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Woven PP

Environmental Product Declaration

We believe true sustainability requires full attention to the potential impacts of every aspect of our business. Like other leading companies, we gauge our progress by measuring our environmental and social performance with as much stringency as our financial performance.

As responsible stewards of the environment, we believe in using all resources as efficiently and judiciously as possible — prioritizing conservation and consumption reduction before recycling or reuse. With conservation at the heart of our sustainability philosophy, finding alternatives for (and preventing the excessive use of) valuable resources is the basis of our approach to environmental impact management.

NSF
Certified Environmental Product Declaration
www.nsf.org

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Program Operator	NSF International 789 N. Dixboro, Ann Arbor, MI 48105 www.nsf.org
General Program instructions and Version Number	Part A: Life Cycle Assessment Calculation Rules and Report Requirements, Version 3.2
Manufacturer Name and Address	EF Contract 1502 Coronet Drive Dalton GA, 30720
Declaration Number	EPD10184
Declared Product and Functional Unit	Woven PP Carpet 1 square meter of installed flooring and with a building service life of 75 years
Reference PCR and Version Number	Part A: Life Cycle Assessment Calculation Rules and Report Requirements, Version 3.2 Part B: Flooring EPD Requirements. UL 10010-7, September 28, 2018
Product's intended Application and Use	Commercial Flooring and Wall Applications
Product RSL	15 years
Markets of Applicability	North America
Date of Issue	03/22/2019
Period of Validity	5 years from date of issue
EPD Type	Product Specific
Range of Dataset Variability	N/A
EPD Scope	Cradle to Grave
Year of reported manufacturer primary data	2017
LCA Software and Version Number	GaBi 8.7.0.18
LCI Database and Version Number	GaBi Database Version 8.7, Service Pack 36
LCIA Methodology and Version Number	TRACI 2.1 CML 2001-Jan 2016
The sub-category PCR review was conducted by:	Jack Geibig (Chair) Thomas Gloria, PhD Thaddeus Owen

This declaration was independently verified in accordance with ISO 14025: 2006. The UL Environment "Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report," v3.1 (February 2018), based on CEN Norm EN 15804 (2012) and ISO 21930:2017, serves as the core PCR, with additional considerations from the USGBC/UL Environment Part A Enhancement (2017) ☐ Internal ☒ External	Jenny Oorbeck joorbeck@nsf.org
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	WAP Sustainability Consulting
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Jack Geibig - EcoForm jgeibig@ecoform.com

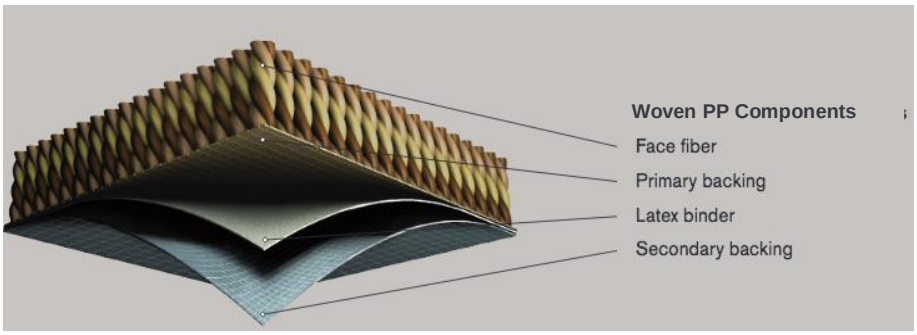
Limitations:
Environmental declarations from different programs (ISO 14025) may not be comparable.
Comparison of the environmental performance of Flooring Products using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the building energy use phase as instructed under this PCR.
Full conformance with the PCR for Products allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible". Example of variations: Different LCA software and background LCI datasets
may lead to differences results for upstream or downstream of the life cycle stages declared.

Product Definition and Information

1. Company Description

EF Contract (EFC) is part of the fastest-growing, most progressive family of flooring companies, Engineered Floors. We stand for confidence in quality, relentless service and doing right by all. Our products are inspired by you: offering the carpet and hard-surface flooring that you want and need, that you've been seeking but unable to find, until now. Every collection, pattern and colorway are created with best in class performance and in pursuit of design that is simply beautiful. That guiding ethic continues today as EF Contract strives to positively impact our associates, customers and community on a daily basis. By putting our people first, we produce products with pride, provide value to our customers and make a difference in our community. Our commitment to our associates and their families, as well as our larger community, requires EF Contract to provide gainful employment and economic development. In 2018, EF Contract joined Engineered Floors, LLC. Based in Dalton, Ga., Engineered Floors, LLC is a privately held carpet producer founded by Robert E. Shaw in 2009 and based in Dalton, Ga., with facilities in Calhoun and Dalton, Ga. Engineered Floors employs 4000 people.

2. Product Description



As part of EF Contract's focus to deliver quality, high performing products, Woven PP provides superior construction to ensure dimensional stability for all our broadloom styles. Woven PP has a nylon 6 face fiber attached to a latex and polypropylene backing. A representative product within the Woven PP family was chosen. The composition within the Woven PP family of products does not differ other than pigments and dyes used to give each style of broadloom carpet its own distinct appearance. The variation in terms of pigments and dyes used is less than 5% of the total product weight and is excluded from the study. This EPD covers all styles and colors under the Woven PP product family. Specific products can be found on EFC's website.

Table 1: Technical Details

Parameter		
Additional characteristics per NSF/ ANSI 140	Available Reclamation Program	
Sustainable certifications	Certified Gold to NSF/ ANSI 140	
VOC emissions test method	Green Label Plus (GLP)	
Product Form	Broadloom	
Type of Manufacturing	Tufted Nylon 6 on woven polypropylene and latex backing	
Yarn Type	Nylon 6	
Total Carpet Weight	1.808 kg/m^2	
Total Pile Weight	0.654 kg/m^2	
CRI-TARR Rating	≤3.5	
Characteristics	**Nominal Value**	**Unit**
Total thickness	6.40 – 14.9 (0.192 - 0.447)	mm (inch)
Surface pile thickness	2.51 – 8.98 (0.099 - 0.354)	mm (inch)
Number of tufts or loops /dm^2	8.0 – 12.6 (6.45 - 9.74)	dm^2(in^2)
Secondary backing	PemierBac® Plus (Latex Broadloom)	Thermoplastic

Table 2: Performance Testing for Woven PP

Test	Result
AATCC2 Test Method 134-2011 Electrostatic Propensity of Carpets (Normative value ≤ 3.5 KV)	≤ 0.7 kV
AATCC2 Test Method 16-2004 Colorfastness to Light (minimum grade 4 at 40 AFU)	Met minimum grade = 5
ASTM6 E648 Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source	Class 1, > 0.45
ASTM6 E662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials	< 450
ASTM6 D5252 Standard Practice for the Operation of the Hexapod Tumble Drum Tester	3
ASTM6 D7330 Standard Test Method for Assessment of Surface Appearance Change in Pile Floor Coverings Using Standard Reference Scales	3.5
ISO14 2551/ ASTM6 Dimensional Stability (Modular Tiles Only)	N/A

3. Application

EF Contract's Woven PP is intended for use as a soft floor covering in medium-to-high traffic commercial applications such as retail, healthcare, education, offices, public venues and institutional environments. Further information about the product may be found on EFC's website.

4. Properties of Declared Product as Delivered

The product is usually delivered in rolls with a standard width of 3.66 m (12 ft).

5. Declaration of Methodological Framework

This EPD is considered a Cradle-to-Grave study. A summary of the life cycle stages included in this EPD is presented in Section 17. The reference service life is outlined in Table 10 and is only applicable if all manufacturing guidelines are followed regarding site-selection and installation, found online. No known flows are deliberately excluded from this EPD. Third party verified ISO 14040/44 secondary LCI data sets contribute more than 67% of total impacts in all impact categories required by the PCR.

6. Flow Diagram

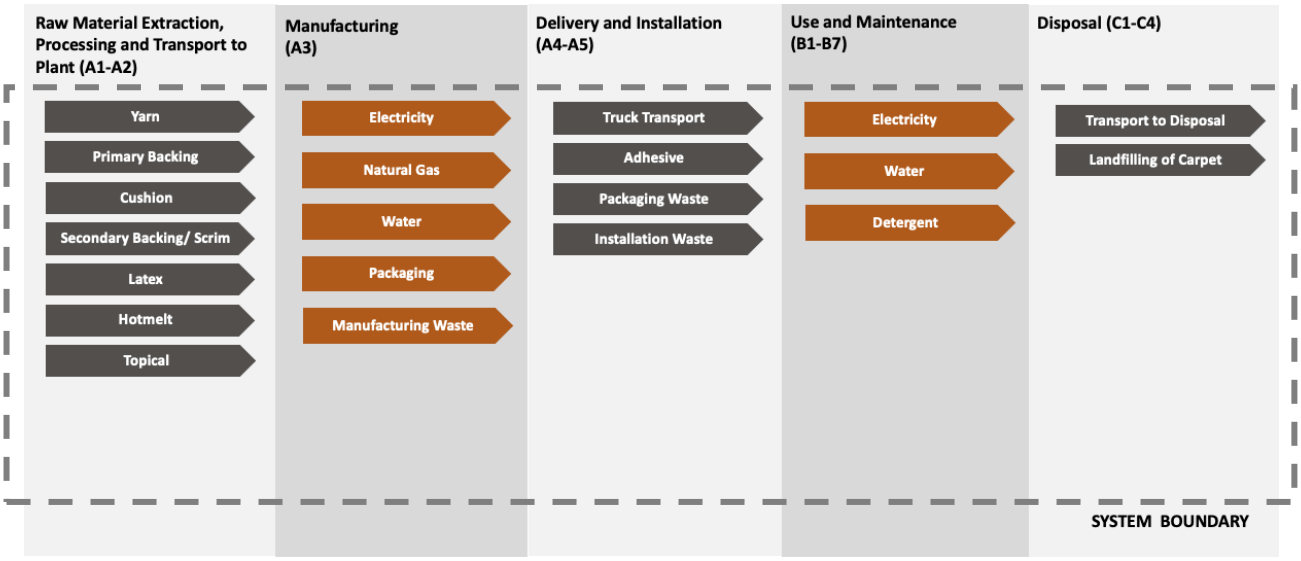


Figure 1: Flow Diagram

7. Manufacturing

The manufacturing process starts with the fiber production. This includes taking virgin and recycled content nylon granulate feedstock and extrude fibers. This is combined in a fiber blend process to create a typical fiber. These individual fibers then go through the processes of heat setting, air entangling and twisting to create yarn which is then tufted to a primary backing. The primary backing materials differs based on the type of backing being produced. The next step is coating which affixes secondary thermoset (latex) backing to tufted fiber and primary backing. Then, the manufactured secondary thermoplastic backing (PVC and PE) is affixed to the tufted fiber and backing. Finally, dye is applied to the tufted fiber in both piece (Beck and Skein) and space (Belmont) dye methods. The last step is packaging for shipment. This product contains no regulated substances above the required threshold.

8. Material Composition

Table 3: Material Composition

Component	Material	(Mass %)
Face Yarn	Nylon 6, Carbon Black, Titanium dioxide	36.3%
Primary Backing	Polypropylene	6.1%
Secondary Backing/ Scrim	Polypropylene	2.7%
Latex	SBR, Calcium carbonate	54.9%
Topical	Non-fluoro Stain Resist	0.2%

9. Transportation

It is assumed that all raw materials are distributed by truck. An average distance using this information was calculated and used in the model. Transport of raw material from supplier to the manufacturing facility was calculated for each raw material using primary data. Average distance to installation site was calculated based on average distance of total shipments to be 565.46 miles from the EF Contract facility in 2017.

10. Packaging

Table 4: Packaging Inputs

Input per sq. m2	Value	Unit
Cardboard	0.031	kg
Paper	0.00004	kg
Plastic film	0.013	kg

11. Product Installation

Table 5: Product Installation Inputs

Input per sq. m2	Value	Unit
Adhesive	0.116	kg
Install waste	5	%

The product is delivered to the customer via truck, depending on the location of the end-user. Detailed installation instructions are provided online. Installation equipment is required though not included in the study as these are multi-use tools and the impacts per declared unit is considered negligible. Packaging waste is generated and disposed of in this stage. Woven PP carpet, it is advised that Commercialon® Premium Carpet Adhesive be used for installation. It is formulated for the most demanding interior carpet installations. It forms a powerful bond with stiff and heavy backed commercial carpets directly over approved substrates. This solvent-free adhesive is also low in odor, making it the ideal adhesive for use in health-conscious environments. An installation loss of 5% is assumed.

12. Use

The reference service life (RSL) of Woven PP carpet is assumed to be 15 years. Given the RSL of the products under consideration, 4 replacements of the product are required to cover the Estimated service life (ESL) of the building which is 75 years. Table 6 shows the parameters for the use phase scenario undergoing study.

Table 6: Use phase parameters

Maintenance	Light	Medium	Heavy	Unit
Vacuum	1	3	5	#/ week
Spot Check/ Clean	5	5	5	#/ week
Interim Maintenance	2	4	12	#/ year
Restorative Maintenance	1	2	4	#/ year

13. Reference Service Life and Estimated Building Service Life

A reference service life of 15 years is assumed for EFC's broadloom carpet. The estimated service life of the building is 75 years as per Part A: Life Cycle Assessment Calculation Rules and Report Requirements, UL Environment, V3.2, 2018.

14. Reuse, Recycling and Energy Recovery

EF Contract, as a brand of the larger Engineered Floors family, offers our customers the opportunity to use our Carpet Reclamation Program. With this program we facilitate the reclamation of used carpet and guarantee that it will not reach a landfill. To initiate the carpet reclamation process, please call 1.800.241.4586 or email reclamation@engineeredfloors.com. In addition to reclaiming used carpet, old flooring can be safely disposed of in municipal landfills or sent to waste-to-energy facilities (subject to local regulations).

15. Disposal

All waste has been classified according to regional-specific legislation as laid out in Section 2.8.5 and 2.8.6 in Part A: Life Cycle Assessment Calculation rules and Report Requirements from UL Environment. Per Part A, the product is completely landfilled.

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Life Cycle Assessment Background Information

16. Functional Unit

The functional unit of the flooring product is one (1) square meter of floor covering.

	Woven PP
Functional Unit [m^2]	1
Average Weight [kg]	1.9-2.7

17. System Boundary

This EPD is a cradle-to-grave study.

Table 7: Description of system boundary modules (X = Included in study)

	PRODUCT STAGE			CONSTRUCT-ION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
	Raw material supply	Transport	Manufacturing	Transport from gate to site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Building Operational Energy Use During Product Use	Building Operational Water Use During Product Use	Deconstruction	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling Potential
EPD Type	X			X	X	X	X	X	X	X	X	X	X	X	X	X	MND

Table 8: System Boundary and Modules

Module Name	Description	Analysis Period	Summary of Included Elements
A1	Product Stage: Raw Material Supply	2018	Raw Material sourcing and processing as defined by secondary data.
A2	Product Stage: Transport	2018	Shipping from supplier to manufacturing site. Fuel use requirements estimated based on product weights and estimated distance.
A3	Product Stage: Manufacturing	2017	Energy, water and material inputs required for manufacturing products from raw materials. Packaging materials and manufacturing waste are included as well.
A4	Construction Process Stage: Transport	2018	Shipping from manufacturing site to project site. Fuel use requirements estimated based on product weights and mapped distance.
A5	Construction Process Stage: Installation	2018	Installation materials, installation waste and packaging material waste.
B1	Use Stage: Use	2018	Use of the product.
B2	Use Stage: Maintenance	2018	Cleaning energy, water, and materials, including refinishing the product.
B3	Use Stage: Repair	2018	Materials and energy required to repair the product.
B4	Use Stage: Replacement	2018	Total materials and energy required to manufacture a replacement.

Module Name	Description	Analysis Period	Summary of Included Elements
B5	Use Stage: Refurbishment	2018	Materials and energy required to refurbish the product.
B6	Operational Energy Use	2018	Operational Energy Use of Building Integrated System During Product Use
B7	Operational Water Use	2018	Operational Water Use of Building Integrated System During Product Use
C1	EOL: Deconstruction	2018	No inputs required for deconstruction.
C2	EOL: Transport	2018	Shipping from project site to landfill. Fuel use requirements estimated based on product weight and mapped distance.
C3	EOL: Waste Processing	2018	Waste processing not required. All waste can be processed as is.
C4	EOL: Disposal	2018	Landfill impacts modeled based on secondary data.
D	Benefits beyond system	MND	Credits from energy or material capture.

18. Estimates and Assumptions

All estimates and assumptions are within the requirements of ISO 14040/44. The majority of the estimations are within the primary data. The primary data was collected as annual totals including all utility usage and production information. For the LCA, the usage information was divided by the production to create an energy and water use per square meter. As there are different products produced at this facility, it is assumed all products are using the same amount of energy. Another assumption is that the installation tools are used enough times that the per square meter impacts are negligible.

19. Cut-Off Rules

Material inputs greater than 1% (based on total mass of the final product) were included within the scope of analysis. Material inputs less than 1% were included if sufficient data was available to warrant inclusion and/or the material input was thought to have significant environmental impact. Cumulative excluded material inputs and environmental impacts are less than 5% based on total weight of the functional unit. The excluded materials are some additives and pigments (0-3.09%).

20. Data Sources

Primary data was collected by EFC associates for onsite energy, water and waste during the course of manufacturing. Whenever available, supplier data was used for raw materials used in the production process. When primary data did not exist, secondary data for raw material production was used from GaBi Database Version 8.7, Service Pack 35. All calculation procedures adhere to ISO14044.

21. Data Quality

The geographical scope of the manufacturing portion of the life cycle is Dalton, GA. All primary data were collected from the manufacturer. The geographic coverage of primary data is considered excellent. Primary data were provided by the manufacturer and represent all information for calendar year 2017. Primary data provided by the manufacturer is specific to the technology that the company uses in manufacturing their product. It is site-specific and considered of good quality. Data used to allocate energy and water on a per unit of product produced includes overhead energy such as lighting, heating and sanitary use of water due to unavailability of sub-metering. Sub-metering would improve the technological coverage of data quality.

22. Period under Review

The period under review is calendar year 2017.

23. Allocation

General principles of allocation were based on ISO 14040/44. There are no products other than carpet tiles and broadloom carpets that are produced as part of the manufacturing processes studied in the LCA. Since there are no co-products, no allocation based on co-products is required. To derive a per unit value for manufacturing inputs such as electricity, natural gas and water, allocation based on total production in square meters was adopted. Discussions with EF Contract staff divulged this was a more representative way than via mass to allocate the manufacturing inputs based on the manufacturing processes used and the types of products created. As a default, secondary GaBi datasets use a physical mass basis for allocation. Throughout the study recycled materials were accounted for via the cut-off method. Under this method, impacts and benefits associated with the previous life of a raw material from recycled stock are excluded from the system boundary. Additionally, impacts and benefits associated with secondary functions of materials at end of life are also excluded (i.e. production into a third life or energy generation from the incineration plant). The study does include the impacts associated with reprocessing and preparation of recycled materials that are part of the bill of materials of the products under study.

24. Comparability and Benchmarking

The user of the EPD should take care when comparing EPDs from different companies. Assumptions, data sources, and assessment tools may all impact the uncertainty of the final results and make comparisons misleading. Without understanding the specific variability, the user is therefore, not encouraged to compare EPDs. Even for similar products, differences in use and end-of-life stage assumptions, and data quality may produce incomparable results. Comparison of the environmental performance of Flooring Products using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the building energy use phase as instructed under this PCR. Full conformance with the PCR for Products allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible". Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

Life Cycle Assessment Scenarios

Table 9: Transport to building site (A4)

Name	Truck	Unit
Fuel type	Diesel	-
Liters of fuel	39.0625	l/100km
Vehicle type	Truck – Trailer, basic enclosed/ 45,000 lb payload	-
Transport distance	909.3	km
Capacity utilization	0.78	%
Weight of products transported	20,411.657	kg
Capacity utilization volume factor	1	-

Table 10: Reference Service Life

Name	Value	Unit
RSL	15	years
Declared product properties (at the gate) and finishes, etc.	See Table 1	-
Design application	Installation per recommendation by manufacturer	-
An assumed quality of work, when installed in accordance with the manufacturer's instructions	Accepted industry standard	-
Indoor environment (if relevant for indoor applications)	Normal building operating conditions	-
Use conditions, e.g. frequency of use, mechanical exposure	Normal building operating conditions	-

Table 11: Installation into the building (A5)

Name	Woven PP	Unit
Adhesive	0.11	kg
Product loss per functional unit	0.114	kg
Waste materials at the construction site before waste processing, generated by product installation	0.16	kg
Output materials resulting from on-site waste processing	0	kg
Packaging waste, cardboard	0.031	kg
Packaging waste, plastic film	0.013	kg
Packaging waste, paper	0.00004	kg
Biogenic carbon contained in packaging	0.118	kg CO_2

Table 12: Maintenance (B2)

Name	Value	Unit
Maintenance process information	Manufacturer recommended	
Vacuum (Daily)	3600	Number/ RSL
Vacuum (Daily)	18000	Number/ ESL
Spot Check (Daily)	3600	Number/ RSL
Spot Check (Daily)	18000	Number/ ESL
Interim Maintenance (Monthly)	180	Number/ RSL
Interim Maintenance (Monthly)	900	Number/ ESL
Restorative Maintenance (Quaterly)	60	Number/ RSL
Restorative Maintenance (Quaterly)	300	Number/ ESL
Net freshwater consumption specified by water source and fate	10.27	kg/m² floor/yr
Neutral detergent	0.007	kg/m² floor/yr
Electricity for vacuuming	1.17	kWh/m² floor/yr
Further assumptions for scenario development (e.g. frequency and time period of use, number of occupants);	Vacuum and spot check everyday, interim maintenance every month and restorative maintenance every quarter	

Table 13: Replacement (B4)

Name	Value	Unit
Replacement cycle	0	Number/ RSL
Replacement cycle	4	Number/ ESL
Energy input, specified by activity, type and amount	0	kWh
Net freshwater consumption specified by water source and fate	0	m^3
Adhesive	0.11	kg/ replacement

Table 14: End of life (C1-C4)

Name		Woven PP	Unit
Assumptions for scenario development		Product is either disposed of with the underlying floor or manually removed via scraping	
Collection process	**Collected separately**	2.28	kg
	Collected with mixed construction waste	0	kg
Recovery	**Reuse**	0	kg
	Recycling	2.28	kg
	Landfill	0	kg
	Incineration	0	kg
	Incineration with energy recovery	84-94	kg
	Energy conversion efficiency rate	2.28	%
Disposal	**Product or material for final deposition**	0.138	kg
Removals of biogenic carbon (excluding packaging)		0.181	kg

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Life Cycle Assessment Results

All results are given per functional unit, which is 1 m^2 of installed flooring over an estimated building life of 75 years. Environmental Impacts were calculated using the GaBi software platform. Impact results have been calculated using both TRACI 2.1 and CML 2001-Jan 2016 characterization factors. LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. 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.

See Impact Category Key below for definition of acronyms.

Table 15: Impact Category Key

Acronym	Text	Acronym	Text
ADP-elements	Abiotic depletion potential for non-fossil resources	**GWP**	Global warming potential
ADP-fossil	Abiotic depletion potential for fossil resources	**OPD**	Depletion of stratospheric ozone layer
AP	Acidification potential of soil and water	**POCP**	Photochemical ozone creation potential
EP	Eutrophication potential	**Resources**	Depletion of non-renewable fossil fuels
LCI Indicators			
RPR_E	Use of renewable primary energy excluding renewable primary energy resources used as raw materials	**SM**	Use of secondary materials
RPR_M	Use of renewable primary energy resources used as raw materials	**RSF**	Use of renewable secondary fuels
$NRPR_E$	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	**NRSF**	Use of non-renewable secondary fuels
$NRPR_M$	Use of non-renewable primary energy resources used as raw materials	**FW**	Net use of fresh water
HWD	Disposed-of-hazardous waste	**MR**	Materials for recycling
NHWD	Disposed-of non-hazardous waste	**MER**	Materials for energy recovery
HLRW	High-level radioactive waste, conditioned, to final repository	**EE**	Exported energy
ILLRW	Intermediate- and low-level radioactive waste, conditioned, to final repository	**CRU**	Components for reuse
RE	Recovered energy		

Table 16: Carbon Emissions and Removals

Parameter	Parameter	Woven PP	Unit
BCRP	Biogenic Carbon Removal from Product	0.138	kg CO_2
BCEP	Biogenic Carbon Emission from Product	0.142	kg CO_2
BCRK	Biogenic Carbon Removal from Packaging	0.118	kg CO_2
BCEK	Biogenic Carbon Emission from Packaging	0.0512	kg CO_2

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1. Woven PP Carpet

1.1 CML Results

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADP-elements [kg Sb eq]	1.67E-05	4.26E-08	1.82E-07	0.00E+00	1.15E-05	0.00E+00	6.79E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.98E-09	0.00E+00	6.05E-08	MND
ADP-fossil fuel [MJ]	1.95E+02	3.29E+00	6.41E+00	0.00E+00	6.53E+02	0.00E+00	8.28E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.39E-01	0.00E+00	2.18E+00	MND
AP [kg SO_2 eq]	1.93E-02	8.04E-04	7.72E-04	0.00E+00	1.08E-01	0.00E+00	8.59E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E-04	0.00E+00	5.95E-04	MND
EP [kg Phosphate eq]	2.36E-03	2.16E-04	3.55E-04	0.00E+00	8.87E-03	0.00E+00	1.20E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.54E-05	0.00E+00	7.69E-05	MND
GWP [kg CO_2 eq]	9.52E+00	2.34E-01	4.25E-01	0.00E+00	5.07E+01	0.00E+00	4.13E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.83E-02	0.00E+00	1.40E-01	MND
ODP [kg CFC 11 eq]	8.93E-10	8.00E-15	8.38E-14	0.00E+00	8.24E-11	0.00E+00	3.57E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-15	0.00E+00	2.57E-14	MND
POCP [kg Ethene eq]	2.38E-03	8.08E-05	1.59E-04	0.00E+00	7.20E-03	0.00E+00	1.07E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E-05	0.00E+00	5.01E-05	MND

1.2 TRACI Results

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
AP [kg SO_2 eq]	2.00E-02	1.08E-03	1.41E-03	0.00E+00	1.06E-01	0.00E+00	9.25E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.77E-04	0.00E+00	6.45E-04	MND
EP [kg N eq]	1.62E-03	8.79E-05	2.79E-04	0.00E+00	7.40E-03	0.00E+00	8.08E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.44E-05	0.00E+00	3.27E-05	MND
GWP [kg CO_2 eq]	9.44E+00	2.33E-01	4.08E-01	0.00E+00	5.04E+01	0.00E+00	4.09E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.82E-02	0.00E+00	1.39E-01	MND
ODP [kg CFC 11 eq]	8.93E-10	8.00E-15	8.38E-14	0.00E+00	8.24E-11	0.00E+00	3.57E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-15	0.00E+00	2.57E-14	MND
Resources [MJ]	2.36E+01	4.41E-01	8.73E-01	0.00E+00	5.13E+01	0.00E+00	1.01E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.23E-02	0.00E+00	2.80E-01	MND
POCP [kg O_3 eq]	3.12E-01	3.57E-02	1.10E-02	0.00E+00	1.18E+00	0.00E+00	1.49E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.85E-03	0.00E+00	1.28E-02	MND

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1.3 Resource Use Results

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
RPR_E [MJ]	1.24E+01	8.18E-02	1.40E-01	0.00E+00	5.73E+01	0.00E+00	5.11E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.34E-02	0.00E+00	1.58E-01	MND
RPR_M [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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
$NRPR_E$ [MJ]	2.14E+02	3.31E+00	6.62E+00	0.00E+00	8.50E+02	0.00E+00	9.05E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.42E-01	0.00E+00	2.24E+00	MND
$NRPR_M$ [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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
SM [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
RE [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
FW [m3]	5.95E-02	3.98E-04	1.85E-03	0.00E+00	9.78E-01	0.00E+00	2.48E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.52E-05	0.00E+00	2.71E-04	MND

1.4 Output Flows and Waste Results

Impact Category	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD [kg]	1.60E-06	2.57E-08	3.63E-09	0.00E+00	4.21E-07	0.00E+00	6.55E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.22E-09	0.00E+00	7.70E-09	MND
NHWD [kg]	1.46E-01	1.24E-04	2.62E-01	0.00E+00	3.30E-01	0.00E+00	1.44E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.04E-05	0.00E+00	3.18E+00	MND
HLRW [kg]	9.70E-06	8.77E-09	9.71E-08	0.00E+00	9.22E-05	0.00E+00	3.93E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.44E-09	0.00E+00	2.90E-08	MND
ILLRW [kg]	7.40E-03	7.27E-06	8.09E-05	0.00E+00	7.69E-02	0.00E+00	3.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.19E-06	0.00E+00	2.29E-05	MND
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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
MR [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
MER [kg]	0.00E+00	0.00E+00	4.09E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
EE [MJ]	0.00E+00	0.00E+00	1.06E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND

Life Cycle Assessment Interpertation

Overall for EF Contract's products Global Warming and Abiotic Depletion of fossil fuels are the impact categories of most significance. Within these impact categories, the vast majority of impacts are aggregated in the A1-A3 phase of the life cycle of the product. A1-A3 includes raw material sourcing, transportation and manufacturing. The second largest life cycle stage is B2 which is the maintenance of the product over a year for all products. Impacts from maintenance can be attributed to the electricity used to vacuum carpet to maintain cleanliness and appearance.

For Woven PP, raw materials and manufacturing contributes to around 91% and maintenance contributes to 4% of total life cycle impacts. Within raw materials and manufacturing, electricity contributes to 17% and yarn contributes to 59-65% of total impacts most of which comes from manufacturing Nylon 6. Latex contributes to around 11-20% of total impacts of which maximum impacts are from SBR. Thermal energy from natural gas is 0.1% of total impacts.

25. Environment and Health During Manufacturing

As responsible stewards of the environment, we believe in using all resources as efficiently and judiciously as possible — prioritizing conservation and consumption reduction before recycling or reuse. With conservation at the heart of our sustainability philosophy, finding alternatives for (and preventing the excessive use of) valuable resources is the basis of our approach to environmental impact management.

- In 2018, we made some notable improvements to our energy efficiency, including reducing dye-house energy, upgrading our extrusion processes, consolidating our operations, and expanding into the industry's most state-of-the-art manufacturing facility.
- We're saving water and energy by optimizing our product mix with a growing number of products featuring yarns that use low-intensity dyeing processes, including solution dyeing and space-dyeing.

26. Environment and Health During Installation

All recommended personal protective equipment (PPE) should be utilized during installation, as indicated on the SDS and installation guidelines, found online. Woven PP meets requirements of the Carpet and Rug Institute's Green Label Plus Program for indoor air quality.

27. Extraordinary Effects

Fire

Woven PP's fire performance testing details can be found in Table *2*.

Water

Should the product become flooded, the water should be removed through means of extraction and drying, and the product should behave as originally intended. There are no environmental impacts associated with the product being flooded.

Mechanical Destruction

In the event that the product is mechanically destroyed, please revert to disposing the product using standard procedure and and ensure timely replacement.

28. Environmental Activities and Certifications

As has previously been said, Engineered Floors and the EF Contract brand consider conservation at the core of sustainability. Preventing excessive or inefficient use of natural resources and the preservation and protection of the environment is the foundation of our environmental stewardship. This is the inspiration for our total environmental efforts which include:

- More than 5 million pounds of waste diverted from landfills since 2016, including recycling 3 million pounds, and sending 710,000 pounds of materials waste to our energy from waste partner.
- Main campus for EFC Contract has been zero waste to landill since 2015 and 3rd party certified Zero Waste to Landfill since 2016.
- Increasing the volume of recycled content in our products through the use of post-industrial and pre-consumer recycled content, as well as continuing to find innovative options for recycled and recyclable materials is an important part of our sustainability journey.

References

1. Life Cycle Assessment, LCA Report for J&J Flooring Group and EF Contract. WAP Sustainability Consulting. January 2019.
2. Product Category Rule (PCR) for Building-Related Products and Services, Part A: Life Cycle Assessment Calculation Rules and Report Requirements UL 10010. Version 3.2, September 18th, 2018.
3. Part B: Flooring EPD Requirements. UL Environment V2.0, 2018.
4. ISO 14044: 2006 Environmental Management – Life cycle assessment – Requirements and Guidelines.
5. ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and Procedures.
6. ISO 21930:2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services.
7. European Standard DIN EN 15804: 2012.04+A1 2013. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products (includes Amendment A1:2013)
8. UL General Program Instructions April 2017, v. 2.1