ENVIRONMENTAL PRODUCT DECLARATION

MODULAR CARPET

INTERFACE ASIA PACIFIC - CHINA
GLASBAC®, TYPE 6 NYLON

Interface®

Interface is the world's largest manufacturer of commercial carpet tile.

For over 40 years Interface has consistently led the industry through design and innovation and is a world leader in environmental sustainability. We are well along the path to achieving Mission Zero®, our promise to eliminate any negative impact we have on the environment by 2020. We are committed to making our progress transparent.

At Interface, we believe Life Cycle Assessment is critical for evaluating the environmental impacts of our products and that the LCA based Environmental Product Declaration is the best way to provide full disclosure of those impacts to our customers.

Interface was one of the first companies to develop EPDs for all of our products manufactured globally, and we continue to remain committed to providing this level of transparency to our customers, partners and the industry at large.

For more information visit www.interface.com

UL CERTIFIED ENVIRONMENTAL PRODUCT DECLARATION UL.COM/EPD

ENVIRONMENTAL PRODUCT DECLARATION

Interface®

Interface Asia Pacific - China
Modular Carpet on GlasBac®
Nylon 6 Styles

According to ISO 14025

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. 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, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.

PROGRAM OPERATOR	UL Environment
DECLARATION HOLDER	Interface, Inc.
DECLARATION NUMBER	4787521006.129.1
DECLARED PRODUCT	Interface Asia Pacific - China modular carpet on GlasBac, Nylon 6 styles
REFERENCE PCR	IBU and UL Environment. PCR for Building-Related Products and Services - Part A: Calculation rules for the LCA and Requirements Project Report, (IBU/ULE,Version 1.306.19.2014) IBU. Part B: Requirements on the EPD for Floor coverings (IBU, V1.6, 07.30.2014)
DATE OF ISSUE	December 19, 2017
PERIOD OF VALIDITY	5 Years
CONTENTS OF THE DECLARATION	Product definition and information about building physics Information about basic material and the material's origin Description of the product's manufacture Indication of product processing Information about the in-use conditions Life cycle assessment results Testing results and verifications

The PCR review was conducted by:	UL Environment Review Panel
	IBU Independent Expert Committee (SRV)
	epd@ulenvironment.com
This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories ☐ INTERNAL ☒ EXTERNAL	Wade Stout, UL Environment
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Thomas Gloria, Industrial Ecology Consultants

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Modular Carpet on GlasBac®
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Product

Product description

This Environmental Product Declaration covers all styles and patterns of modular carpet on GlasBac® recycled backing with recycled Nylon yarn. The products are manufactured in Taicang China. The products range in yarn weight from 407 to 1424 grams per square meter. A medium yarn weight of 678 grams per square meter is reported and the Global Warming Potential of all additional product yarn weights are reported.

Application

Modular installation of textile floor covering in commercial buildings

Technical Data

Name	Value	Unit
Product Form	Tiles	-
Type of Manufacture	Tufted	-
Yarn Type	Nylon	-
Secondary Backing	Vinyl composite	-
Total Weight	4093	grams/m^2
Total Yarn Weight	678	grams/m^2

Delivery Status

Available in a range of tile and plank sizes, mostly commonly 0.5 x 0.5 meter squares and 1.0 x 0.25 meter planks.

Base Materials

Component	Material	Mass %
Yarn	Nylon	
	Post-consumer recycled Nylon	8%
	Pre-consumer recycled Nylon	8%
Primary backing	Pre-consumer recycled polyester	2%
	Polyester	1%
Precoat backing	Ethylene vinyl acetate copolymer	6%
	Aluminium trihydrate	9%
	Pre-consumer recycled limestone	5%
Secondary backing	Diisononyl cyclohexanedicarboxylate	9%
	Polyvinyl chloride	12%
	Pre-consumer recycled limestone	40%

Manufacture

Yarns are tufted into a primary backing fabric. A precoat backing is applied to the reverse side of the tufted face cloth to fix the yarns in place then a secondary backing which includes a stabilization layer is applied. The product is then cut into tiles and packaged.

Environment and health during manufacturing

- ISO 14001 Environmental Management System

Packaging

Carpet tiles are packaged in boxes made with >50% recycled content cardboard. Packaging waste should be reused or sent local cardboard recycling facilities.

Conditions of use

During the reference service life of the carpet, it should be cleaned in accordance with the product warranty instructions including vacuuming and extraction cleaning. The frequency is dependent upon the expected foot traffic and local conditions.

Environment and health during use

Product has low VOC emissions as indicated by compliance with Carpet and Rug Institute's Green Label Plus requrements. The current certificate can be found at http://www.carpet-rug.org/glp-carpet-products.html.

Reference service life

The reference service life of this product is 15 years based on product warranty.

Extraordinary effects

Fire

Name	Value
Radiant panel (AS ISO 9239.1)	≤ 4.5
Smoke density (AS ISO 9239.1-2003)	< 200

Water: The product's backing is impervious to water, protecting the subfloor from leaks and spills. Exposure to flooding for long periods may result in damage to the product.

Mechanical destruction: The product is intended for commercial applications with heavy wear (CRI Test Method 101 Appearance Retention Rating). Performance requires proper installation according to Interface installation guidelines.

Re-use phase

The modular aspect of the product along with Tactile installation as opposed to glue-down methods allows for easy re-use of the product. The product is intended to be recycled through Interface's ReEntry 2.0 process.

Disposal

At end of life the product should be returned to Interface through Interface's ReEntry 2.0 process (see End of Life Warranty for details), Interface Modular Carpet (China) Co. Ltd., 21 Shiny Science Park, 111 North Donging Road, 215400 Taicang, Jiangsu Province, Peoples Republic of China. Disposal in municipal landfill or commercial incineration facilities is permissible in accordance with local regulations.

LCA: Calculation rules

Declared unit

Name	Value	Unit
Declared unit	1	m^2
Conversion factor to 1 kg	0.244	-
Mass	4.093	kg/m^2

System boundary

This study includes all relevant cradle-to-grave environmental information for the life cycle of one square meter of flooring. The analysis period for each module is one fiscal year. The system boundaries include:

A1-A3 Product stage

A1 raw material extraction and processing, and processing of recycled materials
A2 transport to the Interface factory and inter-company transport between buildings
A3 manufacturing at Interface including materials, packaging, energy, and waste disposal or recycling

A4-A5 Construction stage

A4 transport to installation site
A5 installation including ancillary materials required for installation and trim-waste disposal

B2 Maintenance: Includes the energy for vacuuming and wet extraction cleaning and also the production and transport of cleaning agents. The treatment of the waste water from extraction cleaning is included.

C2 Transport of waste to local disposal

C4 Disposal

Estimates and assumptions

The datasets for materials upstream from Interface manufacturing are a combination of information from the GaBi database and supplier provided datasets. Inventories for all materials are not available and when unavailable, conservative proxy datasets were chosen based on similarity of material.

Cut-off criteria

As dictated by the Part A: Calculation rules for the life cycle assessment and requirements, the cut-off criteria is less than 1% for energy use and less than 1% of total mass per unit process, the sum of which shall not exceed 5% of either energy or mass. If a flow met the cut-off criteria for exclusion, yet was thought to have significant environmental impact, then it was included.

Background data

The datasets for materials upstream from Interface manufacturing are a combination of information from the GaBi database version 6.115 in 2017 and supplier provided datasets. The supplier provided data adds significant confidence to the LCA result because it is geographically and technologically specific to the Interface materials. This supplier specific data covers a majority of the environmental impact of the product and includes the Nylon yarn, tufting primary, fiberglass, plasticizer, filler, and product packaging.

Data quality

The data quality ranges from good to very good. The temporal quality of the data is very good with the Interface data being from 2016, the supplier specific data ranging from 2012 to 2017 and the GaBi background data being from 2016.

Period under review

The data collection and the product described are an average product manufactured in 2016.

Allocation

Where relevant, the background data incorporates some allocation such as in the power mix. There are no co-products produced in the process, so the LCA model does not include allocation. No credits were taken for recycling of production waste.

Comparability

A comparison or an evaluation of EPD data is only possible if all of the data sets were created according to EN15804 and the building contexts are taken into account.

LCA: Scenarios and additional technical information

Declared unit

Name	Value	Unit
Transport to the construction site (A4)		
Liters of fuel	0.00891	l/100 km
Transport distance	805	km
Capacity utilization	85	%
Installation in the building (A5)		
Auxiliary materials	0.004	kg
Maintenance (B2)		
Vacuum cleaning	7	1/week
Vacuum cleaning per RSL	105	1/RSL
Extraction cleaning	2	1/year
Extraction cleaning per RSL	30	1/RSL
Water consumption	1.93	kg/year
Electricity consumption	1.615	MJ/year
Cleaning agent	0.007	kg/year
Reference service life (RSL)		
RSL	15	years
End of Life		

Transport to disposal	32.2	km
Landfill	4.093	kg

LCA results

Description of the system boundary (X = included in LCA; MND = module not declared)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS (BEYOND THE SYSTEM BOUNDARY)
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement[1)]	Refurbishment[1)]	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	X	X	MND	X	MND	MND	MND	MND	MND	MND	X	MND	X	MND

Results of the LCA - Environmental impact potentials

CML 2001 - Jan. 2016

	A1-A3	A4	A5	B2	C2	C4
GWP [kg CO2 eq.]	7.45E00	1.69E-01	6.99E-01	6.10E-01	6.33E-03	7.27E-02
ODP [kg R11 eq.]	4.50E-06	1.36E-13	-1.42E-07	1.95E-09	5.11E-15	1.76E-13
AP [kg SO2 eq.]	3.18E-02	7.02E-04	-9.06E-03	3.39E-03	2.63E-05	1.98E-04
EP [kg Phosphate eq.]	4.57E-03	1.75E-04	-3.01E-04	4.91E-04	6.56E-06	1.96E-04
POCP [kg Ethene eq.]	2.71E-03	-2.82E-04	-4.65E-04	2.62E-04	-1.06E-05	2.26E-05
ADPe [kg Sb eq.]	1.72E-05	1.53E-08	-1.12E-06	1.71E-07	5.73E-10	1.46E-08
ADPf [MJ]	1.24E02	2.31E00	-1.60E01	5.49E00	8.67E-02	1.03E00

TRACI 2.1

	A1-A3	A4	A5	B2	C2	C4
GWP [kg CO2 eq.]	7.38E00	1.68E-01	7.07E-01	6.06E-01	6.31E-03	7.17E-02
ODP [kg CFC 11 eq.]	6.03E-06	1.45E-13	-1.55E-07	2.12E-09	5.42E-15	1.86E-13
AP [kg SO2 eq.]	3.21E-02	9.42E-04	-8.27E-03	3.67E-03	3.53E-05	2.08E-04
EP [kg N eq.]	5.46E-03	7.66E-05	-1.08E-04	3.77E-04	2.87E-06	9.42E-05
SFP [kg O3 eq.]	3.80E-01	2.07E-02	-5.72E-02	7.22E-02	7.76E-04	3.51E-03

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non fossil resources; ADPF = Abiotic depletion potential for fossil resources; SFP = Smog air

Results of the LCA - Resource use: declared unit and product

	A1-A3	A4	A5	B2	C2	C4
PERE [MJ]	12.9	0.119	-	0	0.00447	0.0782
PERM [MJ]	20.1	-	-2.07	0.433	-	-
PERT [MJ]	33.1	0.119	-2.07	0.433	0.00447	0.0782
PENRE [MJ]	5.08	2.32	-	0	0.0871	1.07
PENRM [MJ]	150	-	-21.6	5.68	-	-
PENRT [MJ]	155	2.32	-21.6	5.68	0.0871	1.07
SM [kg]	0.352	-	-	-	-	-
RSF [MJ]	-	-	-	-	-	-
NRSF [MJ]	-	-	-	-	-	-
FW [m^3]	0.494	0.000221	0.00377	0.00359	8.28E-006	2.56E-006

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Use of net fresh water

Results of the LCA - Output flows and waste categories: declared unit and product

	A1-A3	A4	A5	B2	C2	C4
HWD [kg]	0.00293	1.21E-007	1.2E-011	0.000125	4.54E-009	4.13E-009
NHWD [kg]	0.447	0.000184	5.18E-008	0.00173	6.9E-006	0.997
RWD [kg]	0.00141	4.81E-006	-0.00179	5.33E-005	1.8E-007	1.62E-005
CRU [kg]	-	-	-	-	-	-
MFR [kg]	0	-	-	-	-	0
MER [kg]	0	-	1	-	-	0
EEE [MJ]	-	-	-	-	-	-
EET [MJ]	-	-	-	-	-	-

Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

Results of the LCA - Product stage A1-A3 Global Warming Potential (GWP) for additional product yarn weights (ounces per square yard / grams per square meter)

	GWP [kg CO2 eq.]
12 oz. / 407 gr.	6.52
13 oz. / 441 gr.	6.64
14 oz. / 475 gr.	6.76
15 oz. / 509 gr.	6.87
16 oz. / 542 gr.	6.99
17 oz. / 575 gr.	7.10
18 oz. / 610 gr.	7.22
19 oz. / 644 gr.	7.34
20 oz. / 678 gr.	7.45
21 oz. / 712 gr.	7.57
22 oz. / 746 gr.	7.68
23 oz. / 780 gr.	7.80
24 oz. / 814 gr.	7.92
25 oz. / 848 gr.	8.03
26 oz. / 881 gr.	8.15
27 oz. / 915 gr.	8.26
28 oz. / 949 gr.	8.38
29 oz. / 983 gr.	8.50
30 oz. / 1017 gr.	8.61
31 oz. / 1051 gr.	8.73
32 oz. / 1085 gr.	8.84
33 oz. / 1119 gr.	8.96
34 oz. / 1153 gr.	9.08
35 oz. / 1187 gr.	9.19
36 oz. / 1220 gr.	9.31
37 oz. / 1254 gr.	9.42
38 oz. / 1288 gr.	9.54
39 oz. / 1322 gr.	9.66
40 oz. / 1356 gr.	9.77
41 oz. / 1390 gr.	9.89
42 oz. / 1424 gr.	10.00

LCA: Interpretation

The life cycle impacts of modular carpets are driven by the Product Stage and the impacts form this stage are driven by raw materials. Yarns and backing materials are the major contributors to impacts. Recycled polymers in both yarns and backings greatly reduce the impacts as compared to virgin petrochemicaly based materials previously used in Interface carpet manufacture.

References

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