

ENVIRONMENTAL PRODUCT DECLARATION

MODULAR CARPET PRODUCT

RECYCLABLE TUNTEX™ COMMERCIAL DURABACK™
YANGZHOU TUNTEX FIBER TECHNOLOGIES CO., LTD.



TUNTEX MODULAR CARPET PRODUCT

Recyclable Tuntex™ Commercial Duraback™ is an innovative backing system used in Tuntex modular carpets, designed to deliver optimal performance while ensuring low TVOC emissions and enhanced sustainability.

Fully recyclable at the end of its lifecycle, Tuntex Duraback can be processed through the separation of face yarn and backing layer, allowing it to be repurposed into other nylon-based consumer products.

TUNTEX™

Since 1968, Tuntex has been a pioneer in carpet manufacturing, building over five decades of expertise into a fully vertical production system. By developing and producing our own yarns in-house, we maintain full control over quality, performance, and environmental responsibility. Supplying products to over 22 countries, Tuntex is recognized globally for its commitment to sustainable and circular manufacturing. Through ongoing innovation, we repurpose production waste into new materials, reduce resource consumption, and advance greener processes across our facilities. Our efforts are supported by third-party certifying bodies such as USCRI and SGBC, reflecting our dedication to measurable environmental stewardship.

For more information visit www.tuntex-carpet.com



ENVIRONMENTAL PRODUCT DECLARATION

TUNTEX™



Modular Carpet Product
Recyclable Tuntex™ Commercial Duraback™

According to ISO 14025
and ISO 21930

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL ENVIRONMENT 333 PFINGSTEN ROAD NORTHBROOK, IL 60611	HTTPS://WWW.UL.COM/ HTTPS://SPOT.UL.COM/
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	PROGRAM OPERATOR RULES V2.7 2022	
MANUFACTURER NAME AND ADDRESS	Yangzhou Tuntex Fiber Technologies Co., Ltd. No.88 Zhongjiang Road., Yizheng Automotive Industrial Park, Yangzhou City, Yizheng, Jangsu Province, China	
DECLARATION NUMBER	4791921063.101.1	
DECLARED PRODUCT & FUNCTIONAL UNIT OR DECLARED UNIT	Tuntex Modular Carpet Product Recyclable Tuntex™ Commercial Duraback™ F.U. 1 m ²	
REFERENCE PCR AND VERSION NUMBER	PCR for Building-Related Products and Services - Part A: Calculation Rules for LCA and Requirements, (UL Environment, V3.2) Part B: Flooring EPD Requirements UL 10010-7 v2.0 September 2018	
DESCRIPTION OF PRODUCT APPLICATION/USE	Modular Carpet Product Floor Covering	
PRODUCT RSL DESCRIPTION (IF APPL.)	15 years	
MARKETS OF APPLICABILITY	Global	
DATE OF ISSUE	May 13, 2026	
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	January 2025 to December 2025 (1 year)	
LCA SOFTWARE & VERSION NUMBER	SimaPro 10.4.0	
LCI DATABASE(S) & VERSION NUMBER	ecoinvent 3.12	
LCIA METHODOLOGY & VERSION NUMBER	EN15804:2012+A2:2019 v1.05	

The PCR review was conducted by:

UL environment

PCR Peer Review Panel

Jack Geibig, Chair

This declaration was independently verified in accordance with ISO 14025: 2006.

INTERNAL

EXTERNAL

Ethan Chen, UL Solutions

This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:

Jiliu WU, CIRS Group **CIRS**

This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:

Kun Chen, UL Solutions

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.



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According to ISO 14025
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1. Product Definition and Information

1.1. Description of Company/Organization

Since 1968, Tuntex has been a pioneer in carpet manufacturing, building over five decades of expertise into a fully vertical production system. By developing and producing our own yarns in-house, we maintain full control over quality, performance, and environmental responsibility.

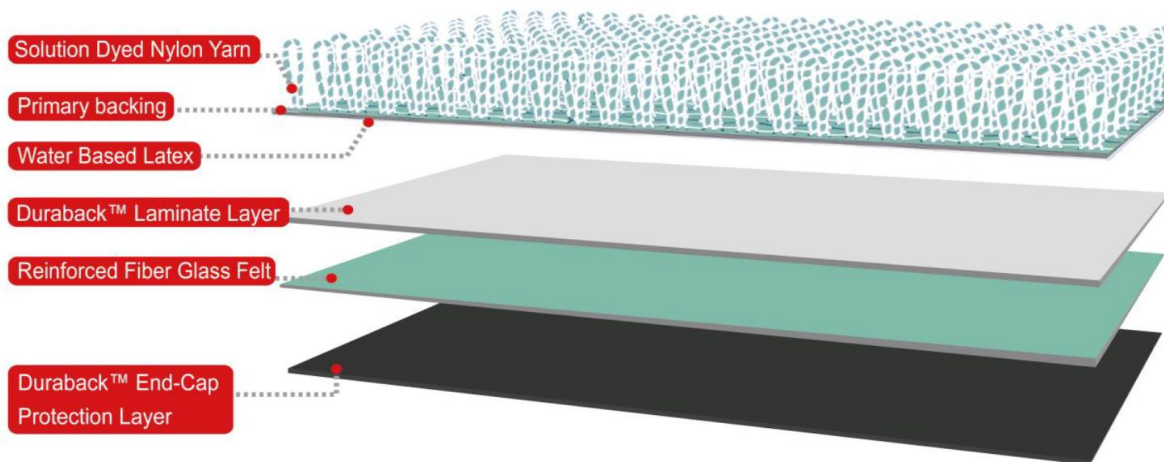
Supplying products to over 22 countries, Tuntex is recognized globally for its commitment to sustainable and circular manufacturing. Through ongoing innovation, we repurpose production waste into new materials, reduce resource consumption, and advance greener processes across our facilities. Our efforts are supported by third-party certifying bodies such as USCRI and SGBC, reflecting our dedication to measurable environmental stewardship.

As we continue to grow internationally, Tuntex remains committed to delivering durable, high-performance flooring while leading the industry toward a more sustainable future.

For more information visit www.tuntex-carpet.com

1.2. Product Description

Product Identification



Recyclable Tuntex™ Commercial Duraback™ is an innovative backing system used in Tuntex modular carpets, designed to deliver optimal performance while ensuring low TVOC emissions and enhanced sustainability.

Fully recyclable at the end of its lifecycle, Tuntex Duraback can be processed through the separation of face yarn and backing layer, allowing it to be repurposed into other nylon-based consumer products. Additionally, it supports a closed-loop recycling system, enabling the reproduction of vinyl backing for new carpet products.

This advanced solution helps minimize environmental impact while promoting circular material use.





Product Specification

This product is covered by UNSPSC code 30161700 and CSI MasterFormat code 09 60 00 - Flooring.

1.3. Application

Tuntex Modular Carpet Product is designed to be used in constructions as decorative carpets.

1.4. Declaration of Methodological Framework

This LCA is a cradle-to-grave study. This EPD covers the entire life cycle of the product from cradle to grave (modules A1-D) excluding modules for which there are no inputs/outputs. A summary of the life cycle stages can be found in Table 12.

The reference service life is 15 years and is only applicable if all manufacturing guidelines are followed regarding site-selection, installation, and maintenance.

The cut-off criteria are described in Section 2.4 and allocation procedures are described in Section 2.8. No known flows are deliberately excluded from this EPD.

1.5. Technical Requirements

The following technical data describe the product undergoing life cycle assessment.

Table 1. technical data

NAME	VALUE	UNIT	NOTE
Yarn type	Nylon	-	Virgin
Primary backing type	PET based	-	PET non-woven fabric
Secondary backing type	PVC based	-	Non-Woven Recyclable TUNTEX™ Commercial Duraback™
Total thickness	6.6	mm	-
Product weight	4996	g/m2	-
Surface pile thickness	4.0	mm	-
Surface pile weight	540	g/m2	-

1.6. Properties of Declared Product as Delivered

The products are packaged with carton and pallet for shipment.

1.7. Material Composition

The material that make up the product are indicated in Table 2.

Table 2. product composition

COMPONENT	MATERIAL	MASS %
Face	Nylon 6	8.5-12%
Backing	PET	2.1%





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Backing Latex	EVA	1.7-1.9%
Backing	PVC	12-18%
Backing	Glass fibre	0.7%
Backing Plasticizer	DOTP	10-11%
Backing	Calcium carbonate	60-64%
Backing	Calcium oxide	0.1-0.2%
Backing	Pigment	0.1%

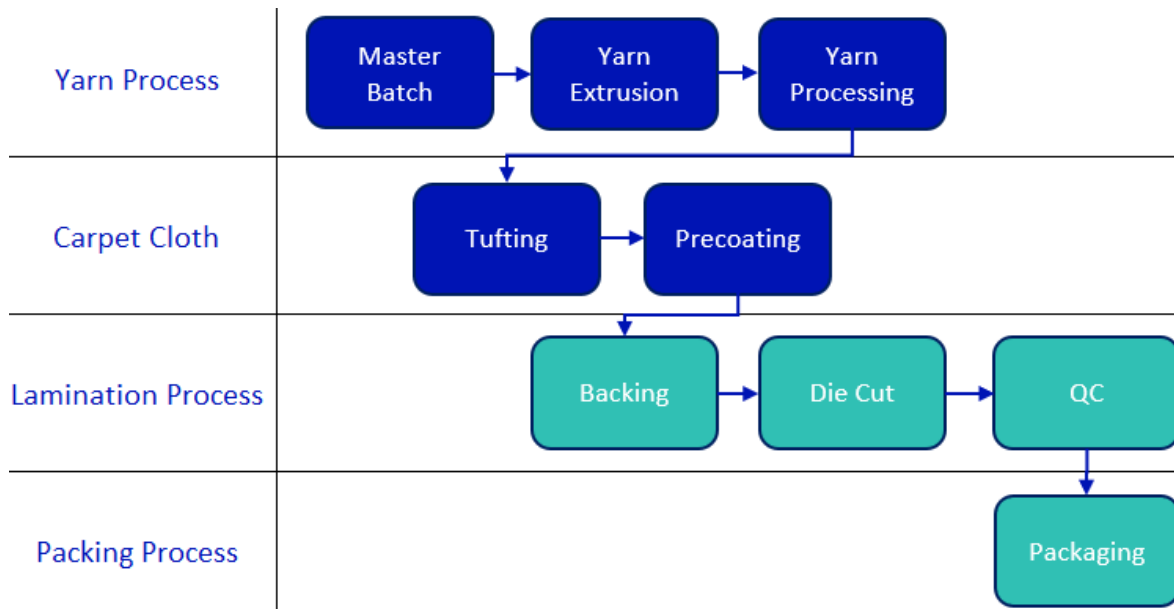
1.8. Manufacturing

The upstream main component suppliers of the carpet are all from China.

Manufacturing site of the carpet is located at No.88 Zhongjiang Road., Yizheng Automotive Industrial Park, Yangzhou City, Yizheng, Jangsu Province, China.

The final products are transported to and distributed for use to global market.

Flow Diagram



1.9. Packaging

Packaging utilized in the shipment of the product is described in Table 3.

Table 3. packaging

PACKAGING TYPE	MATERIAL	AMOUNT (KG)
Carton	Wood	0.25
Pallet	Wood	0.26





1.10. Transportation

Transport of raw materials from supplier to the manufacturing facility by truck or ship is included in the model, the transportation distance of supplier comes from e-map tool.

1.11. Product Installation

Adhesive is used during the installation of carpet products. All waste generated during installation, including a 1.5% of product loss and packaging waste, is assumed to be incinerated.

1.12. Use

Once installation is complete, maintenance and replacement are required during the use stages.

In this study, it was assumed that vacuum cleaning with the equipment would be conducted weekly and deep cleaning would be annual.

1.13. Reference Service Life and Estimated Building Service Life

The Tuntex Modular Carpet Product would be replaced once per RSL (15 years), during the estimated building service life (75 years), 4 replacement are required. It is assumed 90% of the waste would be transported to recycling and 10% to landfill.

1.14. Reuse, Recycling, and Energy Recovery

The product could be processed through the separation of face yarn and backing layer, allowing it to be repurposed into other nylon-based consumer products. Additionally, it supports a closed-loop recycling system, enabling the reproduction of vinyl backing for new carpet products.

Therefore, the fate of Tuntex Modular Carpet Product at the EoL is assumed to be 90% recycling and 10% landfill according to the weight of surface and backing.

1.15. Disposal

For this study, it is assumed that at the end of life of the product, 10% is disposed through landfill, 90% is recycled.

2. Life Cycle Assessment Background Information

2.1. Functional or Declared Unit

Per the PCR, the functional unit is 1 m² of floor covering over the reference service life of 15 years, as indicated in Table 4.

Table 4. functional unit

NAME	VALUE	UNIT
Functional unit	1.0	m ²
Mass	4.996	kg





2.2. System Boundary

This EPD is considered cradle-to-grave. The following modules are included and summarized in Table 5:

Table 5. system boundary

MODULE	DESCRIPTION	SUMMARY OF INCLUDED ELEMENTS
A1	Product stage: raw material supply	Face layer is self-modelled in SimaPro based on site-specific data. Other raw Material sourcing and processing as defined by secondary data.
A2	Product stage: transportation	Shipping from supplier to manufacturing site. Transport distance is from e-map.
A3	Product stage: manufacturing	Energy, water, waste and material inputs required for manufacturing products. Packaging materials and manufacturing waste are included as well.
A4	Construction process stage: transport	Shipping from manufacturing site to installation site. Transport distance is from e-map.
A5	Construction process stage: installation	Installation adhesives, installation waste and packaging material waste.
B2	Use stage: maintenance	Cleaning energy, water, and materials, including refinishing the product.
B4	Use stage: replacement	Total materials and energy required to manufacture a replacement. Includes EoL treatment for replacements.
C2	End-of-life: transport	Shipping from project site to treatment. Transport distance is default value.
C3	End-of-life: waste processing	Waste processing of 90% waste recycling. Impacts modeled based on secondary data.
C4	End-of-life: disposal	Assumes 10% products are sent to landfill. Impacts modeled based on secondary data.

2.3. Estimates and Assumptions

The raw materials, packaging materials, energy consumption, and waste generation during manufacturing stage are mass allocated based on the total output of the products.

The factory has its own rooftop photovoltaic system that directly supplies power for production. Therefore, the power structure is modeled based on the weighted average of the total photovoltaic power generation and the purchased electricity for the entire year of 2025.

2.4. Cut-off Criteria

All inputs in which data was available were included. 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.

2.5. Data Sources

Primary data of product production were collected by facility personnel and from utility bills during January 2025 to December 2025. Face layer is self-modelled in SimaPro based on site-specific data. Since primary data of other raw material did not available in this study, secondary data for raw material production was utilized from ecoinvent database v3.12.

2.6. Data Quality





Temporal Coverage

The primary data provided by the manufacturer represent all information from January 2025 to December 2025. Using this data meets the PCR requirements. Time coverage of this data is considered very good.

The products considered in the LCA report are produced in one single manufacturing site and variations issue for sites is not relevant.

The data which is used to carry out the LCA calculations contains >90% specific data and less 10% generic data.

Geographical Coverage

The geographical scope of product manufacturing is Jiangsu, China. All production primary data were collected from the manufacturer. The geographic coverage of production primary data is considered very good.

The usage stage of the product was chosen to be global, since the final products are distributed for use mainly in Asia, Oceania, America and Africa. Among them, Asia has the highest export volume of 55%.

Technological Coverage

Primary data provided by the manufacturer is specific to the technology that Tuntex uses in manufacturing their product. It is site-specific and considered of good quality.

Dataset

Background data about materials, production processes, transport activities and EoL treatments are retrieved from the ecoinvent v3.12 LCI library. The ecoinvent library is the most comprehensive LCI library available, with information about data quality and representativeness.

Some auxiliary materials do not have completely matching datasets, so proxy data were used, which had an impact of less than 5% on the overall A1-A3 results.

The electricity mix of the networks providing electricity in manufacturing is modelled with ecoinvent v3.12. datasets representing low-voltage electricity in State Grid East China Branch.

- *Electricity, low voltage {CN-ECGC}| market for electricity, low voltage | Cut-off, U*

For factory own rooftop photovoltaic system.

- *Electricity, low voltage {CN-JS}| electricity production, photovoltaic, 3kWp slanted-roof installation, single-Si, panel, mounted | Cut-off, U*

For maintenance, the market dataset for India average is used.

- *Electricity, low voltage {GLO}| market group for electricity, low voltage | Cut-off, U*

2.7. Period under Review

The period under review is from January 2025 to December 2025.

2.8. Allocation

General principles of allocation were based on ISO 14040/44. Where possible, allocation was avoided. When allocation was necessary it was done on a physical mass basis.

The unit amount of auxiliary material input, energy consumption and waste output were got by mass allocation from the total usage and production of the factory.





2.9. Comparability (Optional)

N/A

3. Life Cycle Assessment Scenarios

Table 6. Transport to the building site (A4)

NAME	VALUE	UNIT
Fuel type	Diesel	-
Vehicle type	Lorry and ship	-
Transport distance (site to port) land	40	km
Transport distance (overseas) sea	8475 (average)	km
Transport distance (port to distribution center) land	400	km
Transport distance (to installation) land	250	km

Table 7. Installation into the building (A5)

NAME	VALUE	UNIT
Ancillary materials (adhesive)	0.160	kg
Net freshwater consumption specified by water source and fate (amount evaporated, amount disposed to sewer)	0	m ³
Other resources	0	kg
Electricity consumption	0	kWh
Other energy carriers	0	MJ
Product loss per functional unit	0.075	kg
Waste materials at the construction site before waste processing, generated by product installation	0.586	kg
Output materials resulting from on-site waste processing (specified by route; e.g. for recycling, energy recovery and/or disposal)	0	kg
Biogenic carbon contained in packaging	0.937	kg CO ₂ e
Direct emissions to ambient air, soil and water	0	kg
VOC content	N/A	µg/m ³

Table 8. Reference Service Life

NAME	VALUE	UNIT
RSL	15	years

Table 9. Maintenance (B2)

NAME	VALUE	UNIT
Maintenance cycle during product RSL	15	Number / RSL
Maintenance cycle during building ESL	75	Number / ESL
Net freshwater consumption, tap water (disposed to sewer)	0.015	m ³ / 15 years
Ancillary materials (cleaning agent)	0.075	kg / 15 years





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Other resources	-	kg
Energy input, low voltage	9.777	kWh / 15 years
Other energy carriers	-	kWh
Power output of equipment	1.5	kW
Waste materials from maintenance	-	kg
Direct emissions to ambient air, soil and water	-	kg
Further assumptions for scenario development	Vacuuming once per week, deep cleaning once per year	

Table 10. Replacement (B4)

NAME	VALUE	UNIT
Reference service life	15	Years
Replacement cycle	4	(ESL / RSL) - 1
Energy input	-	kWh
Net freshwater consumption	-	m ³
Ancillary materials	-	kg
Replacement of worn parts	-	kg
Direct emissions to ambient air, soil and water	0	kg
Further assumptions for scenario development	-	As appropriate

Table 11. End of life (C1-C4)

NAME	VALUE	UNIT
Assumptions for scenario development	Product disposed of either with underlying floor or manually removed via scraping	
Collection process	Collected separately	4.996 kg
	Collected with mixed construction waste	0 kg
Recovery	Reuse	0 kg
	Recycling	4.4964 kg
	Landfill	0.4996 kg
	Incineration	0 kg
	Incineration with energy recovery	0 kg
	Energy conversion efficiency rate	-
Disposal	Product or material for final deposition	0.4996 kg
Removals of biogenic carbon (excluding packaging)	-	-





4. Life Cycle Assessment Results

Table 12. 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	
cradle to grave	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	ND

The system boundary is from cradle to grave. All the modules except module D are included.

4.1. Life Cycle Impact Assessment Results (15 years product RSL and 75 years estimated building ESL)

Table 13. Mandatory parameters describing environmental impacts (NS-EN15804:2012+A2:2019)

INDICATORS	UNIT	A1-A3	A4	A5	B2	B4	C2	C3	C4
GWP-total	kg CO2 eq.	2.92E+01	2.78E+00	1.66E+00	3.48E+01	1.55E+02	3.67E-01	4.60E+00	4.61E-02
GWP-fossil	kg CO2 eq.	2.98E+01	2.78E+00	9.07E-01	3.48E+01	1.54E+02	3.67E-01	4.56E+00	4.61E-02
GWP-biogenic	kg CO2 eq.	-6.42E-01	1.04E-03	7.48E-01	-2.01E-01	5.84E-01	1.62E-04	3.87E-02	2.27E-05
GWP-LULUC	kg CO2 eq.	2.27E-02	1.51E-03	5.60E-04	1.64E-01	1.14E-01	1.33E-04	3.54E-03	3.33E-06
ODP	kg CFC11 eq.	3.99E-05	3.73E-08	3.14E-08	3.28E-07	1.60E-04	8.34E-09	2.63E-08	1.48E-10
AP	mol H+ eq.	1.05E-01	2.02E-02	3.07E-03	1.88E-01	5.54E-01	1.88E-03	8.08E-03	3.92E-05
EP-freshwater	kg P eq.	3.97E-03	3.03E-04	1.86E-04	1.73E-02	2.31E-02	3.08E-05	1.27E-03	5.85E-07
EP-marine	kg N eq.	2.46E-02	7.96E-03	7.02E-04	3.81E-02	1.50E-01	7.75E-04	2.39E-03	1.03E-03
EP-terrestrial	mol N eq.	2.33E-01	8.73E-02	7.23E-03	3.69E-01	1.41E+00	8.45E-03	1.45E-02	1.63E-04
POCP	kg NMVOC eq.	9.11E-02	2.60E-02	2.89E-03	1.08E-01	5.10E-01	2.80E-03	4.73E-03	6.72E-05
ADP-M&M	kg Sb eq.	1.99E-04	1.10E-05	6.67E-06	2.20E-04	9.43E-04	1.71E-06	1.77E-05	1.03E-08
ADP-fossil	MJ	3.84E+02	3.70E+01	1.22E+01	4.68E+02	1.87E+03	5.15E+00	2.85E+01	1.22E-01
WDP	m³	8.42E+00	1.59E-01	1.37E-01	5.75E+00	3.57E+01	2.00E-02	2.57E-01	-7.96E-02

GWP-fossil: Global Warming Potential fossil fuels

GWP-biogenic: Global Warming Potential biogenic

GWP-LULUC: Global Warming Potential land use and land use change





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- GWP-total: Global Warming Potential
- ODP: Depletion potential of the stratospheric ozone layer
- AP: Acidification potential, Accumulated Exceedance
- EP-freshwater: Eutrophication potential, fraction of nutrients reaching freshwater end compartment.
- EP-marine: Eutrophication potential, fraction of nutrients reaching freshwater end compartment.
- EP-terrestrial: Eutrophication potential, Accumulated Exceedance
- POCP: Formation potential of tropospheric ozone
- ADP-M&M: Abiotic depletion potential for non-fossil resources (minerals and metals)
- ADP-fossil: Abiotic depletion potential for fossil resources
- WDP: Water deprivation potential, deprivation weighted water consumption

Table 14. Additional parameter (GWP-GHG) describing environmental impacts (NS-EN15804:2012+A2:2019)

INDICATORS	UNIT	A1-A3	A4	A5	B2	B4	C2	C3	C4
GWP-GHG	kg CO2 eq.	2.98E+01	2.78E+00	9.08E-01	3.50E+01	1.54E+02	3.67E-01	4.56E+00	4.61E-02

This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero.

Table 15. Additional parameters describing environmental impacts (NS-EN15804:2012+A2:2019)

INDICATORS	UNIT	A1-A3	A4	A5	B2	B4	C2	C3	C4
PM	Disease incidence	1.44E-06	1.70E-07	3.47E-08	1.63E-06	6.85E-06	2.55E-08	3.40E-08	8.63E-10
IRP	kBq U235 eq.	9.14E-01	3.15E-02	2.75E-02	4.54E+00	6.73E+00	8.81E-03	7.05E-01	9.84E-05
ETP-fw	CTUe	1.37E+02	9.51E+00	1.34E+01	1.33E+02	6.92E+02	1.00E+00	1.01E+01	1.68E+00
HTP-c	CTUh	1.14E-08	8.25E-10	8.40E-10	7.02E-09	5.60E-08	1.23E-10	8.14E-10	3.02E-12
HTP-nc	CTUh	2.22E-07	2.40E-08	8.31E-09	3.40E-07	1.15E-06	3.72E-09	2.83E-08	5.36E-10
SQP	Dimensionless	1.18E+02	1.36E+01	2.40E+00	1.02E+02	5.76E+02	2.12E+00	7.71E+00	2.88E-01

- PM: Particulate matter emissions
- IRP: Ionising radiation, human health
- ETP-fw: Ecotoxicity (freshwater)
- HTP-c: Human toxicity, cancer effects
- HTP-nc: Human toxicity, non-cancer effects
- SQP: Land use related impacts / soil quality

4.2. Life Cycle Inventory Results

Table 16. Resource Use





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PARAMETER	A1-A3	A4	A5	B2	B4	C2	C3	C4
RPR _E [MJ, LHV]	1.20E+01	3.05E-01	7.16E-03	3.93E+01	6.97E+01	5.67E-02	5.09E+00	8.16E-04
RPR _M [MJ, LHV]	7.78E+00	0.00E+00	2.67E-01	5.52E+00	3.22E+01	0.00E+00	0.00E+00	0.00E+00
RPR _T [MJ, LHV]	1.98E+01	3.05E-01	2.74E-01	4.48E+01	1.02E+02	5.67E-02	5.09E+00	8.16E-04
NRPR _E [MJ, LHV]	2.69E+01	3.70E+01	7.35E-01	4.48E+02	3.94E+02	5.15E+00	2.85E+01	1.22E-01
NRPR _M [MJ, LHV]	3.57E+02	0.00E+00	1.14E+01	2.02E+01	1.48E+03	0.00E+00	0.00E+00	0.00E+00
NRPR _T [MJ, LHV]	3.84E+02	3.70E+01	1.22E+01	4.68E+02	1.87E+03	5.15E+00	2.85E+01	1.22E-01
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
RSF [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW [m ³]	7.32E+00	1.59E-01	1.26E-01	7.50E-02	3.13E+01	1.92E-02	2.76E-01	-7.32E-02

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 (primary energy and primary energy resources used as materials)

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 (primary energy and primary energy resources used as materials)

SM: Use of secondary material

RSF: Use of renewable secondary fuels

NRSF: Use of non-renewable secondary fuels

FW: Net use of fresh water

Table 17. Output Flows and Waste Categories

PARAMETER	A1-A3	A4	A5	B2	B4	C2	C3	C4
HWD [kg]	3.46E-03	2.42E-04	2.00E-04	1.69E-03	1.62E-02	3.57E-05	1.00E-04	8.48E-07
NHWD [kg]	1.61E+00	9.43E-01	9.11E-02	1.73E+00	1.57E+01	1.59E-01	6.19E-01	5.00E-01
RWD [kg]	2.23E-04	7.55E-06	6.91E-06	1.10E-03	1.67E-03	2.15E-06	1.78E-04	2.35E-08
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]	4.45E-01	0.00E+00	0.00E+00	0.00E+00	1.80E+01	0.00E+00	4.50E+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
ETE [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

HWD: Hazardous waste disposed





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NHWD: Non-hazardous waste disposed

RWD: Radioactive waste disposed

*The characteristics that render waste hazardous are described in existing applicable legislation, e.g. in the European Waste Framework Directive

CRU: Components for re-use

MFR: Materials for recycling

MER: Materials for energy recovery

EEE: Exported electric energy

ETE: Exported thermal energy

*The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

5. LCA Interpretation

The replacement stage is normally the most contributing stage to the overall environmental impact of the declared unit, 1m² of Tuntex Modular Carpet Product, since 4 replacement are required during the estimated building service life (75 years).

Using GWP-total as the indicator, replacement stage (B4) contributes 67.8% for the entire lifecycle, product stage (A1-A3) contributes 12.8%. The maintenance (B2) accounts for the second largest proportion 15.2% due to its vacuuming equipment electricity consumption.

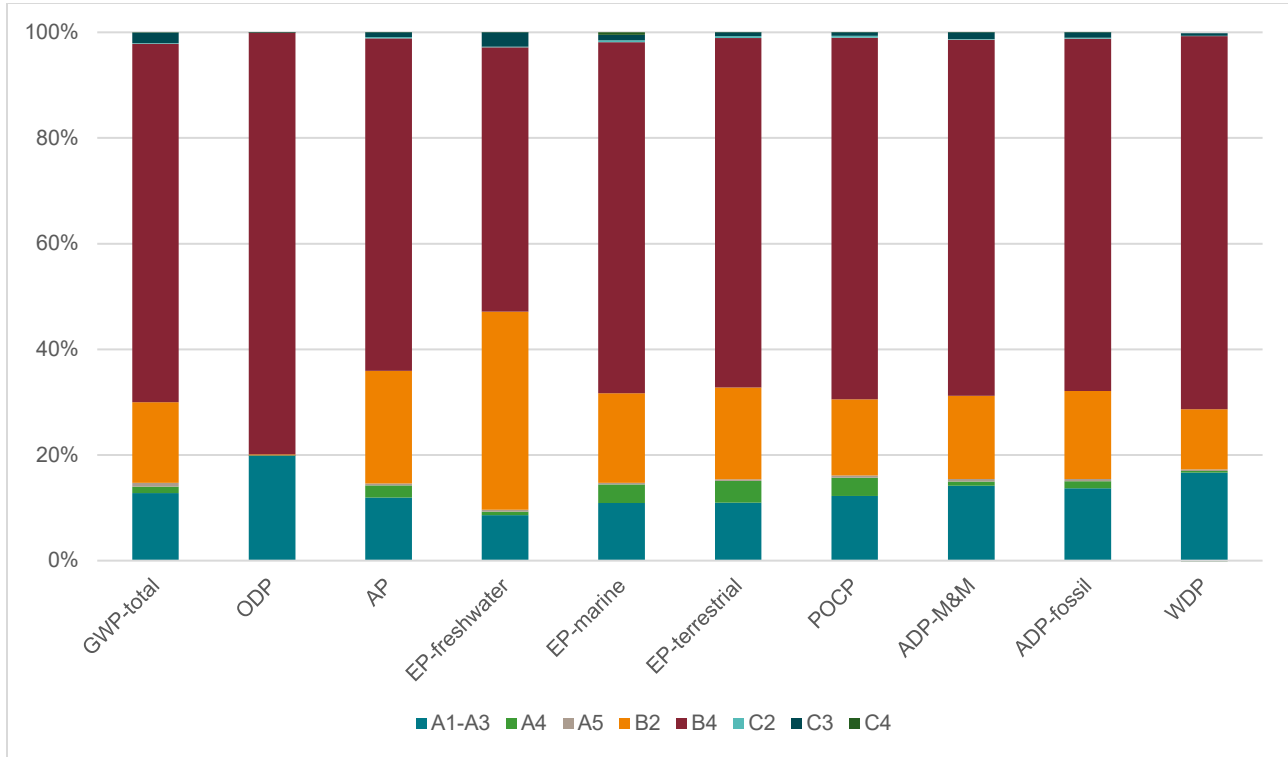


Figure 1: Contribution analysis from A to C

It is important to identify which component in the raw materials has the greatest impact for product stage (A1-A3). Using GWP-total as the indicator, A1-A3 has a 29.2 kg CO₂e / FU emission, surface layer has the largest value of 14.6 kg CO₂e, while calcium carbonate, DOTP and PVC also have significant influence on the result.

Table 18: GWP-total contribution analysis from A1 to A3

COMPONENTS	UNIT	VALUE	PERCENTAGE
Surface layer (A1)	kg CO ₂ e	14.6	50.2%
Calcium carbonate (A1)	kg CO ₂ e	5.9	20.1%
DOTP (A1)	kg CO ₂ e	2.8	9.8%
PVC (A1)	kg CO ₂ e	2.7	9.1%
Others (A1)	kg CO ₂ e	1.1	3.9%
Transportation (A2)	kg CO ₂ e	0.2	0.1%
Production (A3)	kg CO ₂ e	1.8	6.1%
Total	kg CO ₂ e	29.2	100%





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6. Additional Environmental Information

6.1. Certifications

The production site involved in the LCA study is ISO 9001, ISO 14001 and ISO 45001 certified.

7. References

UL PCR Guidance for Building-Related Products and Services Part B Flooring EPD Requirements

UL PCR for Building Related Products and Services, Part A Life Cycle Assessment Calculation Rules and Report Requirements

UL Environment General Program Instructions March 2022, version 2.7

EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services

ISO 14044:2006+A1:2018+A2:2020(2020) Environmental management - Life cycle assessment - Requirements and guidelines

ISO 14025:2006 Environmental labels and declarations

ecoinvent Database, Version 3.12

SimaPro Software, Version 10.4.0