



SmartEPD-2025-001-0590-01

Rubber Stair Treads with Dupont™ Kevlar®

Date of Issue

Expiration date

Last updated

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General Information

Roppe Corporation, USA

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Product Name:	Rubber Stair Treads with Dupont™ Kevlar®
Declared Unit:	1 m
Declaration Number:	SmartEPD-2025-001-0590-01
Date of Issue:	September 11, 2025
Expiration:	September 11, 2030
Last updated:	September 10, 2025
EPD Scope:	Cradle to gate with other options A1 - A3, A4, A5, C1 - C4
Market(s) of Applicability:	North America

General Organization Information

Roppe Holding Company (RHC), the EPD Owner, is a family-owned business headquartered in Fostoria, Ohio, USA. The company operates a manufacturing facility in Fostoria, Ohio, where the declared product is produced. Established in 1955, RHC has a longstanding commitment to delivering high-quality resilient flooring to a diverse range of customers.

The Tuscumbia facility is certified under ISO 14001 for its environmental management system, reflecting RHC's dedication to minimizing environmental impacts and continually improving environmental performance.

As a family-owned company, RHC emphasizes responsible manufacturing practices, efficient resource use, and environmentally conscious product design. The organization actively works to reduce waste, optimize material use, and lower emissions across its operations in support of sustainable building practices.

Further information can be found at: <https://roppe.com/>

Limitations, Liability, and Ownership

Environmental Product Declarations from different programs (following ISO 14025) may not be comparable. Comparison of the environmental performance of products using EPD information shall be based on the product's use and impacts at the building level. EPDs that do not cover all life cycle stages (e.g., cradle-to-grave) shall not be used to make comparisons without additional context and assumptions.

EPD comparability is only possible when all relevant life cycle stages are included and equivalent data quality, system boundaries, and assessment methods are used. Variations in results may occur due to differences in background LCI datasets, regional factors, and LCA modeling approaches or software tools.

The EPD Owner has sole ownership, liability, and responsibility for the content of this EPD.

Reference Standards

Standard(s):	ISO 14025 and ISO 21930:2017
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Core PCR:	Smart EPD® Part A Product Category Rules for Building and Construction Products and Services, 1000, v1.2 Date of issue: March 14, 2025 Valid until: March 14, 2030
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:	 Sevda Alanya Rosenbaum  John Beath Environmental  sevda.rosenbaum@beath.us
EPD Program Operator:	 Smart EPD  info@smartepd.com  www.smartepd.com  585 Grove St., Ste. 145 PMB 966, Herndon, VA 20170, USA
Verification:	Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071: External  Mari Kirss  mari.kirss@meetripuu.ee Independent external verification of EPD, according to ISO 14025 and reference PCR(s): External  Mari Kirss  mari.kirss@meetripuu.ee

Product Information

Declared Unit:	1 m
Mass:	2.931 kg
Product Specificity:	 Product Average  Product Specific

Product Description

This Environmental Product Declaration (EPD) covers Roppe Rubber Stair Treads reinforced with DuPont Kevlar, manufactured in Fostoria, Ohio. The product is a resilient stair tread designed for enhanced durability and extended wear in demanding commercial environments.

The product is available in a wide range of profiles, including smooth, ribbed, hammered, textured, and raised disc surfaces, and is offered in lengths from 36 inches to 108 inches depending on the selected style. Nose configurations include round, square, and square adjustable options to suit various stair conditions.

Roppe Rubber Stair Treads with Kevlar are classified under ASTM F2169 as Type TS, Class 1 or 2, Group 1 and/or 2, Grade 1. The product meets Class I radiant flux performance (ASTM E648), has low smoke generation (ASTM E662), and provides excellent slip resistance (ASTM D2047), chemical resistance (ASTM F925), and dimensional stability (ASTM F1514). Shore A hardness is 85.

The product contributes to LEED v4 and v4.1 credits and is certified under FloorScore, NSF/ANSI 332 Level 1, and GREENGUARD Gold. It also complies with CA Section 01350 and CHPS criteria, and qualifies under American-made product provisions.

This EPD includes a table of nominal dimensions and corresponding weights per meter for each design covered, along with multiplication factors to calculate life cycle impacts for individual product configurations. While LCA results are based on a declared unit of 1 meter of average product, profile-specific results can be derived using these published multipliers. The environmental impact results of products in this document are based on a declared unit and therefore do not provide sufficient information to establish comparisons. The results shall not be used for comparisons without knowledge of how the physical properties of the product impact the precise function at the construction level. The environmental impact results shall be converted to a functional unit basis before any comparison is attempted.

Further information can be found at: <https://roppe.com/rubber-treads-with-dupont-kevlar-2/>

Product Specifications

Product Classification Codes: EC3 - Finishes -> Flooring -> ResilientFlooring
UNSPSC - 30161705

Material Composition

Material/Component Category	Origin	% Mass
Binder	United States	22-28
Filler	United States	53-65
Additive	Various	12-16
Pigment	Various	1-3

Packaging Material	Origin	kg Mass
Corrugated cardboard	United States	0.173
Polyethylene wrap	United States	0.006
Pallet (wood)	United States	2.884

Biogenic Carbon Content	kg C per m
Biogenic carbon content in product	0.086
Biogenic carbon content in accompanying packaging	5.606

Hazardous Materials
No regulated hazardous or dangerous substances are included in this product.

EPD Data Specificity

Primary Data Year: 2023

Manufacturing Specificity:

✗

 Industry Average

✗

 Manufacturer Average

✓

 Facility Specific

Averaging:

EPD averaging was not conducted. This EPD represents a specific product manufactured at a single production facility.

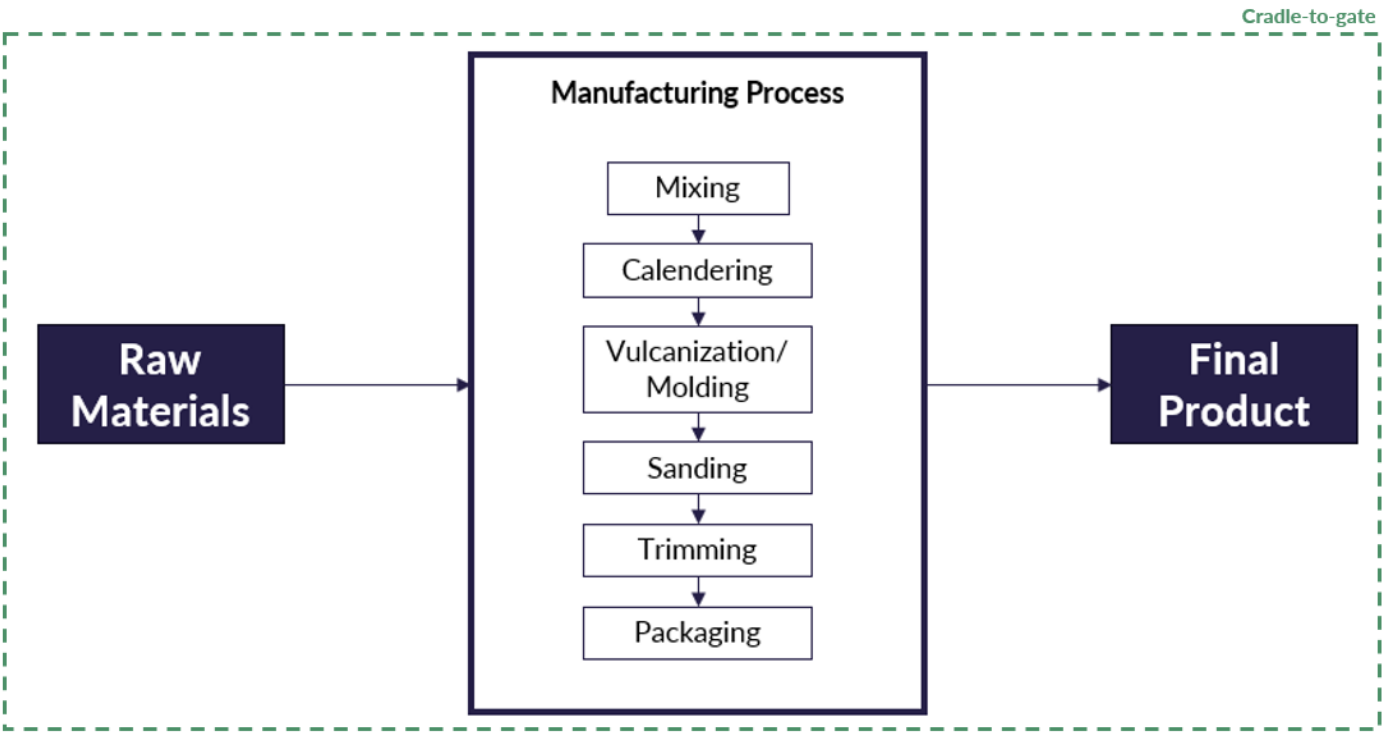
System Boundary

Production	A1	Raw material supply	✓
	A2	Transport	✓
	A3	Manufacturing	✓
Construction	A4	Transport to site	✓
	A5	Assembly / Install	✓
Use	B1	Use	ND
	B2	Maintenance	ND
	B3	Repair	ND
	B4	Replacement	ND
	B5	Refurbishment	ND
	B6	Operational Energy Use	ND
	B7	Operational Water Use	ND
End of Life	C1	Deconstruction	✓
	C2	Transport	✓
	C3	Waste Processing	✓
	C4	Disposal	✓
Benefits & Loads Beyond System Boundary	D	Recycling, Reuse Recovery Potential	ND

Plants

 Roppe Plant
1602 North Union Street, Fostoria, OH, USA

Product Flow Diagram



Software and Database

LCA Software:	openLCA v. 2.4
LCI Foreground Database(s):	Ecoinvent v. 3.10 Global, Rest of World (RoW), and United States Cut-off by classification
LCI Background Database(s):	Ecoinvent v. 3.10 Global, Rest of World (RoW), and United States Cut-off by classification

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

Primary data were collected from RHC's manufacturing facility for the 2023 calendar year and represent actual production processes for the declared product. Background data were sourced from the ecoinvent v3.10 database using the cut-off system model. All data meet the data quality requirements of the Smart EPD General Program Instructions v2.0. No significant data gaps or representativeness issues were identified; therefore, no data quality disclaimer is required for this EPD.

Data Sources

Material/Process Category	Module	Material/Process Name	Inventory Dataset Name	Dataset Geographic Region	Reporting Period/Year Dataset Represents	Reference	Amount (if relevant)	Unit
Raw Materials	A1	Styrene butadiene rubber	acrylonitrile-butadiene-styrene copolymer production	RoW	2023	ecoinvent 3.10	ND	ND
Energy	A3	Electricity	market for electricity, medium voltage	US-RFC, modified	2023	ecoinvent 3.10	ND	ND
Energy	A3	Natural gas	market for heat, central or small-scale, natural gas	GLO	2023	ecoinvent 3.10	ND	ND

Life Cycle Module Descriptions

Modules A1A3 (Raw Material Supply, Transport, and Manufacturing):

These modules include the extraction and processing of raw materials used in the product, including synthetic rubber, plasticizers, fillers, and other additives. Transport of raw materials to the manufacturing facility is included, along with manufacturing processes such as mixing, molding, and curing. Energy and water use, as well as packaging materials, are included. Manufacturing occurs in Fostoria, Ohio, and data are based on annual facility-level consumption values.

Modules A4 (Transport to Site and Installation): This module includes shipping of the product from manufacturing site to project site.

Module A5 (Installation): This module includes product installation. Impacts from the production, transport and disposal of waste material associated with installation are included in this phase in addition to impacts from packaging disposal.

Modules C1C4 (End-of-Life):

- C1 (Deconstruction): Deconstruction is assumed to be manual with negligible environmental impact.
- C2 (Transport): Product is transported 32 km by truck to end-of-life treatment.
- C3 (Waste Processing): No additional waste processing is required prior to final disposal.
- C4 (Disposal): It was assumed that all products are landfilled at the end of their life. Impacts from disposal are modeled accordingly.

LCA Discussion

Allocation Procedure

Co-product Allocation

No co-product allocation was necessary in the system.

Allocation of Background Data

Background data sourced from the ecoinvent v3.10 database are modeled using the cut-off, at classification system model. Under this method, recycled content carries no upstream environmental burdens, and the burdens of waste treatment are assigned to the original product system.

End-of-Life Allocation

At end of life, the product is treated using the same cut-off approach. Any material recovered for recycling is considered to exit the system boundary without further allocation of burdens or credits.

Cut-off Procedure

No cut-off criteria were defined within the system boundary. All available energy and material flow data were included in the model. Proxy data were used when necessary to ensure comprehensive representation of life cycle 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
Vehicle Type:	Diesel Truck
Transport Distance:	755 km
Packaging Mass:	3.064 kg
Gross density of products transported:	1580 kg/m3
Weight of products transported:	2.931 kg
Capacity utilization volume factor:	<1
Assumptions for scenario development:	Transport to the construction site is modeled as 755 km via heavy-duty truck, using diesel fuel. Gross density is estimated at 1,580 kg/m³.

Installation in to the building/construction site (A5)
A5 Module

Installation Scrap Rate Assumed:	7.5 %
Ancillary Materials:	0.05 kg
Product Lost per Declared/Functional Unit:	0.238 kg
Waste Materials at the Construction Site Before Waste Processing:	3.301 kg
Mass of Packaging Waste Specified by Type:	0.173 kg corrugated cardboard, 0.006 kg shrink wrap, 2.884 kg wood pallet kg
Biogenic Carbon Contained in Packaging:	0.318 kg
Assumptions for scenario development:	Installation is performed manually without operational energy or water use. Adhesive is applied at a rate of 0.5 kg per m. Installation loss is assumed to be 4.5%. No VOC emissions or direct environmental emissions are reported during installation.

End of Life (C1 - C4)

C1 - C4 Modules

Collection Process

Collected Separately: 2.931 kg

Recovery

Landfill: 2.931 kg

Disposal

Product or Material for Final Disposal: 2.931 kg

Assumptions for scenario development:

At end of life, 100% of the product mass is assumed to be removed manually and sent to a municipal landfill. No reuse, recycling, or energy recovery is modeled. No direct emissions to air, soil, or water are associated with the disposal process. This scenario reflects a conservative baseline consistent with the SmartEPD Part A and industry practice.

Results

Environmental Impact Assessment Results

IPCC AR6 GWP 100, TRACI 2.2

per 1 m of product .

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

Impact Category	Method	Unit	A1A2A3	A4	A5	C1	C2	C3	C4
GWP-total	IPCC AR6 GWP 100	kg CO2 eq	1.45e+1	6.02e-1	2.60e+0	0	1.35e-1	0	1.85e+0
GWP-fossil	IPCC AR6 GWP 100	kg CO2 eq	1.37e+1	6.01e-1	1.98e+0	0	1.35e-1	0	1.48e-1
GWP-biogenic	IPCC AR6 GWP 100	kg CO2 eq	2.83e-1	1.16e-4	5.81e-1	0	9.30e-6	0	1.70e+0
GWP-luluc	IPCC AR6 GWP 100	kg CO2 eq	4.88e-1	2.84e-4	3.82e-2	0	1.33e-5	0	4.18e-5
ODP	TRACI 2.2	kg CFC 11 eq	1.42e-7	8.11e-9	3.65e-8	0	2.19e-9	0	1.05e-9
AP	TRACI 2.2	kg SO2 eq	3.95e-2	4.03e-3	6.84e-3	0	6.51e-4	0	4.89e-4
EP-marine	TRACI 2.2	kg N eq	2.44e-2	4.82e-3	5.36e-3	0	8.02e-4	0	2.35e-3
POCP	TRACI 2.2	kg O3 eq	5.52e-1	1.18e-1	1.09e-1	0	1.97e-2	0	7.90e-3

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.

Resource Use Indicators

per 1 m of product .

Indicator	Unit	A1A2A3	A4	A5	C1	C2	C3	C4
RPRE	MJ	1.62e+1	1.65e-1	1.79e+0	0	7.58e-3	0	2.92e-2
RPRM	MJ	0	0	0	0	0	0	0
RPRT	MJ	1.62e+1	1.65e-1	1.79e+0	0	7.58e-3	0	2.92e-2
NRPRE	MJ	2.39e+2	7.91e+0	3.09e+1	0	1.74e+0	0	9.34e-1
NRPRM	MJ	1.47e+0	0	6.60e-2	0	0	0	0
NRPRT	MJ	2.41e+2	7.91e+0	3.10e+1	0	1.74e+0	0	9.34e-1
ADP-fossil	MJ	0	0	0	0	0	0	0
SM	kg	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0
FW	m3	2.21e+2	7.76e+0	2.89e+1	0	1.73e+0	0	8.96e-1
RE	MJ	6.17e-2	6.92e-4	7.43e-3	0	3.61e-5	0	1.76e-4

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, NRPRT 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.

Waste and Output Flow Indicators

per 1 m of product .

Indicator	Unit	A1A2A3	A4	A5	C1	C2	C3	C4
HWD	kg	7.34e-4	5.28e-5	2.79e-4	0	1.22e-5	0	5.86e-6
NHWD	kg	2.01e+0	2.65e-1	1.33e+0	0	8.26e-3	0	2.94e+0
HLRW	kg	0	0	0	0	0	0	0
ILLRW	kg	0	0	0	0	0	0	0
CRU	kg	0	0	0	0	0	0	0
MFR	kg	6.67e-1	0	1.98e+0	0	0	0	0
MER	kg	0	0	0	0	0	0	0
EEE	MJ	0	0	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.

Carbon Emissions and Removals per 1 m of product .

Indicator	Unit	A1A2A3	A4	A5	C1	C2	C3	C4
BCRP	kg CO2	-2.53e-1	0	-1.79e+0	0	0	0	0
BCEP	kg CO2	0	0	1.79e+0	0	0	0	2.53e-1
BCRK	kg CO2	-3.18e-1	0	0	0	0	0	0
BCEK	kg CO2	0	0	3.18e-1	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.

Impact Scaling Factors

Product Identifier	Multiplier	Weight (kg/m)
60 SQ Heavy Duty Smooth	1.269	3.720
61 RD Heavy Duty Smooth	1.269	3.720
30 SQ Diamond	1.142	3.348
31 RD Diamond	1.142	3.348
93 SQ Textured	1.016	2.976
94 SQ Raised Square	1.117	3.274
99 SQ Hammered	1.016	2.976
98 SQ Vantage Raised Circular	1.016	2.976
92 SQ Low Profile Raised Circular	0.762	2.232
97 SQ Vantage 15" Depth	1.016	2.976
95 SQ Hammered with Riser	1.269	3.720
96 SQ Vantage with Riser	1.417	4.152

Interpretation

The largest sources of impact are raw materials (A1), followed by manufacturing (A3), for all indicators other than GWPbiogenic. Raw material (A1) impacts come primarily from SBR (styrene butadiene rubber), as well as kaolin and titanium dioxide. Manufacturing (A3) impacts are driven by electricity and natural gas consumption. For GWPbiogenic, disposal (C4) is the largest contributor due to the landfilling impacts.

Further Information

Since this product is available in a variety of configurations and weights, the table below provides multiplication factors to facilitate calculation of environmental impacts for other variants. These multipliers were derived based on deviations from the average product weight for this product, as presented in Section 4 of this EPD. To estimate impacts for alternate configurations, users may multiply the values in the results tables by the appropriate factor from the table above.

Baseline Product Specifications

Name	Average Value	Unit	Min Value	Max Value
Product Thickness	3.18	mm	1.98	6.35

Product Weight	8.71	kg/m	3.17	10.16
Tiles	1829	mm	914	2743

References

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