

ENVIRONMENTAL **PRODUCT DECLARATION**

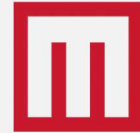
ECOFLEX™ NXT MODULAR CARPET TILES

MOHAWK GROUP

PREMIUM MODULAR BACKING SYSTEM



GT388 Macro Bloom Tile – Lichen Collection



Sustainability is a core value for Mohawk. In addition to being the largest flooring company in the world, Mohawk is unique among other flooring manufacturers in that we produce every component of the carpet: fiber, yarn, carpet cushion, and carpet backing. Our culture drives us to seek innovation and efficiency throughout the life cycle of our product, thus reducing our consumption of water, energy, and raw materials. Mohawk also has the most diverse recycling programs in the industry. Through our nation-wide network of partners, we recycle post-consumer carpet and fiber which is subsequently repurposed in the manufacture of other products. Additionally, Mohawk is the nation's largest recycler of plastic bottles which are processed and spun into carpet and backing at our own facilities. Through third party verification, Mohawk embraces transparency for the benefit of both itself and its customer.

For more information visit:

www.mohawkgroup.com



ENVIRONMENTAL PRODUCT DECLARATION






EcoFlex™ NXT
Modular Commercial Floor Covering

According to ISO 14025 and EN 15804

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	Mohawk Industries, Inc	
DECLARATION NUMBER	4787316173.101.1	
DECLARED PRODUCT	EcoFlex™ NXT	
REFERENCE PCR	IBU Part B: PCR for Building-Related Products and Services (2016)	
REFERENCE PCR STANDARD	<input checked="" type="checkbox"/> EN 15804 (2012) <input type="checkbox"/> ISO 21930 (2007) <input type="checkbox"/> ISO 21930 (2017)	
DATE OF ISSUE	February 14, 2018	
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:	Institut Bauen und Umwelt e.V (IBU)	
	PCR Review Panel	
	PCR tested and approved by the SVR	
This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories <input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL	 Grant R. Martin, UL Environment	
	 Thomas P. Gloria, Industrial Ecology Consultants	
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	 Thomas P. Gloria, Industrial Ecology Consultants	

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Modular Commercial Floor Covering

According to ISO 14025

Product

Product Description

EcoFlex™ NXT is a modular carpet tile consisting of a nylon face fiber tufted into a primary backing; pre-coated with an acrylate polymer to lock the tufts into place; back coated with polyolefin polymer and fiberglass scrim for stability.

The Life Cycle Analysis was conducted on an average face weight of 20.5 oz. per square yard, which was the average of the annual sales. The range of the nylon pile fiber wear layer is 14-34 (osy). Unless noted in the report, the 20.5 (osy) is presented for the impacts.

Application

According to the use class as defined in EN 1307, this product can be used in all professional areas which required **Class 33** or less.

Base materials / Ancillary materials

Name	Value	Unit
Nylon Face Fiber	23	%
Primary Backing	6	%
Acrylate Precoat	11	%
Fiberglass Scrim	2	%
Polyolefin Back Coat	56	%

This product does not contain any materials included in the Resource Conservation and Recovery Act (RCRA), Subtitle 3

Technical Data

Constructional data

Name	Value	Unit
Product Form	Carpet Tile with Polyolefin Extruded Backing	-
Type of Manufacture	Tufted + Coated	-
Yarn Type	Nylon	-
Total Pile Weight	695	g/m ²
Total Carpet Weight	3222	g/m ²

Reference service life

The service life of textile floorcoverings strongly depends on the correct installation taking into account the declared use classification and the adherence of cleaning and maintenance instructions. A minimum service life of 15 years has been assumed, though the technical service life can be considerably longer.



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Extraordinary Effects – Fire

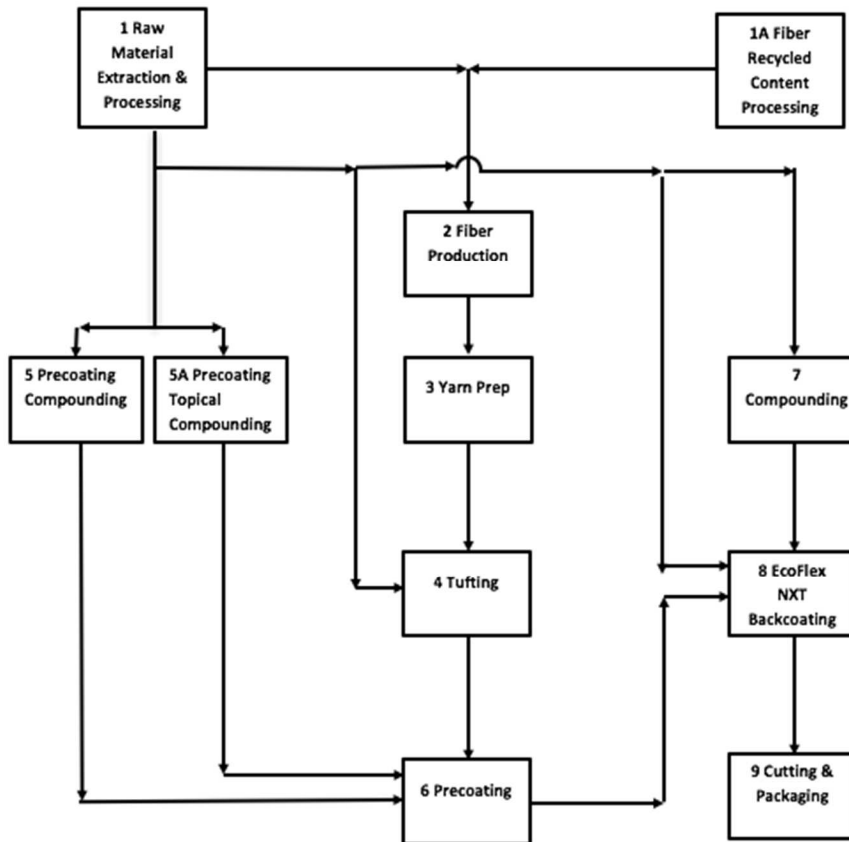
This product was tested according to ASTM E648: Critical Radiant Flux of Floor Coverings using radiant heat energy source (Also referred to as Federal Test Method 372 and NFPA 253)

Name	Avg. Critical Radiant Flux	Class
EcoFlex NXT	0.59 watts/cm ²	Class 1

Delivery Status

EcoFlex NXT carpet tile is available in the following styles: 24”x24”, 12”x36”, 24”x48”.

Manufacture



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Health, Safety, and Environmental Aspects During Production

EcoFlex NXT is manufactured in Glasgow, Virginia, which is an ISO 9001 & ISO 14001 certified facility.

- Supply chain and raw material management program
- Corporate Health and Safety programs focused on continual improvement of worker and contractor safety
- The Mohawk Group is compliant with all local, state, federal and international regulations
- Social Responsibility reporting to measure the social aspects of our manufacturing and the impacts to the communities where they are located
- Compliance with Public health and Environment (PHE) requirements within NSF/ANSI 140 Sustainable Carpet Assessment Standard

Installation

The floor must be prepared and the concrete must be prepared in accordance with Mohawk Group's installation instructions, and the recommended adhesive must be used to maintain the warranty. Complete installation instructions can be found at www.mohawkgroup.com or by calling 800-833-6954.

Packaging

Modular flooring is packaged in cardboard boxes that contain 66% recycled content. The Mohawk Group encourages installers to recycle the packaging through their local recycling program.

Use Stage

EcoFlex NXT Modular carpet tiles are recommended for installation in commercial applications. The carpet is assumed to have a 15-year reference life.

Mohawk Group's Care and Maintenance instructions, including vacuuming and deep cleaning can be found at www.mohawkgroup.com. For vacuuming, Mohawk Group recommends the use of equipment certified by the Carpet and Rug Institute (CRI) Seal of Approval program. The instructions recommend vacuuming three times a week and deep cleaning six times a year. Additional assistance is available from Mohawk Technical Services by calling 800-833-6954.

LCA: Calculation Rules

Declared Unit

Name	Value	Unit
Declared Unit	1	m ²
Conversion Factor to 1kg (average product)	0.26	-
Mass Reference (average product)	3.222	kg/m ²



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System Boundary

Type of EPD: Cradle to grave

System boundaries of the modules: A, B, C, D

A1-A3 Production: Energy supply and production of the basic material, processing of secondary material, auxiliary material, transport of the material to the manufacturing site, emissions, waste water treatment, packaging material and waste processing up to the landfill of residual waste (except radioactive waste). Credits for electricity and steam from incineration of production waste are aggregated.

A4 Transport: Transport of the packaged textile floorcovering from manufacturing gate to the place of installation.

A5 Installation: Installation of the textile floorcovering, production and transport of auxiliary material, waste processing up to the landfill of residual waste (except radioactive waste), the production of the amount of carpet that occurs as installation was incl. its transport to the place of installation. Credits for electricity and steam from the incineration of installation waste leave the product system.

B1 Use: Indoor emissions during the use stage. Due to known VOC-decay curves of the product after the first year no product related VOC-emissions are relevant.

B2 Maintenance: Cleaning of the textile floorcovering for a period of 1 year: - Vacuum cleaning – electricity supply – Wet cleaning – electricity, waste water treatment. The declared values in this module have to be multiplied with the assumed service time of the floor covering in the building considered.

C1 De-construction: De-construction of the floorcovering is made by handcraft and causes no additional impacts.

C2 Transport: Transport of the carpet waste to landfill, to the municipal waste incineration (MWI) or to the waste collection for recycling.

C3 Waste processing: C3-0, C3-1: Landfill and waste incineration need no waste processing. C3-2: Collection of the carpet waste, waste processing (granulating).

C4 Disposal: C4-0, C4-1: Impacts from landfill or from waste incineration (credits leave the system boundaries), C4-2: The processed carpet waste leaves the system and need no disposal.

D Recycling potential: D-0, D-1: Energy credits from landfill and from waste incineration (processing with <60% efficiency), D-2: Transport from the reprocessing plant to the cement plant, substitution of material and fuel input in the cement kiln (substantial and energetic credits).

Estimates and Assumptions

A number of assumptions are used where we could not get adequate data from either primary or secondary sources. Notable assumptions and limitations are described below.

- Transportation to installation was assumed to be 500 miles
- Recycled nylon was given burdens on the recycling process for PET fiber

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Cut –off Criteria

The cut-off criteria for including or excluding materials, energy and emissions data of the study are as follows:

- Mass – If a flow is less than 1% of the cumulative mass of the model it may be excluded, providing its environmental relevance is not a concern
- Energy – If a flow is less than 1% of the cumulative energy of the model it may be excluded, providing its environmental relevance is not a concern
- Environmental relevance – If a flow meets the above criteria for exclusion, yet is thought to potentially have a significant environmental impact, it was included. Material flows which leave the system (emissions) and whose environmental impact is greater than 1% of the whole impact of an impact category that has been considered in the assessment must be covered. The judgment was made based on experience and documented as necessary.

Packaging of raw materials (e.g. pallets, totes, super-sacks) are excluded as they represent less than 1% of the cumulative mass and are not environmentally relevant. Pallets and totes are returned to the vendors for reuse, cardboard, and polyethylene wrappers are recycled. Finishing chemicals (topical treatments) which are applied to some styles in the product family are also excluded as they represent less than 0.2 % of the cumulative mass.

The sum of the excluded material flows must not exceed 5% of mass, energy or environmental relevance. All reported data was incorporated and modeled using best available LCI data.

Background Data and Quality

The LCA model was created using the GaBi 6 software system for life cycle engineering, developed by Thinkstep AG. The GaBi 2015 LCI database provides the life cycle inventory data for the background system.

Primary data collected from Mohawk are based on 12 month averaged data for calendar year 2015. Background datasets are all based on data from the last 7 years (since 2010), with the majority of datasets based on data from 2015 and later. The study was conducted in 2016.

Allocation

Multi –Output Allocation

No co-product or by-product was necessary during the manufacturing, use or end of life.

End-of-Life Allocation

In the case of secondary raw material (i.e., recycled Nylon 6), only burdens from the point of recovery forward were considered. The primary production of recycled materials was outside the system boundary.

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Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all data sets to be compared were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are taken into account.

LCA: Scenarios and additional technical information

The following information refer to the declared modules and are the basis for calculations or can be used for further calculations. All indicated values refer to the declared functional unit.

Transport to the construction site (A4)

Name	Value	Unit
Litres of Fuel	38.77	l/100km
Transport Distance	804.5	km
Capacity Utilization (including empty runs)	78	%
Gross Density of Products Transported	564	kg/m ²

Installation in the building (A5)

Name	Value	Unit
Auxiliary (Adhesive or Flexlok Tabs)	1.41	kg/m ²
Material Loss	0.077	kg

Maintenance (B2)

Name	Value	Unit
Maintenance Cycle (Deep Cleaning)	6	1/year
Maintenance Cycle (Vacuuming)	156	1/year
Water Consumption (Deep Cleaning)	0.0002	m ³ /m ² /yr
Hot Water Consumption (Deep Cleaning)	0.0107	m ³ /m ² /yr
Detergent Consumption (Deep Cleaning)	0.0073	kg/m ² /yr
Total Electricity Consumption	3.71	kWh/m ² /yr

End of Life (C1-C4)

Name	Value	Unit
Collected Separately	0	kg
Collected as Mixed Construction Waste	0	kg
Reuse	0	kg
Recycling	0	kg
Energy Recovery	0	kg
Landfilling	3.222	kg/m ²



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

Though Mohawk has a carpet recovery and recycling program, for the purposes of this LCA, we've assumed that this carpet is disposed in a landfill and no credits have been applied from potential recovery.

LCA: Results

Information on not declared modules: The modules B3-B7 are not relevant during the service time of the carpet and are therefore not declared. Module C1 causes no additional impact (see "LCA: Calculation rules", "C1 De-construction" and is therefore not declared.

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 BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	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	X	X	MND	MND	MND	MND	MND	MND	X	X	X	MND



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RESULTS OF THE LCA – ENVIRONMENTAL IMPACT: declared unit and product

Parameter	Unit	A1 - 3	A4	A5	B1	B2	C2	C3	C4
CML 2001 - April 2013									
GWP	[kg CO ₂ -eq.]	1.38E+01	1.77E-01	6.88E-01	0.00E+00	7.15E-01	3.63E-02	0.00E+00	2.02E-01
ODP	[kg CFC11- eq.]	2.04E-06	1.71E-12	5.58E-11	0.00E+00	2.39E-10	5.61E-14	0.00E+00	4.96E-13
AP	[kg SO ₂ -eq.]	2.55E-02	6.14E-04	1.13E-03	0.00E+00	2.19E-03	1.22E-04	0.00E+00	5.58E-04
EP	[kg PO ₄ ³⁻ -eq.]	4.31E-03	1.66E-04	2.28E-04	0.00E+00	2.03E-04	3.19E-05	0.00E+00	5.53E-04
POCP	[kg ethene- eq.]	2.78E-03	6.48E-05	1.45E-04	1.90E-07	1.39E-04	1.08E-05	0.00E+00	6.36E-05
ADPE	[kg Sb-eq.]	1.01E-05	3.52E-08	2.03E-06	0.00E+00	1.59E-07	1.15E-09	0.00E+00	4.18E-08
ADPF	[MJ]	2.06E+02	2.91E+00	1.30E+01	0.00E+00	8.32E+00	9.53E-02	0.00E+00	2.89E+00
TRACI 2.1									
GWP	[kg CO ₂ -eq.]	1.38E+01	1.77E-01	6.88E-01	0.00E+00	7.15E-01	3.63E-02	0.00E+00	2.02E-01
ODP	[kg CFC11- eq.]	3.74E-08	1.82E-12	5.93E-11	0.00E+00	2.54E-10	5.97E-14	0.00E+00	5.24E-13
AP	[kg SO ₂ -eq.]	2.75E-02	8.21E-04	1.24E-03	0.00E+00	2.12E-03	1.69E-04	0.00E+00	5.87E-04
EP	[kg N-eq.]	2.70E-03	7.02E-05	1.16E-04	0.00E+00	2.62E-04	1.13E-05	0.00E+00	2.66E-04
Smog	[kg O ₃ -eq.]	4.55E-01	2.69E-02	2.14E-02	3.49E-06	1.90E-02	5.90E-03	0.00E+00	9.89E-03
Resources	[MJ]	2.80E+01	3.91E-01	1.71E+00	0.00E+00	6.01E-01	1.28E-02	0.00E+00	3.72E-01
Caption	GWP = Global warming potential; ODP = Ozone depletion potential; AP = Acidification potential; EP = Eutrophication potential; POCP = Photochemical ozone creation potential; ADPE = Abiotic depletion potential for non fossil resources; ADPF = Abiotic depletion potential for fossil resources								



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RESULTS OF THE LCA – RESOURCE USE: declared unit and product

Parameter	Unit	A1 - 3	A4	A5	B1	B2	C2	C3	C4
PERE	[MJ]	8.91E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	8.91E+00	7.26E-02	3.70E-01	0.00E+00	1.16E+00	2.38E-03	0.00E+00	2.21E-01
PENRE	[MJ]	2.32E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	2.32E+02	2.92E+00	1.36E+01	0.00E+00	1.05E+01	9.58E-02	0.00E+00	3.01E+00
SM	[kg]	1.51E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m³]	3.83E-02	3.56E-04	3.24E-03	0.00E+00	4.18E-03	1.17E-05	0.00E+00	7.20E-06
BW	[m³]	3.40E+00	6.74E-03	1.62E-01	0.00E+00	4.65E-01	2.21E-04	0.00E+00	1.13E-01
Caption	PERE = Use of renewable primary energy as energy carrier; PERM = Use of renewable primary energy as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy as energy carrier; PENRM = Use of non-renewable primary energy 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; BW = Use of net blue water								

RESULTS OF THE LCA – OUTOUT FLOWS AND WASTE CATEGORIES: declared unit and product

Parameter	Unit	A1 - 3	A4	A5	B1	B2	C2	C3	C4
HWD	[kg]	1.10E-07	2.39E-08	6.25E-09	0.00E+00	4.67E-09	7.83E-10	0.00E+00	1.16E-08
NHWD	[kg]	3.83E-01	1.08E-04	6.28E-02	0.00E+00	2.02E-02	3.54E-06	0.00E+00	2.81E+00
RWD	[kg]	4.89E-03	6.41E-06	2.18E-04	0.00E+00	8.40E-04	2.10E-07	0.00E+00	4.56E-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
MFR	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	[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
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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; EET = Exported thermal energy								



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LCA: Interpretation

The analysis results represent the cradle-to-grave environmental performance of both Nylon EcoFlex NXT and NXT Air carpet products. As shown in FIGURES under the 1 year product life assumption, raw materials production (A1), carpet manufacturing (A3), and maintenance (B2) are the largest contributors in each impact category considered. The production of raw materials represents a substantial fraction of the life cycle impacts, even over the product reference service life. Within the raw materials, nylon face fiber has the largest contribution to the environmental impacts. In all categories considered, nylon has a greater impact compared to all the other materials combined, though it represents less than 20% of the total mass. Manufacturing is a smaller contributor but represents at least 10% of the total life cycle in five of the seven impact categories.

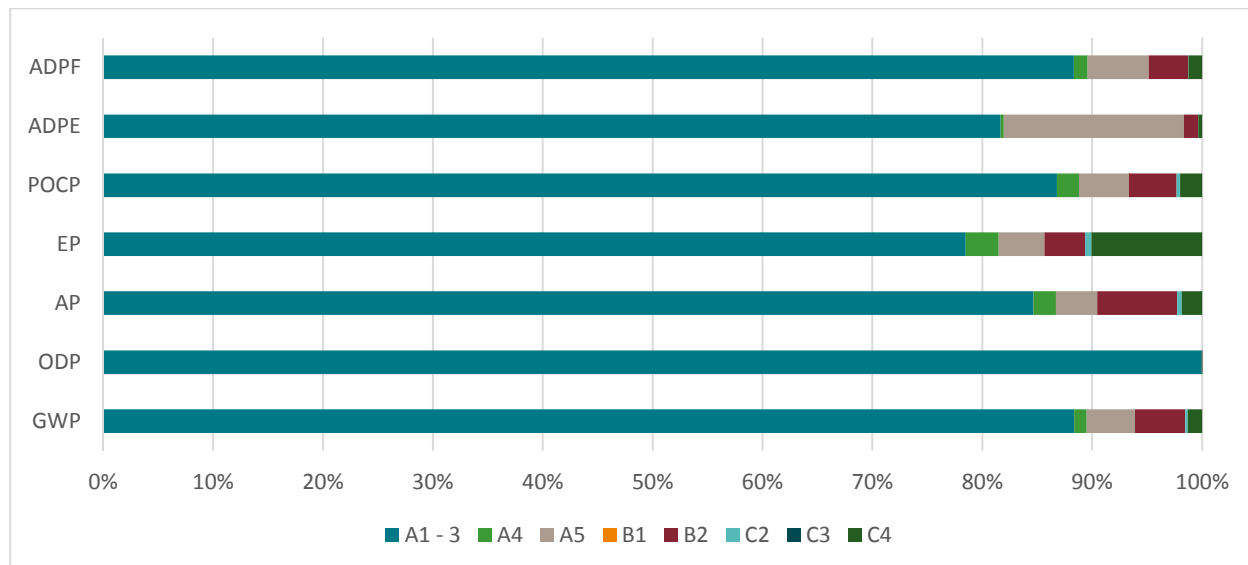


Figure 5-1: Relative impacts of life cycle phases for EcoFlex NXT carpet (CML 2001, April 2013)

Requisite evidence

VOC Emissions

This product meets the requirements of the Carpet and Rug Institute's Green Label Plus program with less than 0.5 mg/m³ or less of total VOCs as reported on certificate GLP1171. The product was tested and reported by Underwriter's Laboratory Environment according to ASTM standards D 5116 and D 7339 following UL Environment's "Standard Method for Evaluation of Chemical Emissions from Flooring Products Using Environmental Chambers". Results were reported in report #18511-154. References



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References

The literature referred to in the Environmental Product Declaration must be quoted in full from the following sources. Standards and standards relating to evidence and/or technical features already fully quoted in the EPD do not need to be listed here. Part B of the PCR document on which they are based must be referred to.

Institut Bauen and Umwelt: Institut Bauen and Umwelt e.V., Berlin (2016): Generation of Environmental Product Declaration

ISO 14025: DIN EN ISO 14025:2011-10: Environmental labels and declarations – Type III environmental declarations – Principles and procedures

EN 15804: EN 15804:2012-04+A1 2013: Sustainability of construction works – Environmental Product Declarations – Core rules for the product category of construction products

Contact Information



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