

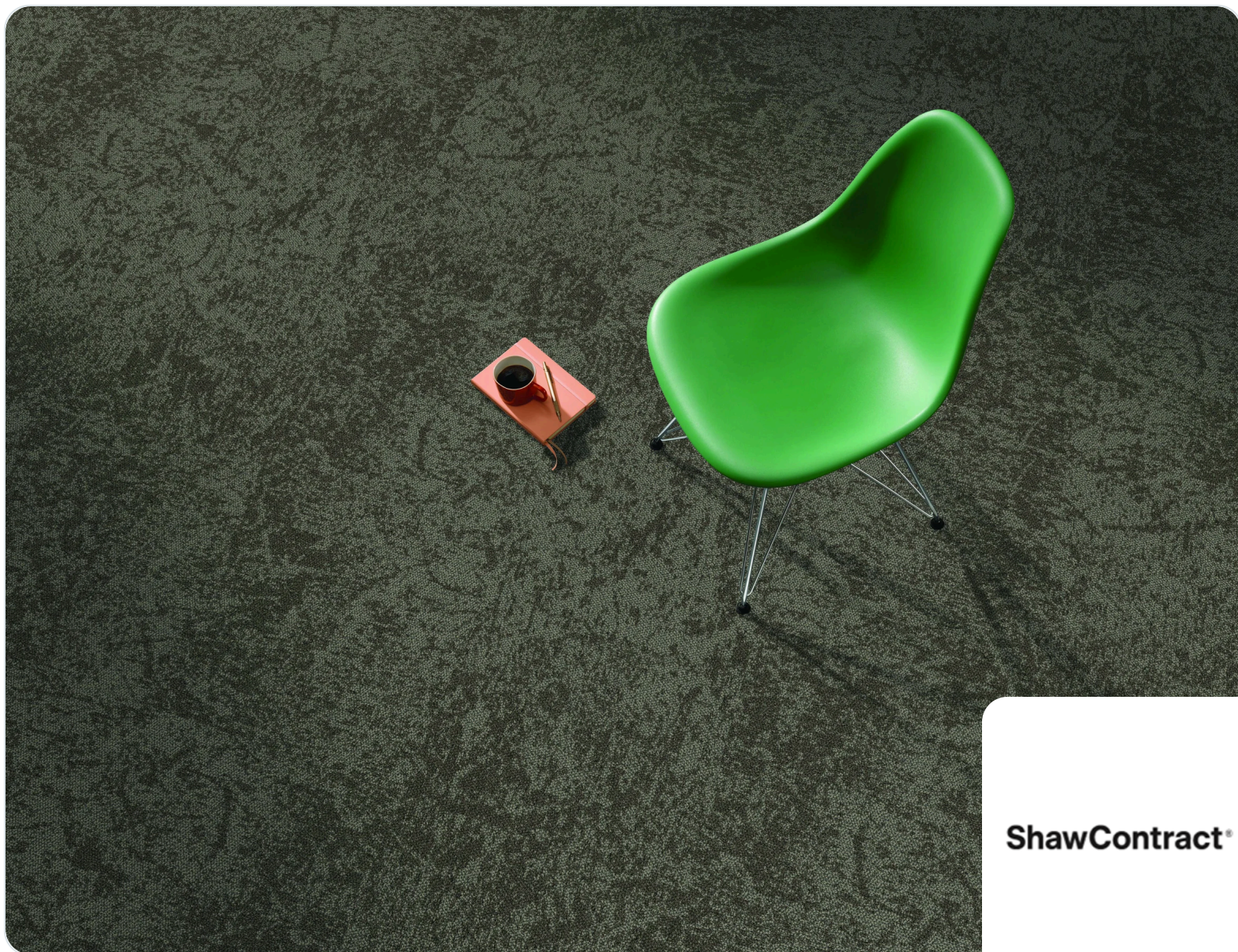


Environmental Product Declaration

Program Operator: Smart EPD®

www.smartepd.com

IN ACCORDANCE WITH ISO 14025:2006 AND EN 15804:2012+A2:2019



ShawContract®

SmartEPD-2026-157-1092-01

STS Polyolefin with 100% Post-Industrial Face Fibre

Date of Issue

Oct 07, 2026

Expiration Date

Oct 07, 2031

Last Updated

Oct 07, 2026



Refer to the EPD Library at www.smartepd.com for the latest EPD listing information

General Information

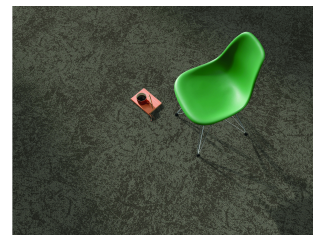
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Product Name:	STS Polyolefin with 100% Post-Industrial Face Fibre
Functional Unit:	1 m2 of installed STS Premium Loop Pile Tufted, Polyolefin Backed Carpet Tile
Declaration Number:	SmartEPD-2026-157-1092-01
Date of Issue:	October 07, 2026
Expiration:	October 07, 2031
Last updated:	October 07, 2026
EPD Scope:	Cradle to grave A1 - A3, A4, A5, B1 - B7, C1 - C4, D
Market(s) of Applicability:	Europe

General Organization Information

Shaw Industries Group, Inc. (Shaw) offers a diverse portfolio of carpet, resilient, hardwood, tile & stone, and laminate flooring products, synthetic turf, and other specialty items for residential and commercial markets worldwide via its brands Anderson Tuflex™, COREtec®, Patcraft®, Philadelphia Commercial®, Shaw Contract®, Shaw Floors™, Shaw Sports Turf®, Southwest Greens®, and more. We are a wholly owned subsidiary of Berkshire Hathaway, Inc. with more than 20,000 associates worldwide. Shaw is headquartered in Dalton, Georgia, with salespeople and/or offices located throughout the U.S., as well as globally.

Further information can be found at: <https://www.shawcontract.com/en-gb>

Limitations, Liability and Ownership

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 – 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. 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. Therefore, this EPD may not be used when comparing flooring products that are not construction works energy use phase.

Product Category Rule: This declaration is based on PCR Floor coverings, 01.08.2021 (PCR checked and approved by the SVR) by IBU – Institut Bauen und Umwelt e.V., Hegelplatz 1, 10117 Berlin, Germany (IBU 2021a, 2021b, 2022).

Reference Standards

Standard(s):	ISO 14025:2006 and EN 15804:2012+A2:2019
Core PCR:	IBU PCR for Building-Related Products and Services Part A v1.4 Date of issue: April 15, 2024
Sub-category PCR:	IBU PCR Part B: Requirements on the EPD for Floor Coverings v.5 Date of issue: June 20, 2023 Valid until: June 20, 2028
Sub-category PCR review panel:	 Contact Smart EPD for more information.
General Program Instructions:	 Smart EPD General Program Instructions v.2.0, March 2025

Verification Information

LCA Author/Creator:	 Eleazer P. Resurreccion, PhD  Shaw Industries Group, Inc.  eleazer.resurreccion@shawinc.com
EPD Program Operator:	 Smart EPD  info@smartepd.com  www.smartepd.com  585 Grove St., Ste. 145, Herndon, VA 20170, USA
Verification:	Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071:  Beth Cassese  Horizon LCA  bcassese@horizonlca.com Independent external verification of EPD, according to ISO 14025 and reference PCR(s):  Beth Cassese  Horizon LCA  bcassese@horizonlca.com

External

External

Product Information

Functional Unit:	1 m2 of installed STS Premium Loop Pile Tufted, Polyolefin Backed Carpet Tile
Mass:	3.034 kg
Reference Service Life:	10 Years
Product Specificity:	 Product Average  Product Specific

Functional unit: The declaration refers to the functional unit of 1 m² of installed STS Premium Loop Pile Tufted, Polyolefin Backed Carpet Tile.

Reference Service Life: When properly installed as a commercial floor covering, STS Premium Loop Pile Tufted, Polyolefin Backed Carpet Tile with 100% recycled Nylon face fibre has a reference service life of 10 years. This carpet tile product comes with a 10-year warranty, subject only to installation and

maintenance being carried out in accordance with the manufacturer's guidelines (Shaw Contract n.d.).

Product Description

This EPD applies to STS Premium Loop Pile Tufted, Polyolefin Backed Carpet Tile with 100% recycled Nylon face fibre.

The face fibre is made of STS 100% recycled solution-dyed Nylon that is tufted into a primary backing sheet, then latex is added to anchor the fibre in place to assure maximum tuft bind. The polyolefin backing system is then applied to create a durable flooring solution for use in varied applications. The carpet tiles are then die-cut and packaged for distribution.

This STS Premium Loop Pile Tufted, Polyolefin Backed Carpet Tile is a commercial carpet tile, suitable for use in all commercial settings as a floor covering, in accordance with manufacturer guidelines. It has a life span of 10 years and comes with a 10-year wear warranty (subject only to installation and maintenance being carried out in line with manufacturer's guidelines). The product meets both internal and external performance standards including those established in the EU under EN 1307 (CEN 2014) and EN 10874 (CEN 2009) for a product suitable for heavy and general commercial installations.

STS Premium Loop Pile Tufted, Polyolefin Backed Carpet Tile comes in various styles. All styles have the same raw material formulation but different designs. This product is manufactured in the UK in ISO 9001- and ISO 14001-certified facilities, or equivalent (ISO 2015b, 2015a). Raw materials are responsibly sourced through supply chain, chemical and waste management programs. No co-products are produced in the manufacturing of these premium carpet tiles.

Further information can be found at: <https://www.shawcontract.com/en-gb>

Product Specifications

Product Classification Codes:

EC3 - Finishes -> Flooring -> Carpet

Product Composition Diagram

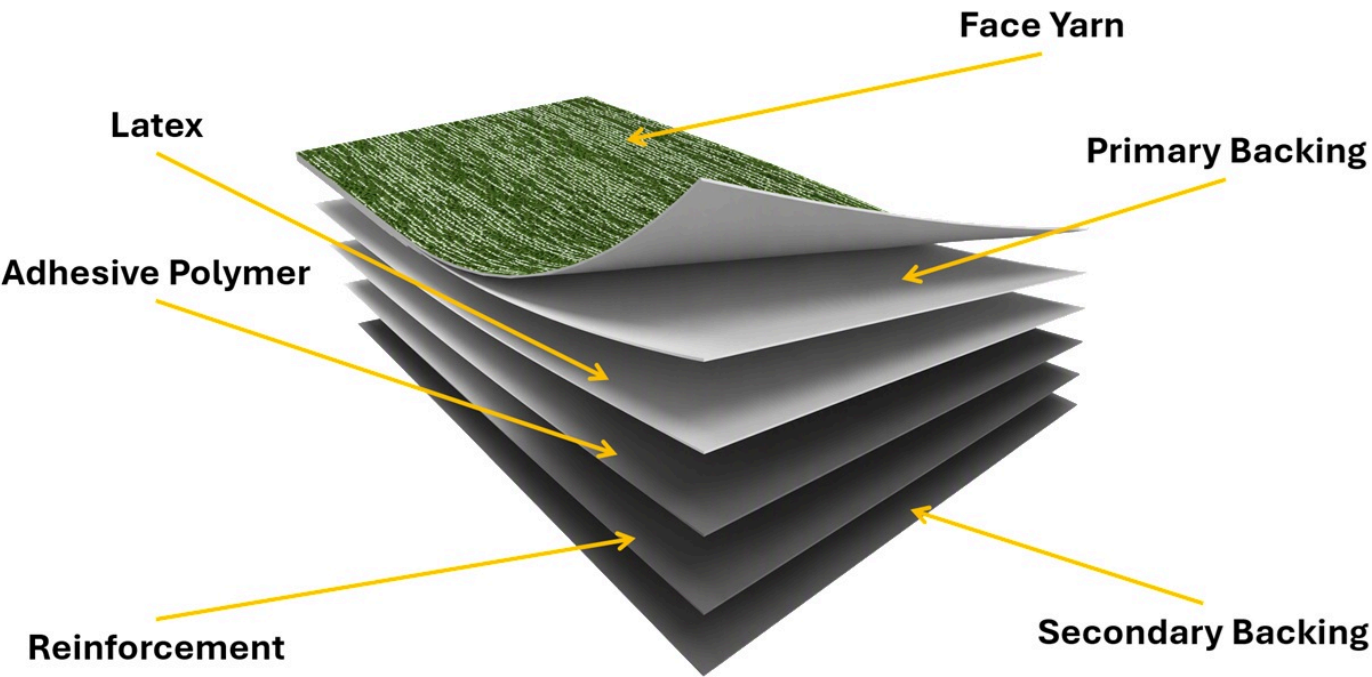


Table 1. Material Composition

Material/Component Category	Origin	% Mass
Nylon 6 Face Fibre (Solution-dyed, 100% PI)	US	25%
Polyester Primary Backing	UK	4%
Calcium Carbonate (with recycled content)	US, UK	39%
Polypropylene	US	16%
Fiberglass Reinforcement	UK	1%
Anti-stat	UK	0.1%
Proprietary Raw Materials	US, UK	~15%



Packaging Material	Origin	kg Mass
Cardboard	UK	0.1366
Wood	UK	0.0907
Plastic	UK	0.0006

Biogenic Carbon Content	kg C per m2
Biogenic carbon content in product	0
Biogenic carbon content in accompanying packaging	0.1456

Hazardous Materials
None

EPD Data Specificity

- Primary Data Year:2025
- Manufacturing Specificity:

✗ Industry Average

✗ Manufacturer Average

✓ Facility Specific

Averaging:
Averaging was not conducted for this EPD.

Table 2. System Boundary

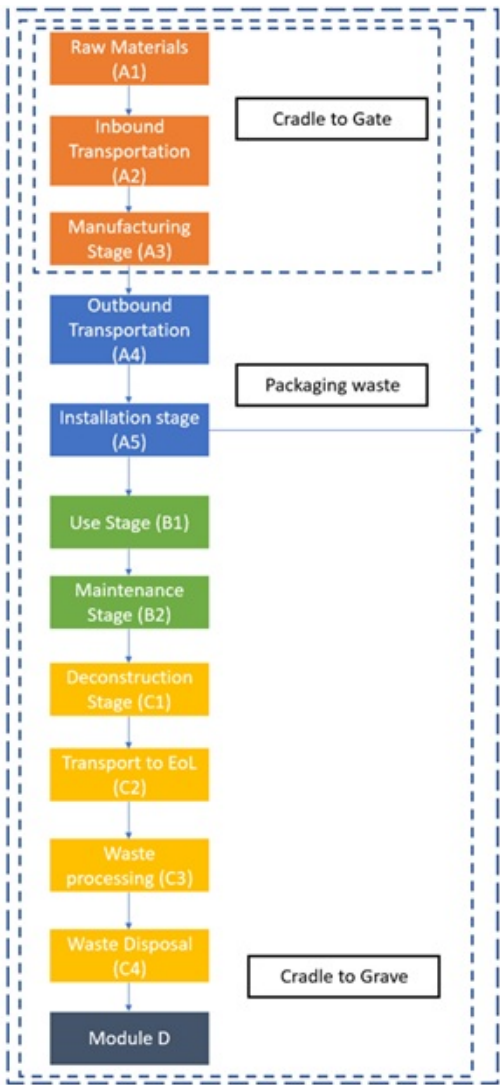
Production	A1	Raw material supply	✓
	A2	Transport	✓
	A3	Manufacturing	✓
Construction	A4	Transport to site	✓
	A5	Assembly / Install	✓



Use	B1	Use	✓
	B2	Maintenance	✓
	B3	Repair	✓
	B4	Replacement	✓
	B5	Refurbishment	✓
	B6	Operational Energy Use	✓
	B7	Operational Water Use	✓
End of Life	C1	Deconstruction	✓
	C2	Transport	✓
	C3	Waste Processing	✓
	C4	Disposal	✓
Benefits & Loads Beyond System Boundary	D	Recycling, Reuse Recovery Potential	✓

Note:
ND = Module not declared

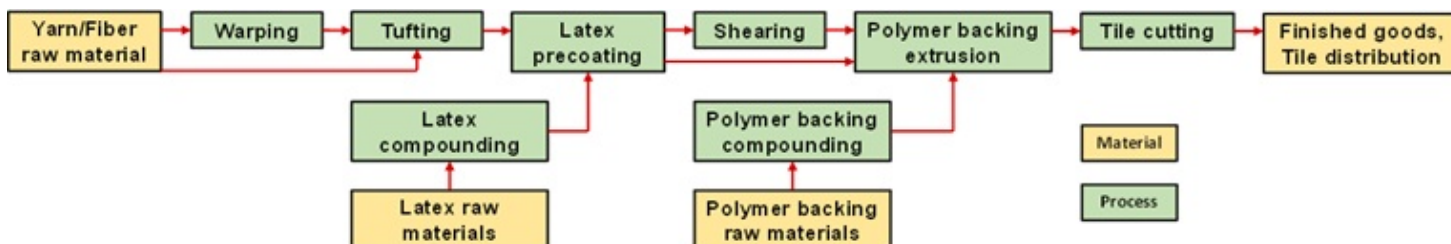
Product Composition Diagram



Plants

Shaw Contract (Shaw Europe Ltd.) Blackaddie Road, Sanquhar, UK

Product Flow Diagram



Polymer Backing Extrusion for STS Premium Loop Pile Tufted, Polyolefin Backed Carpet Tile:

The polymer compounded at a Shaw facility is poured into fiber drums and cooled into a solid mass. It is then shipped to Plant SQ, where it is melted at approximately 170 °C and pumped into a storage tank. The liquid is then pumped onto the polymer backing and fiberglass as a puddle at approximately 140-160 °C, is passed under the doctor bar, and is laminated to the carpet.

Software And Database

LCA Software:

☰ GaBi v. 10.0

LCI Foreground Database(s):

☰ Managed LCA Content v. 2023.1 | 📍 US, EU |

📄 Net scrap / Substitution / System expansion approach

LCI Background Database(s):

☰ Managed LCA Content v. 2023.1 | 📍 US, EU |

📄 Substitution / System expansion approach

A foreground LCI database is the database used to model the primary, site-specific data collected for this EPD. A background LCI database is the database used to model generic or non-specific data.

Data Quality

Data Quality Assessment:

Inventory data quality is judged by its precision (measured, calculated, or estimated), completeness (e.g., unreported emissions), consistency (degree of uniformity of the methodology applied on a study serving as a data source) and representativeness (geographical, technological, and temporal).

To cover these requirements and to ensure reliable results, first-hand industry data in combination with literature and background LCA information from MLC database (Sphera 2023) were used. The LCI datasets from MLC database are widely distributed and used with the Sphera software (Life Cycle for Experts, LFE). The datasets have been used in LCA models worldwide in industrial and scientific applications in internal as well as in many critically reviewed studies. In the process of providing these datasets, they are cross-checked with other databases and values from industry and science.

i. Precision and Completeness

- Precision: As the majority of the relevant foreground data are measured or calculated data based on primary information sources of the owner of the technology, precision is considered to be high. Seasonal variations were balanced out by using yearly averages. All background data are sourced from MLC databases (Sphera 2023) with documented precision.
- Completeness: Each foreground process was checked for mass balance and completeness of the emission inventory. No data were knowingly omitted. Completeness of foreground unit process data is high. All background data are sourced from MLC databases (Sphera 2023) with documented completeness.

ii. Consistency and Reproducibility

- Consistency: To ensure consistency, all primary data were collected with the same level of detail, while all background data were sourced from MLC databases (Sphera 2023). Allocation and other methodological choices were consistently made throughout the model.
- Reproducibility: Reproducibility is possible for internal uses, made possible via the model and corresponding LCA Calculator delivered to the client. For external audiences such as the reviewers, they will be given access to the raw Gate-to-Gate data, but this information will not be published broadly to maintain confidentiality.

iii. Representativeness

- Technological: All primary and secondary data were modeled to be specific to the technologies or technology mixes under study. Primary data comes from Shaw's internal software, annual purchases, and product specifications. Where data was not available, appropriate technological proxies were used. Technological representativeness, therefore, is adequate.
- Geographical: All primary and secondary data were collected specific to the location of manufacture. Where data was not available, appropriate geographical proxies were used. Geographical representativeness, therefore, is adequate.
- Temporal: All primary data were collected from 2025. All background data come from the MLC 2023.1 databases (Sphera 2023) and are representative of the years 2017-2023. Temporal representativeness, therefore, is high.

Model Completeness and Reproducibility:

i. Completeness

- All relevant process steps for the product system were considered and modeled to represent each specific situation. The process chain is considered sufficiently complete regarding the goal and scope of this study.

ii. Consistency

- All assumptions, methods, and data were found to be consistent with the study's goal and scope. System boundaries, allocation rules, and impact assessment methods have been applied consistently throughout the study.

Life Cycle Module Description

The type of EPD is Cradle-to-Grave. The modules considered in the LCA and EPD, based on the product's entire life cycle, are described as follows:

Production Stage:

- Module A1 - Provision of Raw Materials.
- Module A2 - Transport of Raw Materials.
- Module A3 - Manufacturing.

Construction/Installation Stage:

- Module A4 - Transportation by truck of the product to the construction site in Europe.
- Module A5 - Installation of the carpet, treatment of cutting waste (landfill) and packaging waste (landfill, recycling, and incineration). The production of the amount of carpet that occurs as installation waste is also included along with its transport to the place of installation. Biogenic carbon that is stored in the wooden pallets and cardboard (packaging) is released as carbon dioxide emissions into the air at the end of life in module A5.

Use Stage:

- Module B1 - Indoor emissions of volatile organic compounds (VOCs) during the first few months after installation.
- Module B2 - Carpet cleaning per year, including vacuuming (electricity consumption) and hot water cleaning (electricity and water consumption, as well as wastewater treatment).
- Module B3 - Repair (module not relevant).
- Module B4 - Replacement (module not relevant).
- Module B5 - Refurbishment (module not relevant).

- Module B6 - Operational Energy Use (module not relevant).
- Module B7 - Operational Water Use (module not relevant).

End-of-Life (EoL) Stage:

There are three possible EoL scenarios:

- a) Scenario 1: the STS Polyolefin backed carpet is 100% disposed of in a landfill.
- b) Scenario 2: the STS Polyolefin backed carpet is 100% incinerated.
- c) Scenario 3: 40% of STS Polyolefin backed carpets are incinerated and the remaining 60% are landfilled. This assumption is based on the carpet disposal rates in Europe mentioned in the study conducted by Deutsche Umwelthilfe in 2017 (Deutsche Umwelthilfe e.V. 2017) and the European Commission in 2013 (European Commission, 2013).

- Module C1 - The carpet is de-constructed manually and no additional environmental impact is caused.
- Module C2 - Transport of the carpet waste to a landfill or to the municipal waste incineration plant.
- Module C3 - Impacts from thermal treatment disposal (C3/2 and C3/3).
- Module C4 - Impacts from landfill disposal (C4/1 and C4/3).

For this EPD, only Scenario 1 was considered (100% landfill disposal). Thus:

- Module C3/1, C3/2, C3/3 = C3 = 0. Thermal treatment is not needed for waste going into landfill.
- Module C4/1 = C4 = has value.
- Module C4/2, C4/3 = 0. 100% landfill disposal is considered.

Credits/Burdens Outside of the System Boundary:

Module D includes benefits from energy recovery via treatment of packaging materials and incineration of carpets at their end of life (D/1, D/2 and D/3), as well as the burdens of balancing the secondary material content in modules A1 and A3 via the net-scrap approach.

LCA Discussion

Allocation Procedure

Multi-Output Allocation:

Primary foreground data on energy consumption and waste generation during manufacturing of carpet products was obtained directly from Shaw. Annual energy and water consumption, as well as production of waste and wastewater, are monitored using flowmeters and can be obtained specific to different carpet products based on area (per m² or per yard). No co-product or by-product allocation was necessary during use or EoL phases. Allocation of background data (energy and materials) taken from the MLC database (Sphera 2023) is documented online at Sphera's website (Sphera n.d.).

The overall production of Shaw comprises further products beyond the products considered in this study. However, production data (e.g., energy consumption, water consumption) obtained from Shaw refer only to the declared product. During data collection the allocation is done via m² of carpet produced.

End-of-Life (EoL) Allocation:

In the case of secondary raw materials (i.e., recycled content), only burdens from the point of recovery forward were considered (cut-off approach). The production of recycled materials was outside the system boundary (i.e., processes that prepare secondary materials for utilization such as grinding, pelletizing, etc.), and it is assumed that all secondary material input comes in burden free.

Material that is recycled into secondary material at EoL is able to substitute an equivalent amount of virgin material. Hence a benefit is given to account for this material substitution in module D. Such a substitution is modeled by applying a net scrap calculation in EoL where the amount of secondary material consumed by the product system is subtracted from the stockpile of secondary material generated by the product system. This approach ensures that one does not consider recycled content coming in as raw material to be burden free and still claims the benefit of substituting virgin material by producing recycled content at EoL as this would constitute double-counting. In case where the amount of secondary material input requirement in stage A1 is higher than the amount of secondary material available from manufacturing scrap or via recycling at EoL, module D becomes a net debit (positive LCIA values) instead of a net credit (negative LCIA values).

Cut-off Procedure

No cut-off criteria are defined for this study. The system boundary was defined based on relevance to the goal of the study. For the processes within the system boundary, all available energy and material flow data have been included in the model. In cases where no matching life cycle inventories are available to represent a flow, proxy data have been applied based on conservative assumptions regarding environmental impacts.

Renewable Electricity

Energy Attribute Certificates (EACs) such as Renewable Energy Certificates (RECs) or Power Purchase Agreements (PPAs) are included in the baseline reported results:

✗ No

Scenarios

Transport to the building/construction site (A4)

A4 Module

Fuel Type:	Diesel
Liters of Fuel:	38.4 l/100km
Vehicle Type:	Truck, Class 8
Transport Distance:	687 km
Capacity Utilization:	55 %
Packaging Mass:	3.034 kg
Gross density of products transported:	783.443 kg/m3
Capacity utilization volume factor:	=1
Assumptions for scenario development:	It should be noted that the liters of fuel consumed is reported in the units of L/100 km-m2, as opposed to L/100 km as required by the PCR. This is based on the truck mileage data obtained from datasets in MLC (Sphera 2023), which restrict the calculation of fuel consumption on functional unit basis.

Installation in to the building/construction site (A5)

A5 Module

Installation Scrap Rate Assumed:	5 %
Ancillary Materials:	0.23 kg
Product Lost per Declared/Functional Unit:	0.152 kg

Waste Materials at the Construction Site Before Waste Processing:	0.152 kg
Output Materials Resulting from On-site Waste Processing:	0.38 kg
Mass of Packaging Waste Specified by Type:	0.228 kg
Biogenic Carbon Contained in Packaging (kg C):	0.146 kg
VOC Emissions:	900198.75 ug/m3
Assumptions for scenario development:	The installation of STS Polyolefin Backed Carpet Tile is done manually and no energy is required. A Pressure-Sensitive adhesive is required for the installation of STS Polyolefin Backed Carpet Tile and should be used in accordance with the manufacturer's guidelines. Installation losses have been accounted for in module A5. Product losses are considered as 5%. The packaging material treatment and disposal are also considered in module A5 (landfilling, recycling, and incineration) and the resulting benefits from energy generation are included in module D. The quantity of wooden pallets used is 0.091 kg/m². Wooden pallets are assumed to be re-used 20 times before being disposed of. Hence, the quantity of pallet disposed per pass is 0.0046 kg/m². The quantity of cardboard packaging is 0.137 kg/m². Total amount of packaging disposed at installation is 0.228 kg/m². Packaging disposal rates (Eurostat 2015).

Use (B1)

B1 Module

Declared Product Properties:

Product properties are declared in the product specification for STS 3000 Polyolefin found at <https://pdmsview.shawinc.com/viewer/document/doc/39620?>

Design Application Parameters:

Design application parameters are declared in the product specification for STS 3000 Polyolefin found at <https://pdmsview.shawinc.com/viewer/document/doc/39620?>

An Assumed Quality of Work, When Installed in Accordance with The Manufacturer's Instructions:

10-Year Commercial Limited Warranty subject to installation in full accordance with manufacturer's instructions and a regular effective cleaning and maintenance programme. STS 3000 Polyolefin Carpet Tile can be installed using IOBAC MagTags and Tab-It products (IOBAC n.d.). The product meets or exceeds all local and national regulations in country of manufacture.

Indoor Environment:

Indoor emissions of volatile organic compounds (VOCs) during the first few months after installation.

Maintenance (B2)

B2 Module

Maintenance Cycle:	20 Cycles/RSL 150 Cycles/ESL
Net Fresh Water Consumption Specified by Water Source and Fate:	0.00045 m3
Energy Input:	0.0766 kWh
Power Output of Equipment:	0.012 kWh
VOC Emissions:	900198.75 ug/m3
Maintenance Process Information:	For the maintenance of STS Polyolefin Backed Carpet Tile, 2 hot water extraction cleanings (water and electricity consumption) per year as well as 52 vacuum cleanings (electricity consumption per year are recommended. The Reference Service Life of the product is 10 years. The results in the EPD declare maintenance parameters on a per m² functional unit basis.

Repair (B3)

B3 Module

Further assumptions for scenario development: Module not relevant.

Replacement (B4)

B4 Module

Further assumptions for scenario development: Module not relevant.

Refurbishment (B5)

B5 Module

Further assumptions for scenario development: Module not relevant.

Operational Energy Use (B6) & Operational Water Use (B7)

B6 & B7 Modules

Further assumptions for scenario development:
Module not relevant.

End of Life (C1 - C4)

C1 - C4 Modules

Collection Process

Collected Separately: 2.882 kg

Recovery

Reuse: 0 kg
Recycling: 0 kg
Landfill: 2.882 kg
Incineration: 0 kg
Incineration with Energy Recovery: 0 kg
Energy Conversion: 0 kg

Disposal

Product or Material for Final Disposal: 2.882 kg
Removals of Biogenic Carbon: 0 kg CO₂

Assumptions for scenario development:

Deconstruction and collection are done manually with no material, energy, and water inputs. 100% of used carpet at end-of-life goes directly to landfill.

Reuse, Recovery and / or Recycling Potentials & Relevant Scenario Information (D)

D Module

Recycled Content of Product: 55 %

Results

Table 3. Environmental Impact Assessment Results

EF3.1

per 1 m2 of product of installed STS Premium Loop Pile Tufted, Polyolefin Backed Carpet Tile.

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

Impact Category	Unit	Method	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP- total	kg CO2 eq	EF3.1	4.49e+0	2.05e-1	8.97e-2	3.81e-3	2.89e+0	ND	ND	ND	ND	ND	0	4.11e-2	0	2.13e-1	5.71e+0
GWP- fossil	kg CO2 eq	EF3.1	4.85e+0	2.04e-1	7.60e-2	3.81e-3	2.86e+0	ND	ND	ND	ND	ND	0	4.09e-2	0	2.15e-1	5.68e+0
GWP-biogenic	kg CO2 eq	EF3.1	-3.59e-1	-2.82e-4	1.37e-2	0	3.05e-2	ND	ND	ND	ND	ND	0	-5.66e-5	0	-2.29e-3	2.28e-2
GWP-luluc	kg CO2 eq	EF3.1	2.83e-3	1.14e-3	3.52e-5	0	6.06e-4	ND	ND	ND	ND	ND	0	2.28e-4	0	1.05e-4	3.89e-4
ODP	kg CFC11 eq	EF3.1	8.71e-9	1.22e-14	2.24e-13	0	4.19e-11	ND	ND	ND	ND	ND	0	2.45e-15	0	2.89e-13	9.13e-12
AP	mol H+ eq	EF3.1	1.88e-2	2.11e-4	3.91e-4	0	6.29e-3	ND	ND	ND	ND	ND	0	4.22e-5	0	6.37e-4	1.05e-2
PM	disease incidence	EF3.1	2.43e-7	1.22e-9	4.68e-9	0	5.21e-8	ND	ND	ND	ND	ND	0	2.44e-10	0	6.13e-9	7.09e-8
IRP	kBq U235 eq	EF3.1	4.06e-1	4.94e-4	2.46e-3	0	1.41e+0	ND	ND	ND	ND	ND	0	9.90e-5	0	5.53e-3	1.15e-1
POCP	kg NMVOC eq	EF3.1	1.53e-2	1.86e-4	3.14e-4	2.12e-4	3.82e-3	ND	ND	ND	ND	ND	0	3.72e-5	0	4.54e-4	9.53e-3
EP-fw	kg P eq	EF3.1	2.14e-5	6.10e-7	1.40e-5	0	1.40e-5	ND	ND	ND	ND	ND	0	1.22e-7	0	4.01e-5	4.63e-6
EP-marine	kg N eq	EF3.1	5.16e-3	6.89e-5	6.82e-5	0	1.43e-3	ND	ND	ND	ND	ND	0	1.38e-5	0	1.41e-4	2.95e-3
EP-terrestrial	mol N eq	EF3.1	5.62e-2	8.20e-4	1.38e-3	0	1.48e-2	ND	ND	ND	ND	ND	0	1.64e-4	0	1.55e-3	2.54e-2
SQI	dimensionless	EF3.1	1.27e+1	9.40e-1	1.04e+1	0	1.87e+1	ND	ND	ND	ND	ND	0	1.88e-1	0	2.20e-1	2.65e+0
WDP	m3 world eq deprived	EF3.1	7.18e-1	1.83e-3	6.97e-2	0	6.54e-1	ND	ND	ND	ND	ND	0	3.67e-4	0	-2.12e-3	2.26e-1
ADP-fossil	MJ, net calorific value	EF3.1	1.17e+2	2.73e+0	1.17e+0	0	5.19e+1	ND	ND	ND	ND	ND	0	5.47e-1	0	3.05e+0	1.14e+2
ADP-minerals&metals	kg Sb eq	EF3.1	2.04e-6	1.71e-8	2.41e-8	0	7.80e-7	ND	ND	ND	ND	ND	0	3.42e-9	0	1.49e-8	5.92e-7
ETP-fwio	CTUe	EF3.1	5.69e+1	1.90e+0	8.81e-1	1.73e-3	2.35e+1	ND	ND	ND	ND	ND	0	3.80e-1	0	2.99e+0	5.35e+1
HTP-cio	CTUh	EF3.1	1.22e-9	3.82e-11	3.24e-11	0	6.79e-10	ND	ND	ND	ND	ND	0	7.66e-12	0	1.34e-10	1.52e-9
HTP-ncio	CTUh	EF3.1	5.10e-8	1.98e-9	1.95e-9	4.60e-11	2.65e-8	ND	ND	ND	ND	ND	0	3.97e-10	0	1.12e-8	5.75e-8

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particulate Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate, and could lead to erroneous selection of materials or products which are higher-impact, at least in some impact categories.

Table 4. Resource Use Indicator

per 1 m2 of product of installed STS Premium Loop Pile Tufted, Polyolefin Backed Carpet Tile.

Indicator	Unit	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
RPRE	MJ	1.03e+1	1.55e-1	5.11e+0	0	2.88e+1	ND	ND	ND	ND	ND	0	3.11e-2	0	2.51e-1	4.43e+0
RPRM	MJ	5.31e+0	0	-4.19e+0	0	0	ND	ND	ND	ND	ND	0	0	0	0	0
RPRT	MJ	1.56e+1	1.55e-1	9.18e-1	0	2.88e+1	ND	ND	ND	ND	ND	0	3.11e-2	0	2.51e-1	4.43e+0
NRPRE	MJ	6.69e+1	2.74e+0	1.52e+0	0	5.19e+1	ND	ND	ND	ND	ND	0	5.48e-1	0	3.05e+0	1.15e+2
NRPRM	MJ	5.22e+1	0	-3.17e-1	0	0	ND	ND	ND	ND	ND	0	0	0	0	0
NRPRRT	MJ	1.17e+2	2.74e+0	1.21e+0	0	5.19e+1	ND	ND	ND	ND	ND	0	5.48e-1	0	3.05e+0	1.15e+2
SM	kg	1.95e+0	0	0	0	0	ND	ND	ND	ND	ND	0	0	0	0	-1.95e+0
RSF	MJ	0	0	0	0	0	ND	ND	ND	ND	ND	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	ND	ND	ND	ND	ND	0	0	0	0	0
FW	m3	2.78e-2	1.76e-4	8.06e-3	0	2.75e-2	ND	ND	ND	ND	ND	0	3.52e-5	0	3.95e-5	1.15e-2

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

Table 5. Waste and Output Flow Indicators

per 1 m2 of product of installed STS Premium Loop Pile Tufted, Polyolefin Backed Carpet Tile.

Indicator	Unit	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	6.68e-9	1.31e-11	2.43e-9	0	4.49e-9	ND	ND	ND	ND	ND	0	2.63e-12	0	4.71e-10	1.03e-8
NHWD	kg	4.05e-1	3.92e-4	1.88e-1	0	4.77e-2	ND	ND	ND	ND	ND	0	7.86e-5	0	3.02e+0	5.83e-3
RWD	kg	4.22e-3	3.37e-6	1.89e-5	0	8.30e-3	ND	ND	ND	ND	ND	0	6.76e-7	0	3.75e-5	7.62e-4
CRU	kg	0	0	0	0	0	ND	ND	ND	ND	ND	0	0	0	0	0
MFR	kg	0	0	1.81e-1	0	0	ND	ND	ND	ND	ND	0	0	0	0	0
MER	kg	0	0	2.13e-2	0	0	ND	ND	ND	ND	ND	0	0	0	0	0
EEE	MJ	0	0	6.37e-2	0	0	ND	ND	ND	ND	ND	0	0	0	0	0
EET	MJ	0	0	9.77e-2	0	0	ND	ND	ND	ND	ND	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

Table 6. Carbon Emissions and Removals

per 1 m2 of product of installed STS Premium Loop Pile Tufted, Polyolefin Backed Carpet Tile.

Indicator	Unit	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
BCRP	kg CO2	0	0	0	0	0	ND	ND	ND	ND	ND	0	0	0	0	0
BCEP	kg CO2	0	0	0	0	0	ND	ND	ND	ND	ND	0	0	0	0	0
BCRK	kg CO2	1.46e-1	0	-1.18e-1	0	0	ND	ND	ND	ND	ND	0	0	0	0	0
BCEK	kg CO2	0	0	2.75e-2	0	0	ND	ND	ND	ND	ND	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.



Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

Interpretation

(a) Cradle-to-Grave Results

The figure presents the cradle-to-grave (C2Gr) environmental performance of STS Polyolefin Backed Carpet Tile across 19 impact categories using the EF3.1 characterization methodology (aligned with EN15804+A2 construction framework). The results are displayed as a 100% stacked bar chart showing relative contributions from 4 life cycle stages: Production (A1–A3), Construction (A4–A5), Use (B1–B7), and End-of-Life (EoL) (C1–C4). Because the chart presents relative stage contributions only, it identifies the distribution of impacts by life cycle stage but not the absolute magnitude of each indicator.

Global Warming Potential

Production (A1–A3) is the largest GWP contributor at ~57% of GWP-Total and ~59% of GWP-Fossil, reflecting the upstream burdens of raw material extraction and manufacturing. The Use stage (B1–B7) is the second-largest contributor at ~37% and ~35%, respectively. The figure does not disaggregate B-modules; however, if the model assigns use phase burdens primarily to maintenance, these impacts would be associated with Module B2.

GWP-Biogenic is dominated by Production (~88%), reflecting biogenic carbon flows from packaging materials, as the product formulation itself contains no significant organic content. Use contributes ~9%, while Construction and EoL each contribute <3%.

GWP-Luluc is more distributed: Production (~57%), Construction (~24%), and EoL (~10%).

Other Air Indicators

ODP is almost entirely attributable to Production (~99%), driven by upstream dataset characteristics rather than the product formulation. AP, PM, and POCP follow a consistent pattern: Production ~74–79%, Use ~17–22%, and Construction and EoL <3% each.

Eutrophication and Ecotoxicity

EP-Marine and EP-Terrestrial follow the dominant pattern (Production ~77%, Use ~18–19%). EP-Freshwater is the exception: EoL is the largest contributor at ~43%, with Production (~24%), Construction (~16%), and Use (~17%) sharing the remainder. This indicates that waste disposal pathways carry freshwater eutrophication burdens proportionally more significant than in other categories. ETP-Fwio follows the typical distribution (Production ~69%, Use ~25%).

Resource Depletion and Human Toxicity

ADP-Fossil is driven by Production (~69%) and Use (~27%), reflecting fossil energy consumption in both manufacturing and use-phase activities. ADP-Minerals & Metals follows a similar pattern (Production ~74%, Use ~23%). WDP is more evenly split (Production ~54%, Use ~42%), indicating that use-phase water consumption is a significant contributor.

HTP-Cio and HTP-Ncio are Production-dominated (~60% and ~57%), with Use as secondary (~30% and ~26%). EoL contributes a comparatively larger share to HTP-Ncio (~13%) than to most other categories, indicating that disposal pathways carry non-cancer human toxicity burdens of note.

IRP is the only category where Use dominates (~77%), with Production at ~22%, suggesting that use-phase electricity consumption drives the majority of this impact. SQI is the most evenly distributed: Use (~43%), Production (~31%), Construction (~25%), EoL (~1%).

End-of-Life (EoL)

EoL (C1–C4) generally represents 1–3% of C2Gr impact across categories. The exceptions are EP-Freshwater (~43%), HTP-Ncio (~13%), and GWP-Luluc (~10%), where waste management and disposal activities carry proportionally higher burdens.

Biogenic Carbon

The product formulation does not contain significant organic content. Biogenic carbon flows are associated with packaging materials, consistent with the Production-dominated GWP-Biogenic results.

(b) Contribution/Hotspot Analysis

A contribution (hotspot) analysis was conducted across all 19 EF3.1 categories to evaluate the relative influence of each life cycle stage. The analysis identifies Production and Use as the two primary drivers, with their relative dominance varying by category.

Production (A1–A3): Dominant Hotspot

Production is the largest contributor in 16 of 19 categories, exceeding 70% in 8: ODP (~99%), GWP-Biogenic (~88%), PM (~79%), AP (~74%), POCP (~77%), EP-Marine (~77%), EP-Terrestrial (~77%), and ADP-Minerals & Metals (~74%). In the remaining categories where Production leads, it ranges from ~54–69%, except IRP where it is the secondary contributor (~22%). This concentration reflects the energy-intensive nature of upstream raw material extraction and product manufacturing.

Use (B1–B7): Secondary Hotspot

Use is the second-largest contributor across most categories and the dominant contributor in two: IRP (~77%) and SQL (~43%). It also contributes substantially to WDP (~42%), GWP-Total (~37%), GWP-Fossil (~35%), and HTP-Ncio (~26%).

Category-Specific Hotspots

Several categories deviate from the dominant Production–Use structure:

- **EP-Freshwater:** EoL is the largest contributor at ~43%, the only category where neither Production nor Use leads. This indicates that waste disposal pathways carry freshwater eutrophication burdens proportionally more significant than in other categories.
- **GWP-Luluc:** Construction contributes ~24%, well above its share in most other categories, indicating that transportation and logistics activities contribute proportionally more to land-use-related emissions.
- **ODP:** ~99% concentrated in Production, indicating a single upstream dataset driver rather than the product formulation.
- **HTP-Ncio:** EoL contributes ~13%, higher than in most toxicity categories, indicating that disposal activities carry non-cancer human toxicity burdens of note.

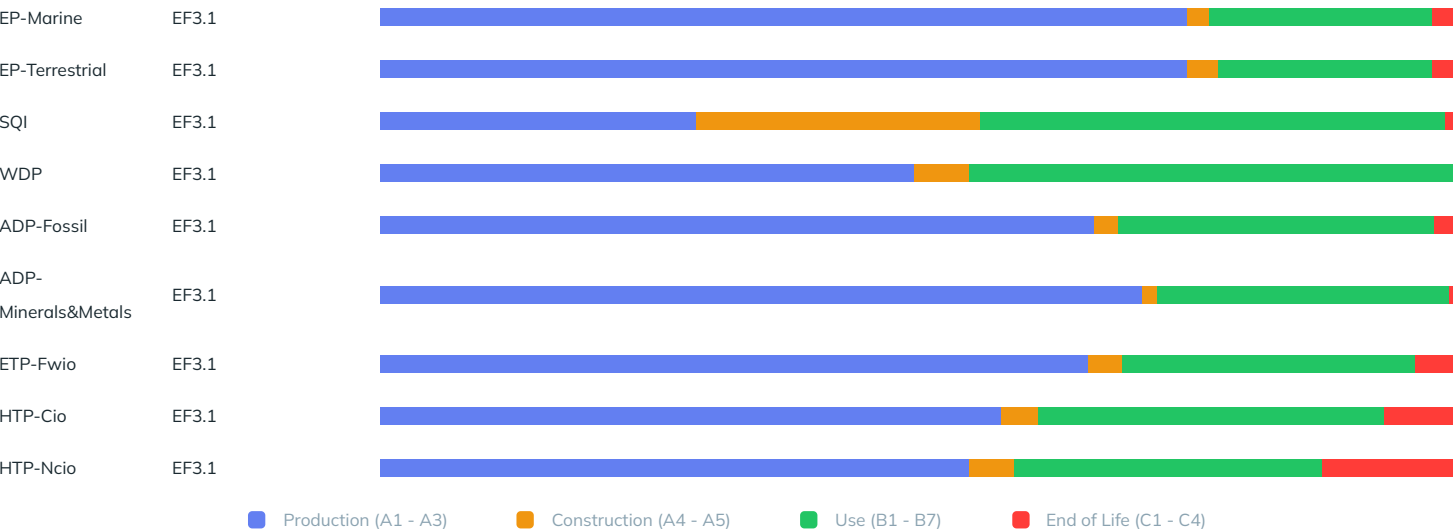
Construction and EoL

Construction (A4–A5) is generally <5%, except GWP-Luluc (~24%), SQL (~25%), and EP-Freshwater (~16%). EoL (C1–C4) is generally <3%, except EP-Freshwater (~43%), HTP-Ncio (~13%), and GWP-Luluc (~10%).

Summary

The hotspot structure is governed by two dominant stages: Production, which drives most impacts, and Use, which is the primary driver for IRP and SQL. Construction and EoL are minor overall but show category-specific influences in land use change, freshwater eutrophication, and non-cancer human toxicity. Findings should be interpreted alongside inventory assumptions, allocation choices, and scenario parameters for transport, use, and EoL modeling. Improvement strategies should prioritize upstream raw material sourcing and manufacturing efficiency, with secondary attention to use-phase optimization.





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