

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 21930 & ISO 14025

PANELSHIELD™ SA

By VaproShield, LLC



EPD HUB, HUB-2898

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GENERAL INFORMATION

MANUFACTURER

Manufacturer	VaproShield
Address	915 26th Ave NW Ste C5, Gig Harbor, WA, US
Contact details	info@vaprosshield.com
Website	www.vaprosshield.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	ISO 21930:2017 and ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD author	Carrie Sell-Salazar – VaproShield LLC
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	Sarah Curpen, an authorized verifier acting for EPD Hub Limited

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with ISO 21930 and if they are not compared in a building context.

PRODUCT

Product name	PanelShield SA
Additional labels	-
Product reference	19309099
Place of production	United States
Period for data	October 2023 to October 2024
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	- %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Square Meter WRB Membrane
Declared unit mass	0.275 kg
GWP-TRACI, A1-A3 (kgCO ₂ e)	1.14E+00
Secondary material, inputs (%)	1.58
Secondary material, outputs (%)	75
Total energy use, A1-A3 (kWh)	4.6
Net freshwater use, A1-A3 (m ³)	0.01

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

VaproShield designs and manufactures high performance, vapor permeable, water resistive barriers (WRB) and air barrier (AB) systems and accessories, creating a total solution-based approach to protecting the building envelope. Our innovative WRB/AB systems for roof and walls mitigate moisture damage and control air infiltration (air barrier) leading to a lifetime of improved indoor air quality and energy savings.

PRODUCT DESCRIPTION

A vapor permeable, self-adhered water resistive barrier membrane that protects the building envelope by allowing vapor to pass through (breathable) but not air or liquid water

Further information can be found at www.vaproshield.com.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	-
Minerals	0	-
Fossil materials	100	USA / EU
Bio-based materials	0	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0.0289124

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Square Meter WRB Membrane
Mass per declared unit	0.275 kg
Functional unit	-
Reference service life	-

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

The manufacturing of **PanelShield SA** begins in **A1** with the extraction and refining of fossil-based resources to produce polyethylene terephthalate (PET) as polyester, along with the synthesis of coating agent resins. These raw materials are processed into the base polyester fabric and transported to the manufacturing site, generating upstream emissions and energy use. In **A2**, the transportation of these materials—resins, additives, and polyester substrates—to the production facility is accounted for, including fuel use and associated emissions. **A3** includes the manufacturing steps: the polyester substrate is coated with the final formulated resin, followed by a controlled baking or curing process in industrial ovens to ensure adhesion. This stage involves thermal energy consumption, emissions from solvent evaporation or

combustion, and potential VOC capture or treatment. The finished material is then cooled, slit or cut to size, inspected, packaged into cardboard boxes with plastic cores, and palletized. Finally, **PanelShield SA** is loaded onto trucks for delivery, completing the A3 phase.

TRANSPORT AND INSTALLATION (A4-A5)

This section was not considered for this study.

PRODUCT USE AND MAINTENANCE (B1-B7)

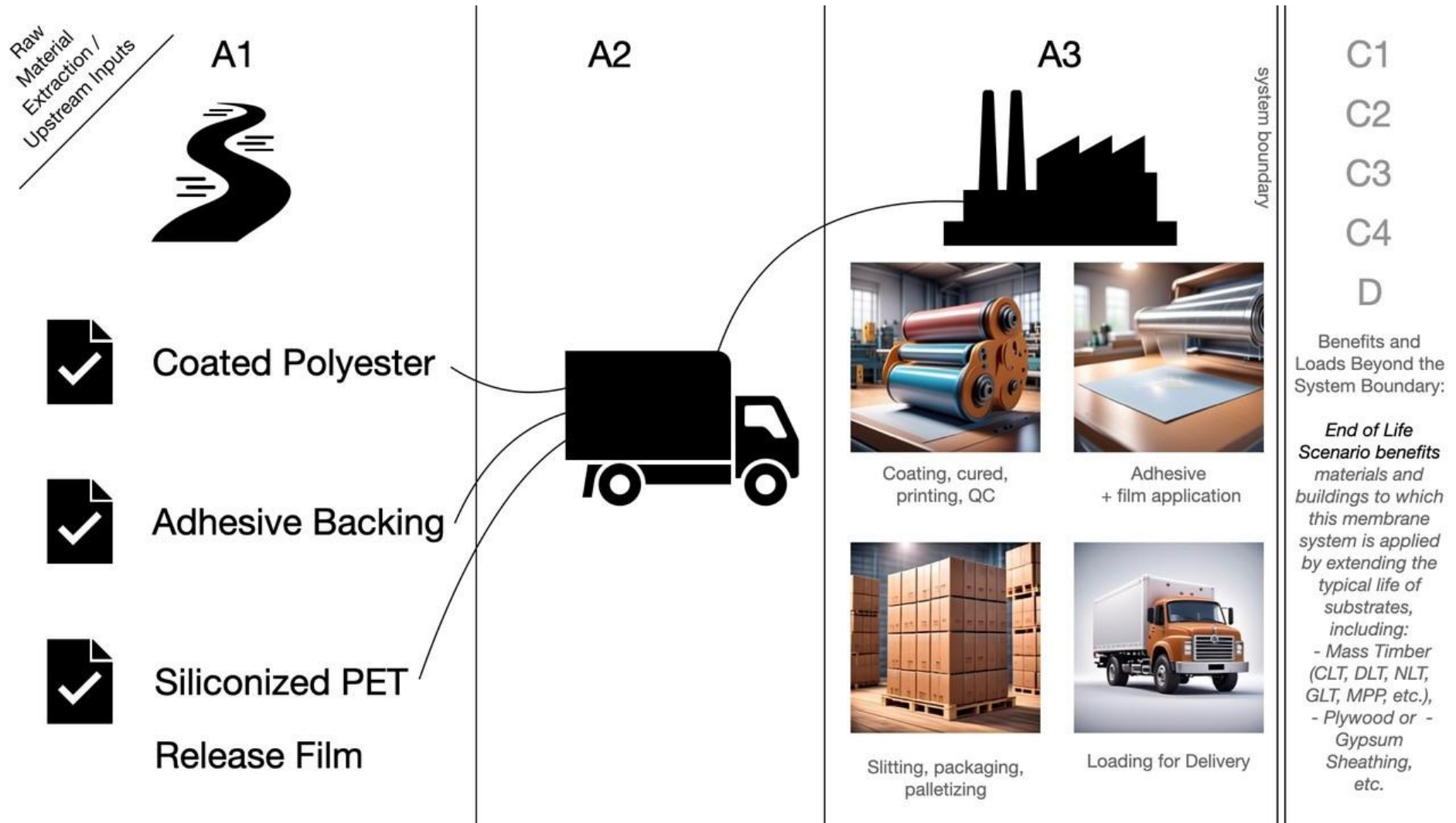
Use phase was not considered for the present study, per applicable PCR. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

Self-adhered membrane systems become a semi-permanent composite component of the substrate on which they are installed. End of Life scenarios vary depending on substrate, planning, and other factors. Common substrates include mass timber (i.e. CLT), plywood, gypsum sheathing, and concrete. Material is adhered compositely to mass timber or other construction material substrates, and is often re-used, especially with the wood, similar to how a coating finish would remain on and help preserve its' reusability.

Whether re-used or not at end of life, VaproShield membrane systems can significantly extend the useful life of these building components. When reused, the material is transported **by truck for about 50 km** to a re-use facility. When not, it is assumed to go to a landfill. Recycling, although possible, is not generally practiced due to cost and logistics constraints.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	Allocated by mass or volume
Ancillary materials	Not applicable
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	- %

This EPD represents a single product.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1, EPDs with TRACI methodologies, and the Federal LCA Commons as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

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.

ENVIRONMENTAL IMPACTS – TRACI 2.1. / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	1.01E+00	2.90E-02	1.02E-01	1.14E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	3.95E-06	2.52E-03	3.18E-03	6.49E-03	-9.46E-01
Ozone Depletion	kg CFC-11e	2.66E-08	4.48E-10	9.08E-10	2.80E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	6.46E-14	3.86E-11	7.69E-12	2.41E-11	-1.84E-05
Acidification	kg SO ₂ e	4.04E-03	4.62E-04	1.96E-04	4.70E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	3.34E-08	7.63E-06	7.27E-06	6.39E-06	-3.80E-03
Eutrophication	kg Ne	7.79E-03	1.99E-05	8.42E-05	7.90E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	2.27E-09	8.08E-07	1.68E-06	1.60E-05	-1.93E-03
POCP ("smog")	kg O ₃ e	5.51E-02	8.99E-03	3.05E-03	6.72E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	1.11E-06	1.92E-04	1.01E-04	1.60E-04	-6.87E-02
ADP-fossil	MJ	1.50E+01	3.87E-01	1.21E+00	1.66E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	5.24E-05	3.64E-02	1.24E-02	-2.83E+00	-1.73E+01

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy ¹⁾	MJ	9.02E-01	4.03E-03	-8.67E-01	3.98E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	3.32E-07	4.98E-04	-1.10E+00	3.27E-04	-2.02E+00
Renew. PER as material	MJ	0.00E+00	0.00E+00	1.10E+00	1.10E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	-1.10E+00	0.00E+00	0.00E+00
Total use of renew. PER	MJ	9.02E-01	4.03E-03	2.36E-01	1.14E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	3.32E-07	4.98E-04	-2.20E+00	3.27E-04	-2.02E+00
Non-re. PER as energy	MJ	1.49E+01	3.86E-01	1.21E+00	1.65E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	5.24E-05	3.64E-02	1.22E-02	-2.83E+00	-4.88E+00
Non-re. PER as material	MJ	8.25E+00	0.00E+00	1.05E-01	8.36E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	-8.01E+00	-3.45E-01	0.00E+00
Total use of non-re. PER	MJ	2.32E+01	3.86E-01	1.31E+00	2.49E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	5.24E-05	3.64E-02	-8.00E+00	-3.18E+00	-4.88E+00
Secondary materials	kg	4.36E-03	1.75E-04	8.04E-02	8.49E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	2.18E-08	1.60E-05	3.67E-05	7.09E-06	0.00E+00
Renew. secondary fuels	MJ	9.15E-05	1.18E-06	1.19E-04	2.12E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	5.69E-11	2.03E-07	1.50E-07	1.33E-07	0.00E+00
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m ³	8.34E-03	4.02E-05	1.73E-03	1.01E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	3.46E-09	5.06E-06	6.79E-06	-2.90E-04	-1.29E-02

1) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	7.10E-02	5.78E-04	2.82E-03	7.44E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	5.83E-08	6.26E-05	1.79E-04	3.54E-05	-5.48E-01
Non-hazardous waste	kg	3.46E+00	9.32E-03	9.95E-02	3.57E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	7.95E-07	1.17E-03	3.95E-03	3.90E-01	-5.41E-01
Radioactive waste	kg	1.51E-05	6.05E-08	1.39E-06	1.66E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	5.69E-12	7.45E-09	1.53E-08	5.17E-09	-3.62E-07

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	2.06E-01	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	6.93E-02	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	1.03E+00	2.92E-02	1.04E-01	1.16E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	3.98E-06	2.54E-03	3.40E-03	7.01E-03	0.00E+00
Ozone depletion Pot.	kg CFC ₁₁ e	2.07E-08	3.38E-10	7.40E-10	2.18E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	4.86E-14	2.92E-11	6.18E-12	1.83E-11	0.00E+00
Acidification	kg SO ₂ e	3.30E-03	4.31E-04	1.94E-04	3.93E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	2.54E-08	6.57E-06	6.01E-06	4.92E-06	0.00E+00
Eutrophication	kg PO ₄ ³ e	2.10E-02	5.16E-05	8.80E-05	2.11E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	5.94E-09	1.60E-06	2.38E-06	8.31E-06	0.00E+00
POCP (“smog”)	kg C ₂ H ₄ e	3.22E-04	2.26E-05	1.72E-05	3.62E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	1.91E-09	5.88E-07	1.39E-06	1.41E-06	0.00E+00
ADP-elements	kg Sbe	7.30E-06	5.04E-08	1.50E-07	7.50E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	1.40E-12	7.65E-09	1.57E-08	1.95E-09	0.00E+00
ADP-fossil	MJ	2.22E+01	3.82E-01	1.73E+00	2.43E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	5.20E-05	3.59E-02	1.12E-02	1.94E-02	0.00E+00

ENVIRONMENTAL IMPACTS – ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Radioactive waste, high	kg	4.14E-06	1.78E-08	4.13E-07	4.57E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	1.63E-12	2.20E-09	4.83E-09	1.48E-09	0.00E+00
Radioactive waste, int/low	kg	1.10E-05	4.27E-08	9.78E-07	1.20E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	4.06E-12	5.25E-09	1.05E-08	3.69E-09	0.00E+00

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online

This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Sarah Curpen, an authorized verifier acting for EPD Hub Limited
04.07.2025

