8.63E-06	0	0	0	0	1.87 E-08	0	2.36 E-06
Respiratory effects	kg PM _{2.5} eq	4.82 E-02	5.78E-03	6.21 E-04	1.63E-04	0	6.93E-03	0	3.47E-02	0	0	0	0	4.11 E-05	0	4.35 E-05
Ecotoxicity	CT Ue	1.02 E+03	1.56E+02	8.93 E+00	4.81E+00	0	1.16E+02	0	5.81E+02	0	0	0	0	9.40 E-01	0	1.57 E+02
Fossil fuel depletion	MJ surplus	4.71 E+01	2.17E+01	1.54 E+00	6.50E-01	0	3.81E+00	0	1.90E+01	0	0	0	0	1.47 E-01	0	1.23 E-01

ENVIRONMENTAL PRODUCT DECLARATION

VOXFLO®



SDN 6/6.6 VOXFLO CARPET TILE WITH ECOACE-BAC COLLECTION

According to ISO 14025,
and ISO 21930:2017

4.2 Life Cycle Inventory Results

Table 22 Life cycle inventory result for EcoAce-BAac, SDN 6

Impact category	Unit	Production	Transport of product	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction	Transport of waste	Waste processing	Disposal
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
PENRE	MJ	4.17E+01	8.33E-01	1.21E+00	0	4.46E+01	0	2.23E+02	0	0	0	0	8.95E-02	0	8.24E-02
PERE	MJ	9.76E+00	1.16E-01	1.54E-01	0	1.54E+01	0	7.68E+01	0	0	0	0	1.22E-02	0	1.40E-02
PENRM	MJ	5.63E+00	0	1.65E-01	0	0	0	0	0	0	0	0	0	0	0
PERM	MJ	1.71E+00	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	4.73E+01	8.33E-01	1.38E+00	0	4.46E+01	0	2.23E+02	0	0	0	0	8.95E-02	0	8.24E-02
PERT	MJ	1.15E+01	1.16E-01	1.54E-01	0	1.54E+01	0	7.68E+01	0	0	0	0	1.22E-02	0	1.40E-02
FW	m3	1.82E+00	1.18E-03	1.10E-03	0	7.40E-02	0	3.70E-01	0	0	0	0	1.25E-04	0	1.01E-02
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HWD	kg	1.17E-03	6.29E-05	5.71E-05	0	1.48E-04	0	7.41E-04	0	0	0	0	6.37E-06	0	5.72E-06
NHWD	kg	8.09E-01	3.66E-01	1.27E-01	0	1.72E-01	0	8.64E-01	0	0	0	0	4.35E-02	0	2.84E+00
HLRW	kg	2.50E-05	5.22E-07	7.15E-07	0	4.78E-05	0	2.39E-04	0	0	0	0	5.52E-08	0	6.30E-08
ILLRW	kg	5.72E-05	1.23E-06	1.75E-06	0	1.21E-04	0	6.03E-04	0	0	0	0	1.30E-07	0	1.57E-07
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	6.70E-03	0	0	0	0	0	0	0	0	0	0	3.90E-01
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0



ENVIRONMENTAL PRODUCT DECLARATION

VOXFLO®



SDN 6/6.6 VOXFLO CARPET TILE WITH ECOACE-BAC COLLECTION

According to ISO 14025,
and ISO 21930:2017

Table 23 Life cycle inventory result for EcoAce-BAac, SDN 6.6

Impact category	Unit	Production	Transport of product	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction	Transport of waste	Waste processing	Disposal
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
PENRE	MJ	3.04E+01	8.33E-01	1.21E+00	0	4.46E+01	0	2.23E+02	0	0	0	0	8.95E-02	0	8.24E-02
PERE	MJ	7.69E+00	1.16E-01	1.54E-01	0	1.54E+01	0	7.68E+01	0	0	0	0	1.22E-02	0	1.40E-02
PENRM	MJ	5.63E+00	0	1.65E-01	0	0	0	0	0	0	0	0	0	0	0
PERM	MJ	1.71E+00	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	3.61E+01	8.33E-01	1.38E+00	0	4.46E+01	0	2.23E+02	0	0	0	0	8.95E-02	0	8.24E-02
PERT	MJ	9.40E+00	1.16E-01	1.54E-01	0	1.54E+01	0	7.68E+01	0	0	0	0	1.22E-02	0	1.40E-02
FW	m3	1.67E-01	1.18E-03	1.10E-03	0	7.40E-02	0	3.70E-01	0	0	0	0	1.25E-04	0	-1.01E-02
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HWD	kg	1.06E-03	6.29E-05	5.71E-05	0	1.48E-04	0	7.41E-04	0	0	0	0	6.37E-06	0	5.72E-06
NHWD	kg	6.44E-01	3.66E-01	1.27E-01	0	1.72E-01	0	8.64E-01	0	0	0	0	4.35E-02	0	2.84E+00
HLRW	kg	1.10E-05	5.22E-07	7.15E-07	0	4.78E-05	0	2.39E-04	0	0	0	0	5.52E-08	0	6.30E-08
ILLRW	kg	2.55E-05	1.23E-06	1.75E-06	0	1.21E-04	0	6.03E-04	0	0	0	0	1.30E-07	0	1.57E-07
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	6.70E-03	0	0	0	0	0	0	0	0	0	0	3.90E-01
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0



ENVIRONMENTAL PRODUCT DECLARATION

VOXFLOOR®



SDN 6/6.6 VOXFLOOR CARPET TILE WITH ECOACE-BAC COLLECTION

According to ISO 14025,
and ISO 21930:2017

Table 24 life cycle inventory result for EcoAce-Bac Pro, SDN 6

Impact category	Unit	Production	Transport of product	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Decommissioning	Transport of waste	Waste processing	Disposal
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
PENRE	MJ	2.70E+01	9.19E-01	1.21E+00	0	4.46E+01	0	2.23E+02	0	0	0	0	9.88E-02	0	9.02E-02
PERE	MJ	7.77E+00	1.28E-01	1.54E-01	0	1.54E+01	0	7.68E+01	0	0	0	0	1.34E-02	0	1.53E-02
PENRM	MJ	6.43E+00	0.00E+00	1.65E-01	0	0	0	0	0	0	0	0	0.00E+00	0	0.00E+00
PERM	MJ	1.71E+00	0.00E+00	0.00E+00	0	0	0	0	0	0	0	0	0.00E+00	0	0.00E+00
PENRT	MJ	3.35E+01	9.19E-01	1.38E+00	0	4.46E+01	0	2.23E+02	0	0	0	0	9.88E-02	0	9.02E-02
PERT	MJ	9.47E+00	1.28E-01	1.54E-01	0	1.54E+01	0	7.68E+01	0	0	0	0	1.34E-02	0	1.53E-02
FW	m3	7.33E-02	1.31E-03	1.10E-03	0	7.40E-02	0	3.70E-01	0	0	0	0	1.38E-04	0	-1.12E-02
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HWD	kg	1.11E-03	6.94E-05	5.71E-05	0	1.48E-04	0	7.41E-04	0	0	0	0	7.04E-06	0	6.28E-06
NHWD	kg	7.63E-01	4.04E-01	1.27E-01	0	1.72E-01	0	8.64E-01	0	0	0	0	4.80E-02	0	3.13E+00
HLRW	kg	1.32E-05	5.76E-07	7.15E-07	0	4.78E-05	0	2.39E-04	0	0	0	0	6.09E-08	0	6.89E-08
ILLRW	kg	2.91E-05	1.36E-06	1.75E-06	0	1.21E-04	0	6.03E-04	0	0	0	0	1.44E-07	0	1.72E-07
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	6.70E-03	0	0	0	0	0	0	0	0	0	0	4.30E-01
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0



ENVIRONMENTAL PRODUCT DECLARATION

VOXFLO®



SDN 6/6.6 VOXFLO CARPET TILE WITH ECOACE-BAC COLLECTION

According to ISO 14025,
and ISO 21930:2017

Table 25 life cycle inventory result for EcoAce-Bac Pro, SDN 6.6

Impact category	Unit	Production	Transport of product	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction	Transport of waste	Waste processing	Disposal
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
PENRE	MJ	3.25E+01	9.19E-01	1.21E+00	0	4.46E+01	0	2.23E+02	0	0	0	0	9.88E-02	0	9.02E-02
PERE	MJ	8.15E+00	1.28E-01	1.54E-01	0	1.54E+01	0	7.68E+01	0	0	0	0	1.34E-02	0	1.53E-02
PENRM	MJ	6.43E+00	0.00E+00	1.65E-01	0	0	0	0	0	0	0	0	0.00E+00	0	0.00E+00
PERM	MJ	1.71E+00	0.00E+00	0.00E+00	0	0	0	0	0	0	0	0	0.00E+00	0	0.00E+00
PENRT	MJ	3.89E+01	9.19E-01	1.38E+00	0	4.46E+01	0	2.23E+02	0	0	0	0	9.88E-02	0	9.02E-02
PERT	MJ	9.85E+00	1.28E-01	1.54E-01	0	1.54E+01	0	7.68E+01	0	0	0	0	1.34E-02	0	1.53E-02
FW	m3	4.64E-03	1.31E-03	1.10E-03	0	7.40E-02	0	3.70E-01	0	0	0	0	1.38E-04	0	-1.12E-02
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HWD	kg	1.10E-03	1.10E-03	5.71E-05	0	1.48E-04	0	7.41E-04	0	0	0	0	7.04E-06	0	6.28E-06
NHWD	kg	7.59E-01	7.59E-01	1.27E-01	0	1.72E-01	0	8.64E-01	0	0	0	0	4.80E-02	0	3.13E+00
HLRW	kg	1.32E-05	1.32E-05	7.15E-07	0	4.78E-05	0	2.39E-04	0	0	0	0	6.09E-08	0	6.89E-08
ILLRW	kg	2.90E-05	2.90E-05	1.75E-06	0	1.21E-04	0	6.03E-04	0	0	0	0	1.44E-07	0	1.72E-07
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	6.70E-03	0	0	0	0	0	0	0	0	0	0	4.30E-01
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0



ENVIRONMENTAL PRODUCT DECLARATION

VOXFLO®



SDN 6/6.6 VOXFLO CARPET TILE WITH ECOACE-BAC COLLECTION

According to ISO 14025,
and ISO 21930:2017

Table 26 life cycle inventory result for EcoAce-Bac Max, SDN 6

Impact category	Unit	Production	Transport of product	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction	Transport of waste	Waste processing	Disposal
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
PENRE	MJ	2.92E+01	1.01E+00	1.21E+00	0	4.46E+01	0	2.23E+02	0	0	0	0	1.21E+00	0	9.80E-02
PERE	MJ	8.30E+00	1.40E-01	1.54E-01	0	1.54E+01	0	7.68E+01	0	0	0	0	1.54E-01	0	1.66E-02
PENRM	MJ	7.24E+00	0.00E+00	1.65E-01	0	0	0	0	0	0	0	0	1.65E-01	0	0.00E+00
PERM	MJ	1.71E+00	0.00E+00	0.00E+00	0	0	0	0	0	0	0	0	0.00E+00	0	0.00E+00
PENRT	MJ	3.64E+01	1.01E+00	1.38E+00	0	4.46E+01	0	2.23E+02	0	0	0	0	1.38E+00	0	9.80E-02
PERT	MJ	1.00E+01	1.40E-01	1.54E-01	0	1.54E+01	0	7.68E+01	0	0	0	0	1.54E-01	0	1.66E-02
FW	m3	7.59E-02	1.43E-03	1.10E-03	0	7.40E-02	0	3.70E-01	0	0	0	0	1.51E-04	0	-1.22E-02
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HWD	kg	1.15E-03	7.59E-05	5.71E-05	0	1.48E-04	0	7.41E-04	0	0	0	0	7.70E-06	0	6.84E-06
NHWD	kg	8.77E-01	4.42E-01	1.27E-01	0	1.72E-01	0	8.64E-01	0	0	0	0	5.25E-02	0	3.43E+00
HLRW	kg	1.54E-05	6.31E-07	7.15E-07	0	4.78E-05	0	2.39E-04	0	0	0	0	6.67E-08	0	7.48E-08
ILLRW	kg	3.27E-05	1.49E-06	1.75E-06	0	1.21E-04	0	6.03E-04	0	0	0	0	1.57E-07	0	1.87E-07
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	6.70E-03	0	0	0	0	0	0	0	0	0	0	4.70E-01
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0



ENVIRONMENTAL PRODUCT DECLARATION

VOXFLOOR®



SDN 6/6.6 VOXFLOOR CARPET TILE WITH ECOACE-BAC COLLECTION

According to ISO 14025,
and ISO 21930:2017

Table 27 life cycle inventory result for EcoAce-Bac Max, SDN 6.6

Impact category	Unit	Production	Transport of product	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction	Transport of waste	Waste processing	Disposal
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
PENRE	MJ	3.47E+01	1.01E+00	1.21E+00	0	4.46E+01	0	2.23E+02	0	0	0	0	1.08E-01	0	9.80E-02
PERE	MJ	8.77E+00	1.40E-01	1.54E-01	0	1.54E+01	0	7.68E+01	0	0	0	0	1.47E-02	0	1.66E-02
PENRM	MJ	7.24E+00	0.00E+00	1.65E-01	0	0	0	0	0	0	0	0	0.00E+00	0	0.00E+00
PERM	MJ	1.71E+00	0.00E+00	0.00E+00	0	0	0	0	0	0	0	0	0.00E+00	0	0.00E+00
PENRT	MJ	4.19E+01	1.01E+00	1.38E+00	0	4.46E+01	0	2.23E+02	0	0	0	0	1.08E-01	0	9.80E-02
PERT	MJ	1.05E+01	1.40E-01	1.54E-01	0	1.54E+01	0	7.68E+01	0	0	0	0	1.47E-02	0	1.66E-02
FW	m3	1.72E-01	1.43E-03	1.10E-03	0	7.40E-02	0	3.70E-01	0	0	0	0	1.51E-04	0	-1.22E-02
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HWD	kg	1.15E-03	7.59E-05	5.71E-05	0	1.48E-04	0	7.41E-04	0	0	0	0	7.70E-06	0	6.84E-06
NHWD	kg	8.74E-01	4.42E-01	1.27E-01	0	1.72E-01	0	8.64E-01	0	0	0	0	5.25E-02	0	3.43E+00
HLRW	kg	1.54E-05	6.31E-07	7.15E-07	0	4.78E-05	0	2.39E-04	0	0	0	0	6.67E-08	0	7.48E-08
ILLRW	kg	3.26E-05	1.49E-06	1.75E-06	0	1.21E-04	0	6.03E-04	0	0	0	0	1.57E-07	0	1.87E-07
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	6.70E-03	0	0	0	0	0	0	0	0	0	0	4.70E-01
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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VOXFLOOR®



SDN 6/6.6 VOXFLOOR CARPET TILE WITH ECOACE-BAC COLLECTION

According to ISO 14025,
and ISO 21930:2017

Table 28 Carbon Emissions and Removals

Impact category	Unit	Production	Transport of product	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction	Transport of waste	Waste processing	Disposal
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
BCRP	kg CO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEP	kg CO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCRK	kg CO2	2.73E-01	0	0	0	0	0	0	0	0	0	0	0	0	0
BCEK	kg CO2	0	0	2.73E-01	0	0	0	0	0	0	0	0	0	0	0
BCEW	kg CO2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CCE	kg CO2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CCR	kg CO2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CWNR	kg CO2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

4.3 Additional environmental information

These six impact categories 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 29 USEtox contribution analysis for EcoAce-Bac, SDN 6.6

Impact category	Unit	EcoAce-Bac, SDN 6	EcoAce-Bac, SDN6.6	EcoAce-Bac Pro, SDN6	EcoAce-Bac Pro, SDN6.6	EcoAce-Bac Max, SDN6	EcoAce-Bac Max, SDN6.6
Human toxicity, cancer	%	1.49%	2.15%	2.12%	2.12%	2.09%	2.09%
Human toxicity, non-cancer	%	1.68%	1.97%	1.83%	1.84%	1.72%	1.72%
Freshwater ecotoxicity	%	3.91%	4.02%	3.72%	3.72%	3.47%	3.47%



5. LCA Interpretation

The life cycle inventory includes data collection from a variety of publicly available sources, taking into consideration of representativeness in technology, temporal and geographical scales. Chinese regionalized LCI database has been utilized to the best extent. In case of missing data, Ecoinvent and regional database such as ELCD and some other relevant databases were referred to. Sensitivity analysis was conducted to calculate the validity of the results using parameters to reflect reality.

Analysis of impact categories on various life cycle stages reveals that production, transportation (oceanic and road), maintenance and end of life treatment of carpet tile are the main contributors to environment impacts. The process contribution analysis reveals that nylon, electricity consumption, transportation, and incineration and landfill process for waste treatment contribute the most of the environmental impacts. The sensitivity analysis shows that change in assumptions such as transportation distance, inputs during maintenance and disposal scenario can lead to certain fluctuation of the final LCA results, hence it is recommended to revise the model to get up-to-date results in case the assumption or process parameters would be changed in the future, or in case that data with higher quality would be available.

The LCA study has been carried out based on available information, regional and global database and experience to achieve more accuracy, completeness and representative of the results.

The third party verified ISO 14040/44 secondary LCI data sets contribute more than 67% of total impact (either at the unit process level or in aggregate) to any of the required impact categories identified by the applicable PCR.

6. Additional Information

6.1 Environmental Activities and Certifications

VOXFLOOR has been awarded certificates for compliance with the following standards:

- ISO 9001:2015 - Quality Management System
- ISO 14001:2015 - Environmental Management System
- ISO 45001:2018 – Occupational Health and Safety Management System

6.2 Environmental and Health during Manufacturing

No substances required to be reported as hazardous, as listed in the “List of Toxic Chemicals Severely Restricted on the Import and Export in China (Circular No. 65 [2005]) and Measures for the Administration of Restricted Use of Hazardous Substances in Electrical and Electronic Products (Circular No. 32 [2016])”, are associated with the production of this product.

6.3 Environmental and Health during Installation

All recommended personal protective equipment (PPE) should be utilized during installation, as indicated on the SDS and installation guidelines. It is suggested to use the glue recommended by VOXFLOOR for the installation on the purpose of higher indoor air quality.

6.4 Further Information

The total VOC emission of this product is no more than 0.5 mg/m³.



7. References

UL ENVIRONMENT

UL Environment General Program Instructions March 2022, Version 2.7

Part A: Life Cycle Assessment Calculation Rules and Report Requirements UL 10010 (September 2018, Version 3.2)

Part B: Flooring EPD Requirements UL 10010-7 (September 2018, Version 2.0)

SUSTAINABILITY REPORTING STANDARDS

European Standards. (2019). EN 15804+A2 Sustainability of construction works - Environmental product declarations - Core rules for product category of construction products for the product category of construction products.

ISO. (2006). ISO 14044: Environmental management - Life cycle assessment - Requirements and guidelines.

ISO. (2006). ISO 14040: Environmental management - Life cycle assessment - principles and frameworks.

ISO. (2006). ISO 14025: Environmental labels and declarations - Type III environmental declarations - principles and procedures.

ISO. (2017). ISO 21930 Sustainability in building construction - Environmental declaration of building products.

8. Contact Information

8.1 EPD Owner

VOXFLOOR®

VOXFLOOR INDUSTRIAL PARK CO., LTD

Email: marketing@voxfloor.com

Website: www.voxfloor.com

8.2 LCA Practitioner



Ecovane Environmental Co., Ltd

Mr. Chao WANG (wangchao@1mi1.cn)

Website: www.1mi1.org

