



ENVIRONMENTAL PRODUCT DECLARATION

VersiCore® Polyiso Eco Insulation



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VERSICORE® ECO POLYISO

VERSICO ROOFING SYSTEMS



A division of Carlisle Construction Materials LLC, Versico was formed through the acquisition of a major single-ply roofing supplier in 1993. With decades of experience in the single-ply roofing industry, Versico strives to provide the highest quality, longest-lasting, and most efficient roofing products in the industry. Versico provides its customers with superior roofing systems and services through a select network of manufacturer's representatives, distributors, and contractors.

Today, Versico's diverse product offering includes EPDM, TPO, PVC, and fleece-backed roofing membranes, as well as a full line of labor-saving flashing accessories and insulation. Backed by industry-leading warranties, Versico's products have been installed on a wide range of buildings including schools, hospitals, warehouses, and cold storage facilities.



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Versico Roofing Systems
Polyiso Eco Roof Insulation Board EPD



According to ISO 14025, ISO21930:2017

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL Solutions 333 Pfingsten Rd, Northbrook IL, 60062 www.ul.com www.spot.ul.com
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	UL Solutions Program Operator Rules v.2.7 2022
MANUFACTURER NAME AND ADDRESS	Versico Roofing Systems 1285 Ritner Hwy Carlisle, PA 17013 USA https://www.versico.com For more information, please contact: Insulation Product Manager Carlisle Construction Materials 1-800-453-2554
DECLARATION NUMBER	4792319355.117.1
DECLARED PRODUCT & FUNCTIONAL UNIT OR DECLARED UNIT	Polyiso insulation board product; 1 m ² of installed insulation material with a thickness that gives an average thermal resistance RSI = 1 m ² ·K/W and with a building service life of 75 years (packaging included)
REFERENCE PCR AND VERSION NUMBER	ISO 21930:2017, UL PCR Part A v4.0, UL PCR Part B: Building Envelope Thermal Insulation EPD Requirements v4.0
DESCRIPTION OF PRODUCT APPLICATION/USE	Polyisocyanurate Eco Roof Insulation Boards are used in commercial, light commercial, residential and industrial roof construction.
PRODUCT RSL DESCRIPTION (IF APPL.)	40 years
MARKETS OF APPLICABILITY	North America
DATE OF ISSUE	October 2nd, 2026
PERIOD OF VALIDITY	5 Years
EPD TYPE	Product-specific, Type III
RANGE OF DATASET VARIABILITY	Site Specific
EPD SCOPE	Cradle-to-grave
YEAR(S) OF REPORTED PRIMARY DATA	2023
LCA SOFTWARE & VERSION NUMBER	LCA for Experts v10.9.4.13
LCI DATABASE(S) & VERSION NUMBER	Sphera's MLC databases v 2025.2
LCIA METHODOLOGY & VERSION NUMBER	IPCC AR6, TRACI 2.2, CML 2016

The PCR review was conducted by:

UL Solutions
PCR Review Panel
epd@ul.com

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

☐ INTERNAL ☒ EXTERNAL

Cooper McCollum, UL Solutions

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

Sphera Inc.

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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1. Product Definition and Information

1.1. Description of Company/Organization

A division of Carlisle Construction Materials LLC, Versico was formed through the acquisition of a major single-ply roofing supplier in 1993. With decades of experience in the single-ply roofing industry, Versico strives to provide the highest quality, longest-lasting, and most efficient roofing products in the industry. Versico provides its customers with superior roofing systems and services through a select network of manufacturer's representatives, distributors, and contractors.

Today, Versico's diverse product offering includes EPDM, TPO, PVC, and fleece-backed roofing membranes, as well as a full line of labor-saving flashing accessories and insulation. Backed by industry-leading warranties, Versico's products have been installed on a wide range of buildings including schools, hospitals, warehouses, and cold storage facilities.

1.2. Product Description

Product Identification

VersiCore® Eco is a Polyiso Eco™ product offering consisting of a rigid roof insulation panel composed of a closed-cell polyisocyanurate foam core bonded to glass reinforced felt (GRF) facers on both sides. Polyiso Eco products incorporate approximately 5% bio-circular content within the foam formulation through the use of International Sustainability and Carbon Certification PLUS (ISCC PLUS) mass balance-certified bio-circular raw materials. The bio-circular content is derived from certified feedstocks and is attributed through the supply chain in accordance with ISCC PLUS chain of custody requirements.

VersiCore Eco is available in 4' x 4' (1220 mm x 1220 mm) and 4' x 8' (1220 mm x 2440 mm) panels in thicknesses from ½" (13 mm) to 4.5" (115 mm), as well as 4' x 12' (1220 mm x 3660 mm) panels in 1.5" to 3.5" thicknesses. Polyiso roof insulation boards are manufactured to meet the requirements of industry consensus product specifications and standards in the United States and Canada. Compliance with model building codes does not always ensure compliance with state or local building codes, which may be amended versions of these model codes. Always check with local building code officials to confirm compliance. Typical physical properties for polyiso roof insulation boards are listed in Table 1.

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Table 1. Typical Physical Properties of Polyiso Roof Insulation Boards and Corresponding Requirements Listed in ASTM C1289 and CAN/ULC-S704.1 Standards

PHYSICAL PROPERTY	STANDARD DESIGNATION	ASTM C1289 (TYPE II, CLASS 1 & 2)	CAN/ULC S704.1 (TYPE 2)
Thermal Resistance (R-value or long-term resistance), °F·ft ² ·hr/Btu (K·m ² /W), min	→	Class 1 Class 2 For 1.0-inch (25.4 mm): 5.6 (0.97) 5.3 (0.93) For 1.5-inch (25.4 mm): 8.4 (1.48) 8.0 (1.41) For 2.0-inch (25.4 mm): 11.2 (1.97) 10.6 (1.87) measured per ASTM C518 at 75°F (24°C) after 180 conditioning period	10.22 (1.80) for 1.97-inch (50-mm) thick board measured per CAN/ULC-S770 long-term thermal resistance
Compressive Strength, psi (kPa), min	ASTM D1621	Grade 2: 20 (140) Grade 3: 25 (172)	20 (140)
Flexural Strength, psi (kPa), min	ASTM C203	40 (275)	40 (275)
Tensile Strength, psf (kPa), min	→	500 (24) Measured per ASTM C209	500 (24) Measured per ASTM D1623
Dimensional Stability, % Linear Change, Thickness, Max	ASTM D2126	-40°F (-40°C) / ambient RH: 4.0 158°F (70°C) / 97% RH: 4.0 200°F (93°C) / ambient RH: 4.0	Not Applicable
Dimensional Stability, Linear Change, Length and Width, Max	ASTM D2126	-40°F (-40°C) / ambient RH: 2.0 158°F (70°C) / 97% RH: 2.0 200°F (93°C) / ambient RH: 2.0	-20°F (-29°C) / ambient RH: 2.0 158°F (70°C) / 97% RH: 2.0 176°F (80°C) / ambient RH: 2.0
Water Absorption, % by Volume, Max	→	1 Measured per ASTM C1763 – Procedure B	3.5 Measured per ASTM D2842 – Procedure B
Water Vapor Permeance, perm (ng/Pa·s·m ²)	ASTM E96/E96M Desiccant Method	Class 1: ≤1.5 (≤85.8) Class 2: ≤4.0 (≤228.8)	Class 1: ≤0.26 (≤15) Class 2: ≥0.26, ≤1.05 (≥15, ≤60) Class 3: > 1.05 (>60)



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1.3. Application

VersiCore Eco applications include single-ply roof systems (ballasted, mechanically attached, fully adhered) and meet the following standards and requirements:

- ASTM C1289, Type II, Class 1, Grade 2 (20 psi), Grade 3 (25 psi)
- International Building Code (IBC) Section 2603
- UL Standard 790, 263 and 1256: Component of Class A Roof Systems (refer to UL Roof Materials' system directory)
- FM Standards 4450/4470: Class 1 approval for steel roof-deck constructions (refer to FM RoofNavSM)
- California Code of Regulations, Title 24, Insulation Quality Standard License #TI-1418[SS2.1]
- Third-party certification with the PIMA Quality Mark for Long-Term
- Thermal Resistance (LTTR) values
- CAN/ULC S704, Type 2, Class 3 (20PSI), Type 3, Class 3 (25PSI)
- Florida Building Code Approval
- CDPH compliant for maximum allowable concentrations of target VOCs

1.4. Declaration of Methodological Framework

The EPD has been created strictly in accordance with the standards and norms below:

- ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and procedures
- ISO 21930:2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services
- UL Environment. (2022). Part A: Life Cycle Assessment Calculation Rules and Report Requirements, UL 10010 (v4.0)
- UL Environment. (2025). Part B: Building Envelope Thermal Insulation EPD Requirements, UL 10010–1 (v4.0)

1.5. Technical Requirements

Primary use is governed by building codes. These codes lay out safety requirements, structural sufficiency needs, and building energy compliance.

1.6. Material Composition

VersiCore Eco roof insulation boards are comprised of a foam core and glass reinforced felt (GRF) facers on the top and bottom surfaces. The composition is based on the average weighted formulation by mass listed in Table 2. More than half of the foam formulation consists of MDI which reacts with polyester polyol containing other chemicals



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including blowing agent, flame retardant, surfactant, catalyst and water. The chemical reaction forms a rigid cellular foam structure following a curing process. Approximately 5% bio-circular content is present within the foam formulation through the use of bio-circular MDI and bio-circular polyester polyol. The chemical reaction forms a rigid cellular foam structure following a curing process. The GRF facer is comprised of a cellulosic fiber felt containing glass fiber for added strength.

Table 2. Composition of VersiCore Eco Roof Insulation, Per Functional Unit

COMPONENT	COMPOSITION	
Facer	21%	
Foam	79%	
Foam Composition	MDI	52%
	Bio-Circular MDI	6%
	Polyester Polyol	27%
	Bio-Circular Polyester Polyol	3%
	Blowing Agent	7%
	Flame Retardant	3%
	Other	3%

1.7. Manufacturing

This module includes manufacturing of polyiso roof insulation boards, packaging, manufacturing waste, and associated releases to the air, soil, ground, and surface water. The raw materials transported to the polyiso manufacturing plant consist of chemical liquids stored in on-site tanks or totes. The chemicals for the “A” side (MDI), the “B” side (polyester polyol plus catalyst, surfactant, and flame retardant) and the blowing agent (pentane) are pumped from storage into process tanks. The “B” side and blowing agent are then pumped to a mixer and then to a mix head where they are combined with the “A” side and injected between the top and bottom facers on the pour table. The mixed chemicals react rapidly to form a closed-cell foam board with a foam core sandwiched between the top and bottom facers. The rigid foam board moves through a heated laminator, which controls thickness and aids in cell formation, curing, and facer adhesion. The board exits the laminator and is fed through saws that trim the board to the desired width and then through a cross-cut saw that cuts the board to the desired lengths. The finished rigid boards are then stacked, packaged with plastic wrap, labeled, and moved via forklift to a warehouse area for storage and eventual loading onto trucks for shipment. The manufacturing process for polyiso roof insulation boards at a typical manufacturing plant is illustrated in Figure 1. Bundles of polyiso roof insulation boards are wrapped and/or bagged in plastic prior to shipment from the manufacturing facility. Packaging used to wrap/shroud bundles is made from extruded low-density polyethylene (LDPE) film. This EPD represents production at the Montgomery, NY manufacturing facility (Table 3), with all foreground data collected directly





from the site. Manufacturing processes (Figure 1) are representative of the facility included in the study.

Table 3: Manufacturing Location Under Study

PRODUCT TYPE	SITE
City and State	Montgomery, NY

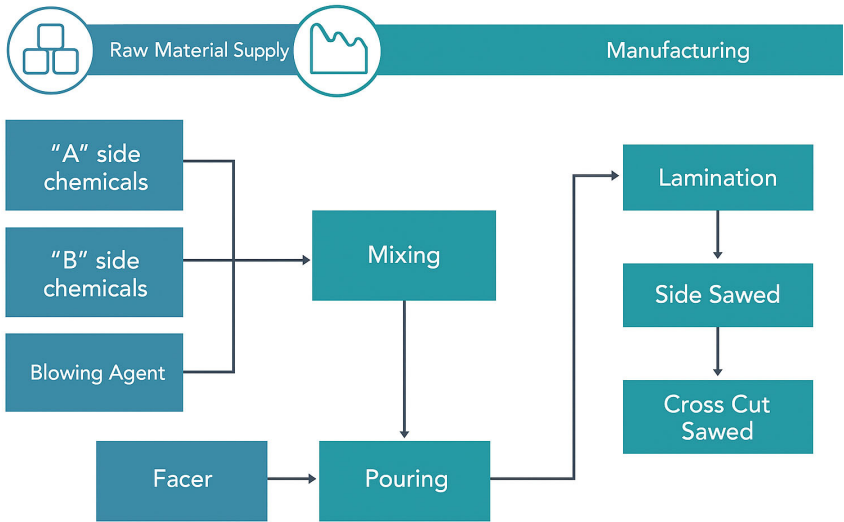


Figure 1: Flow Diagram for Polyiso Manufacturing Steps

1.8. Packaging

The polyiso product is packaged in plastic wrap. The packaging’s end of life is considered during installation (A5) using the following end of life rates: 9% recycling, 68% landfill, 17% incineration (UL Solutions, 2022).

1.9. Transportation

Primary data on inbound transportation of raw materials and packaging material were collected. Transportation to the construction site (A4) and transportation to end of life (C2) are 100 miles via diesel truck-trailer each.



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Table 4: Transport to Building Site Assumptions for Board Insulation (UL Solutions, 2025)

NAME	VERSICORE Eco	UNIT
Fuel type	Diesel	
Vehicle type	Rail + Heavy-duty truck	
Transport distance	1711 (Rail) 525 (Truck)	km
Capacity utilization (including empty runs, mass based)	65	%
Gross density of products transported	30.43	kg/m ³
Capacity utilization volume factor	1	

1.10. Product Installation

In the absence of primary data, polyiso insulation boards are considered in this study to be installed using PCR values for adhesive (0.0012 g/m²), metal fasteners (0.0012 g/m²), electricity (0.012 kWh/m²), diesel fuel for onboard generators (0.37 MJ/m²), and a product loss of 2% (UL Solutions, 2025). No biogenic carbon is reported in Table 5 as only plastic wrap is used for packaging the boards.

Table 5: Installation Into the Building (A5) (Values Are Per Functional Unit) (UL Solutions, 2025)

NAME	BOARDS AND BLANKETS	UNIT
Ancillary materials	0.0012 Fasteners 0.0012 Adhesive	kg
Electricity consumption	0.012	kWh
Diesel fuel for onboard generators	0.37	MJ
Product loss	2	%
Biogenic carbon contained in packaging	0	kg CO ₂
Direct emissions to ambient air, soil and water (separate from blowing agent emissions)	-	kg
VOC emissions*	≤0.5	mg/m ³

*The VOC emissions shall be determined in accordance with the “Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers - version 1.2”. California Department of Public Health Specification 01350.



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1.11. Use

The study considers that 20% of the pentane emissions are released during use (UL Solutions, 2025). All blowing agent emission allocation factors found in Table 6 are considered in the study.

Table 6: Blowing Agent Emission Allocation Factors Per Information Module (UL Solutions, 2025)

INSULATION CATEGORY	MANUFACTURING (A3)	INSTALLATION (A5)	USE (B)	PHASE	DISPOSAL (C4)	REMAINS IN MATERIAL
Polyiso	6%	1%	20%		73%	0%

Table 7: Replacement (B4) (UL Solutions, 2025)

NAME	VALUE	UNIT
Reference Service Life	40	Years
Replacement Cycle	0.9	N/A
Electricity for Installation Tools	0.012	kWh/m ²
Direct Emissions to Ambient Air, Soil, and Water	-	kg

1.12. Reference Service Life and Estimated Building Service Life

The expected lifespan of the polyiso insulation products is 40 years with the building service life of 75 years; thus the products are considered to be replaced 0.9 times when rounded up to the nearest tenth as required by the Part B PCR section 4.

1.13. Reuse, Recycling, and Energy Recovery

Recycling – Versico Roofing Systems continues to research means to increase the use of recycled materials into polyiso insulation products.

Reuse – Versico Roofing Systems offers an incentivized rooftop recycling program through its partner Nationwide Foam Recycling. Under this program, the boards are reused in lower-quality applications (such as sheds) upon end of life.

Energy efficiency – As a leader in the commercial roofing industry, Versico Roofing Systems continues to advocate for careful selection of roofing systems based on a building's design, location, and climatic conditions.

1.14. Disposal

Versico Roofing Systems offers an incentivized rooftop recycling program through its partner Nationwide Foam Recycling. Under this program, the boards are reused in lower-quality applications (such as sheds) upon manual



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removal. The study assumes that 70% of the product is reused at end of life given that on average, 70% of Versico Roofing Systems' polyiso insulation boards meet reuse requirements. The remaining is assumed to be landfilled. As primary data were unavailable, Module D uses a 20% value-correction factor to reflect that the reused products provide only partial value (i.e., 20%) compared to new products.

Regarding the removals of biogenic carbon reported in Table 8: While there is one raw material (surfactant) that contains biogenic carbon, precisely accounting for its emissions upon end of life is not possible so their inclusion has been omitted.

Table 8: End of Life (C1-C4) (UL Solutions, 2025)

NAME	EXAMPLE	VERSICORE ECO	UNIT
Deconstruction (module C1)		0	kWh
Transport (module C2)		161	km
Collection process	Collected with mixed construction waste	0.76	kg
	Reuse	0.53	kg
	Recycling	0	kg
Waste processing (module C3)	Incineration	0	kg
	Incineration with energy recovery	0	kg
	Energy conversion efficiency rate	0	kg
Disposal (module C4)	Product or material for final deposition (landfill)	0.23	kg
Blowing agent emissions		0.013	kg
Removals of biogenic carbon** (excluding packaging)		0	g

** "Removals of biogenic carbon" refers to the "amount of biogenic carbon contained within bio-based material leaving the product system" (per ISO 21930 7.2.7)

Module D is reported to acknowledge the polyiso boards are downcycled into sheds at the end of life. No additional environmental credit is applied, as the reuse doesn't displace the production of virgin materials or generate energy recovery.

Table 9: Reuse, Recovery, and/or Recycling Potentials (D), Relevant Scenario Information (UL Solutions, 2025)

NAME	VALUE	UNIT
Net energy benefit from energy recovery from waste treatment declared as exported energy in C3 (R>0.6)	0	MJ
Net energy benefit from thermal energy due to treatment of waste declared as exported energy in C4 (R<0.6)	0	MJ
Net energy benefit from material flow declared in C3 for energy recovery	0	MJ



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Process and conversion efficiencies	N/A
Further assumptions for scenario development (e.g. further processing technologies, assumptions on correction factors)	N/A

2. Life Cycle Assessment Background Information

A cradle-to-grave analysis using life cycle assessment (LCA) techniques was conducted for this EPD. The analysis was done according to ISO 21930:2017 Sustainability in building and construction PCR and followed LCA principles, requirements and guidelines laid out in the ISO 14040/14044 standards. As such, EPDs of construction products may not be comparable if they do not comply with the same PCR. While the intent of the PCR is to increase comparability, there may still be differences among EPDs that comply with the same PCR.

2.1. Functional Unit

The functional unit for this study is:

1 m² of installed insulation material with a thickness that gives an average thermal resistance RSI = 1 m²·K/W and with a building service life of 75 years (packaging included)

Table 10: Physical Properties of VersiCore Eco Roof Insulation

ATTRIBUTE	UNIT	VERSI CORE ECO
RSI	ft ² ·°F·hr/Btu (m ² ·K/W)	5.68 (1)
R-Value	ft ² ·°F·hr/Btu·in	5.77
Density	lb/ft ³ (kg/m ³)	1.90 (30.43)
Mass	lb (kg)	1.68 (0.76)
Thickness to achieve functional unit	in (m)	0.984 (0.029)
Area	ft ² (m ²)	10.76 (1)

The expected lifespan on the product is 40 years with the building service life of 75 years; thus, the product is considered to be replaced 0.9 times, when rounded up to the nearest tenth. Environmental performance results therefore represent the company average production of polyiso roof insulation, normalized to 1 m² produced.



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2.2. System Boundary

The declared system boundary is cradle-to-grave. Cradle-to-grave includes the PCR life cycle modules A1-A3 (production), A4-A5 (construction), B1-B7 (use), C1-C4 (end of life), and Module D (benefits and loads beyond the system boundaries). Capital goods and infrastructure flows are excluded from the product system boundary. The declared modules are shown in Table 11.

Table 11: Description of the System Boundary Modules

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

X = declared module; MND = module not declared

The system boundary and life cycle stages assessed in this EPD are shown in Figure 2.



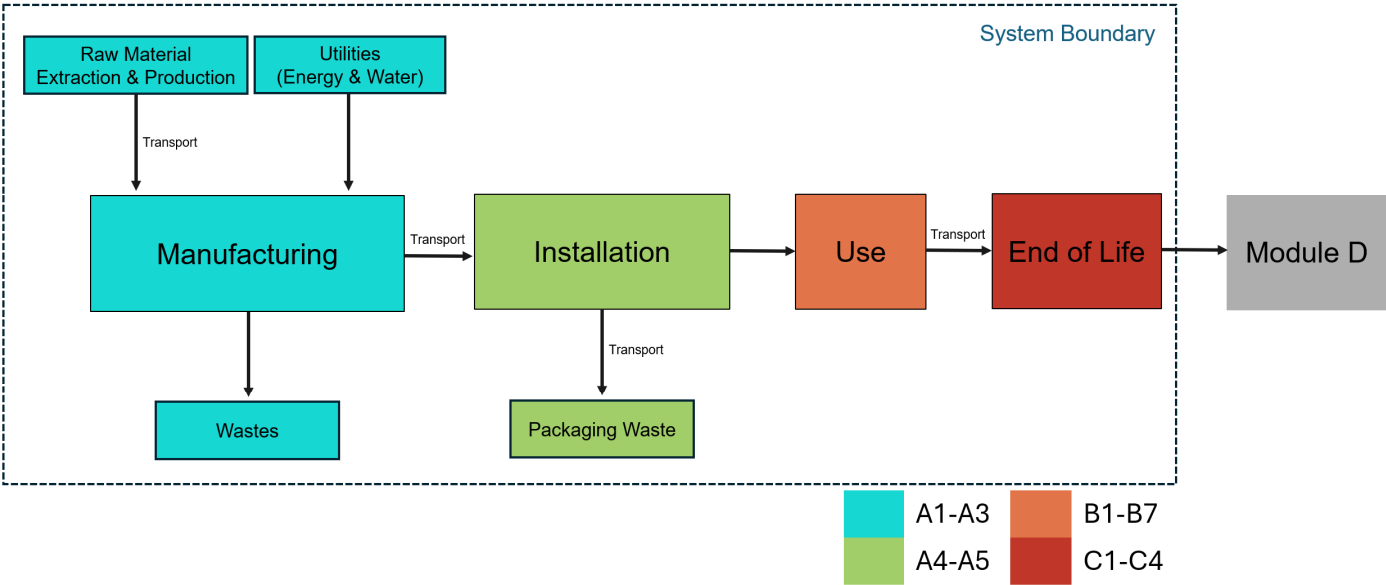


Figure 2: Life Cycle Stages Included in System Boundary

2.3. Estimates and Assumptions

Proxy data were applied to some materials where no matching life cycle inventories were available, as documented in the background report. Proxy datasets were selected using a conservative approach when no exact dataset match was found using a conservative selection approach. These datasets have minimal impact on overall results.

2.4. Cut-off Criteria

Cut-off criteria of the PCRs and ISO 21930 were followed (e.g., <1% of mass and/or energy flows were excluded). As summarized in Section 2.2, 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. Infrastructure and capital goods were excluded.

2.5. Data Sources

All upstream background data have been taken from the MLC 2025.2 database, using Sphera’s LCA FE software. All manufacturing data were collected from Versico for the calendar year 2024 (Sphera, 2025).

To ensure the highest quality data, primary data were collected by Versico. Where primary data could not be obtained, background LCI data were sourced from the MLC database. To maintain confidentiality, specific sources are not disclosed in this report but are available upon request.





2.6. Data Quality

Precision and Completeness

Precision: As the majority of the relevant foreground data are measured data or calculated based on primary information sources of the owner of the technology, precision is considered to be good. Seasonal variations were balanced out by using yearly averages. All background data are sourced from MLC databases with documented precision; documentation can be found at <https://lcadatabase.sphera.com/>.

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 considered to be good. All background data are sourced from MLC databases with the documented completeness.

Consistency and Reproducibility

Consistency: To ensure data consistency, all primary data were collected with the same level of detail, while all background data were sourced from the MLC databases.

Reproducibility: Reproducibility is supported as much as possible through the disclosure of input-output data, dataset choices, and modeling approaches in this report. Based on this information, any third party should be able to approximate the results of this study using the same data and modeling approaches.

Representativeness

Temporal: All primary data were collected for the year 2023. All secondary data come from the MLC 2025.2 databases and are representative of the years 2021-2024. As the study intended to compare the product systems for the reference year 2023, temporal representativeness is considered to be very good.

Geographical: All primary and secondary data were collected specific to the countries or regions under study. Where country-specific or region-specific data were unavailable, proxy data were used. Geographical representativeness is considered to be very good.

Technological: All primary and secondary data were modeled to be specific to the technologies or technology mixes under study. Where technology-specific data were unavailable, proxy data were used. Technological representativeness is considered to be good.

2.7. Period Under Review

Primary data collected represent production during the 2023 calendar year. This analysis is intended to represent production in 2023.

2.8. Allocation

Allocation of Background Data

Allocation of background data (energy and material) taken from the MLC 2025.2 databases is documented online at <https://lcadatabase.sphera.com/>.



Allocation in the Foreground Data

This EPD represents production at the Montgomery, NY, manufacturing facility, with all foreground data collected directly from the site. Where inputs and outputs are shared among multiple products manufactured at the facility, mass allocation was used to assign impacts to the product system. This approach was selected because the environmental burdens associated with manufacturing operations, including energy consumption, emissions, and waste generation, are primarily related to the mass throughput of the production process.

2.9. Comparability

EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries. According to PCR, only EPDs prepared from cradle-to-grave life-cycle results, and based on the same function, quantified by the same functional unit, and taking account of replacement based on the product reference service life (RSL) relative to an assumed building service life, can be used to assist purchasers and users in making informed comparisons between products. EPDs based on cradle-to-gate and cradle-to-gate with options information modules shall not be used for comparisons. Also, EPDs based on a declared unit shall not be used for comparisons.

2.10. Audience

The intended audience of this EPD is business-to-business (BtB) stakeholders.

3. Life Cycle Assessment Results

3.1. Life Cycle Impact Assessment Results

Life cycle impact assessment and inventory results are presented in this section. Results are calculated using TRACI 2.2 and IPCC AR6 (global warming). Tabulated results are followed by contribution analyses of the products, to provide a sense of which modules are driving environmental burden.

Replacement (B4) was found to be the most dominant contributor in all impact categories, regardless of product type. This is unsurprising as the polyiso insulation is replaced 0.9 times and the replacement includes modules A1-A5, as well as the end of life of the replaced product. Otherwise, raw materials (A1) are the most dominant contributor within replacement (B4), regardless of the product type. MDI is the main raw material in polyiso insulation products and contributes the most to the overall global warming potential (GWP).

With the exception of GWP-luc, the impact categories in Table 12 are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined and LCA should continue making advances in their development. However, the EPD users shall not use additional measures for comparative purposes.

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins, or risks. Declared modules that are not shown in the results (i.e., B2-B3, B5-B7, and C1) are assumed to have zero impacts.





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LCIA results are modeled for the functional unit of 1 m² at RSI = 1 m²·K/W. To estimate impacts at a specified thickness (th_x) and corresponding R-value, the following relationship is used:

$$Results_{thx} = Foam Results_{RSI=1} \times (th_x / th_{RSI=1}) + Static facer results$$

Where:

- $Results_{thx}$ Indicator value (e.g., GWP) for board thickness th_x (per m²).
- $Foam Results_{RSI=1}$ Indicator value for the foam portion at RSI = 1 (per m²).
- th_x Project board thickness (mm).
- $th_{RSI=1}$ Thickness (mm) that provides RSI = 1.
- $Static facer results$ Indicator value for facer (per m²); constant with thickness and includes upstream transport (A2).

EXAMPLE: A1-A3 GWP Impact GRF (3" Board):

$$Foam Results_{RSI=1} = 2.33$$

$$Static facer results = 0.16$$

$$Results_{thx} = 2.33 \times (76.2 / 24.99) + 0.16 = 7.25 \text{ kg CO}_2\text{eq./m}^2$$

Note: The scaling factors listed above are only applicable to the results of this particular LCA study and are not applicable to any results generated for variants or polyiso products with different inputs. Users should avoid cross-product comparisons unless functional units and system boundaries are identical.



ENVIRONMENTAL PRODUCT DECLARATION



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According to ISO 14025:2006, ISO21930:2017

Table 12: VersiCore Eco Insulation North American Impact Assessment Results

INDICATOR	A1	A2	A3	A4	A5	B1	B4	C2	C3	C4	D
Global Warming Potential (GWP-total) excluding biogenic carbon [kg CO ₂ eq.]											
	2.12E+00	6.95E-02	1.42E-01	7.23E-02	1.06E-01	0.00E+00	2.23E+00	1.09E-02	0.00E+00	5.05E-03	-6.17E-01
Global Warming Potential (GWP-total) including biogenic carbon [kg CO ₂ eq.]											
	2.03E+00	6.95E-02	1.42E-01	7.23E-02	1.04E-01	0.00E+00	2.15E+00	1.09E-02	0.00E+00	5.05E-03	-5.95E-01
Fossil Global Warming Potential (GWP-fossil) excluding biogenic carbon [kg CO ₂ eq.]											
	2.22E+00	6.94E-02	1.42E-01	7.22E-02	1.06E-01	0.00E+00	2.31E+00	1.09E-02	0.00E+00	5.05E-03	-6.49E-01
Fossil Global Warming Potential (GWP-fossil) including biogenic carbon [kg CO ₂ eq.]											
	2.14E+00	6.94E-02	1.42E-01	7.22E-02	1.04E-01	0.00E+00	2.24E+00	1.09E-02	0.00E+00	5.05E-03	-6.28E-01
Biogenic Global Warming Potential (GWP-bio) [kg CO ₂ eq.]											
	-1.35E-01	4.95E-05	3.07E-04	5.18E-05	-1.17E-03	0.00E+00	-1.16E-01	9.51E-06	0.00E+00	-5.63E-06	4.08E-02
Carbon Emissions from Land-use Change (GWP-luc) [kg CO ₂ eq.]*											
	3.07E-02	3.58E-05	3.78E-04	3.82E-05	6.57E-04	0.00E+00	2.88E-02	5.73E-06	0.00E+00	3.33E-06	-8.20E-03
Ozone Depletion Potential [kg CFC-11 eq.]											
	4.24E-12	1.95E-14	2.28E-12	2.04E-14	2.96E-13	0.00E+00	6.21E-12	3.07E-15	0.00E+00	1.54E-14	-1.78E-12
Photochemical Ozone Creation Potential [kg O ₃ eq.]											
	5.93E-02	1.50E-02	5.79E-03	1.54E-02	8.25E-03	1.12E-02	1.18E-01	7.67E-04	0.00E+00	4.13E-02	-2.15E-02
Acidification Potential [kg SO ₂ eq.]											
	3.40E-03	4.96E-04	9.57E-05	5.05E-04	3.10E-04	0.00E+00	3.97E-03	3.42E-05	0.00E+00	2.58E-05	-1.08E-03
Eutrophication Potential – freshwater [kg P eq.]											
	4.23E-06	5.52E-08	2.08E-07	5.89E-08	3.61E-07	0.00E+00	4.42E-06	8.84E-09	0.00E+00	2.17E-09	-1.19E-06
Eutrophication Potential – marine [kg N eq.]											
	1.74E-03	4.66E-04	6.90E-05	4.77E-04	2.13E-04	0.00E+00	2.30E-03	3.10E-05	0.00E+00	1.29E-05	-6.09E-04
Abiotic depletion potential for fossil resources (ADP _{fossil}) [MJ]											
	4.35E+01	8.82E-01	2.31E+00	9.20E-01	1.68E+00	0.00E+00	4.40E+01	1.38E-01	0.00E+00	7.41E-02	-1.25E+01

*Emerging LCA impact categories and inventory items are still under development and can have high levels of uncertainty that preclude international acceptance pending further development. Use caution when interpreting data in this category.

Figure 3 exclude replacement (B4) as this stage includes Modules A1-A5 for the amount of product replaced and the end of life of the replaced product (C1-C4); including it in the figures would visually duplicate those impacts without adding interpretive value.



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According to ISO 14025:2006, ISO21930:2017

For VersiCore Eco, raw materials (A1) are the primary contributor across all impact categories when replacement is excluded, contributing 22-47% of total cradle-to-grave impacts. Raw materials contribute 44-45% of GWP-total. Raw materials are also the dominant contributor to AP (39%), EPf (45%), EPm (33%), ODP (32%), and ADPf (47%). After raw materials, manufacturing (A3) is the next largest contributor to ODP (17%) and contributes 3% of GWP. Inbound transportation (A2) is the next largest contributor to EPm (9%). Installation (A5) contributes 4% of both AP and EPf impacts. End of life disposal (C4) is the second largest contributor to POCP, accounting for 15% of impacts.

A review of GWP results including and excluding biogenic carbon shows that impacts within the raw material stage (A1) are reduced by approximately 4% when biogenic carbon associated with the product's 5% bio-circular content in the foam composition is included. Transportation (A2) and manufacturing (A3) impacts remain unchanged; therefore, the difference between the two GWP results is attributable solely to the reduction in raw material impacts.

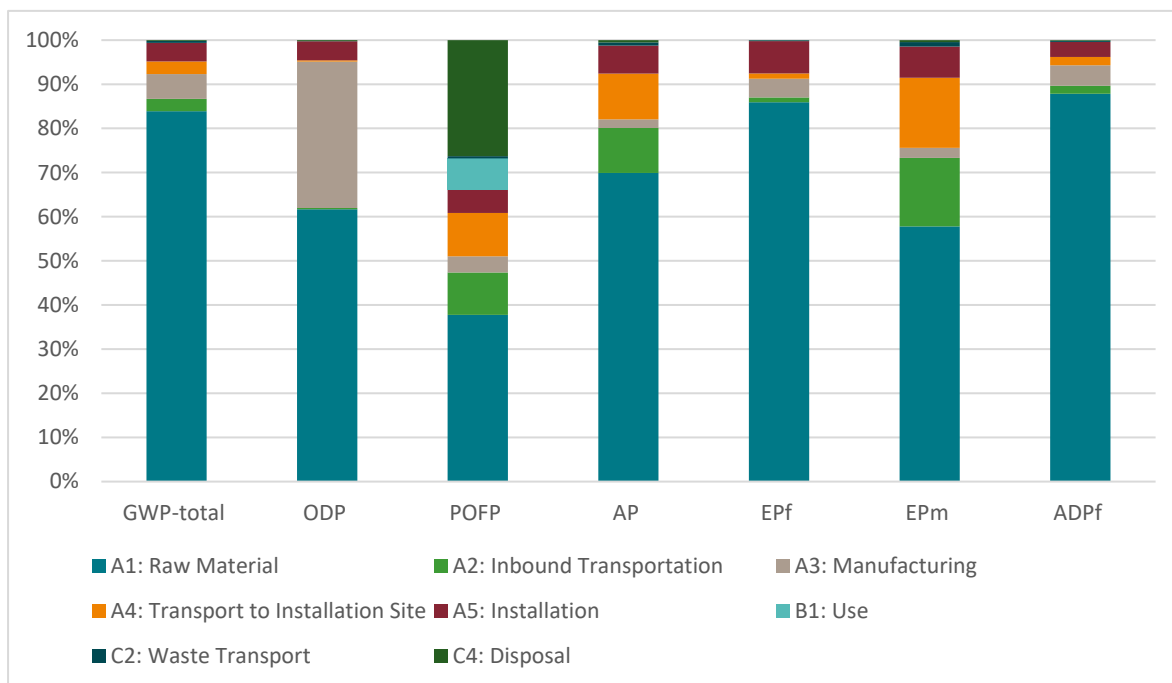


Figure 3: Cradle-to-Grave Life Cycle Impact Results of VersiCore Eco Insulation



ENVIRONMENTAL PRODUCT DECLARATION



Versico Roofing Systems
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According to ISO 14025:2006, ISO21930:2017

3.2. Life Cycle Inventory Results

Table 13: VersiCore Eco Roof Insulation Resource Use

INDICATOR	A1	A2	A3	A4	A5	B1	B4	C2	C3	C4	D
Renewable Primary Energy Resources as Energy (RPRE) [MJ]											
	3.10E+00	3.63E-02	6.50E-01	3.86E-02	1.43E-01	0.00E+00	3.47E+00	5.80E-03	0.00E+00	1.09E-02	-1.10E+00
Renewable Primary Resources as Material (RPRM) [MJ]											
	9.99E-02	0.00E+00	0.00E+00	0.00E+00	2.00E-03	0.00E+00	9.22E-02	0.00E+00	0.00E+00	0.00E+00	-2.63E-02
Non-Renewable Primary Resources as Energy (fuel) (NRPRE) [MJ]											
	3.20E+01	8.91E-01	2.33E+00	9.29E-01	1.50E+00	0.00E+00	3.34E+01	1.40E-01	0.00E+00	7.64E-02	-9.44E+00
Non-Renewable Primary Resources as Material (NRPRM) [MJ]											
	1.37E+01	0.00E+00	3.34E-01	0.00E+00	2.80E-01	0.00E+00	1.29E+01	0.00E+00	0.00E+00	0.00E+00	-3.68E+00
Secondary Materials (SM) [kg]											
	7.29E-02	0.00E+00	0.00E+00	0.00E+00	2.38E-03	0.00E+00	6.81E-02	0.00E+00	0.00E+00	0.00E+00	-1.92E-02
Renewable Secondary Fuels (RSF) [MJ]											
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-Renewable Secondary Fuels (NRSF) [MJ]											
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recovered Energy (RE) [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	0.00E+00	0.00E+00	0.00E+00
Use of Net Freshwater Resources (FW) [m3]											
	1.46E-02	3.93E-05	9.09E-04	4.17E-05	4.80E-04	0.00E+00	1.46E-02	6.26E-06	0.00E+00	8.32E-06	-4.18E-03



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According to ISO 14025:2006, ISO21930:2017

Table 14: VersiCore Eco Insulation Output Flows and Waste Categories

INDICATOR	A1	A2	A3	A4	A5	B1	B4	C2	C3	C4	D
Hazardous Waste Disposed (HWD) [kg]											
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-Hazardous Waste Disposed (NHWD) [kg]											
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.86E-02	0.00E+00	2.24E-01	0.00E+00	0.00E+00	2.29E-01	0.00E+00
High-level radioactive waste, conditioned, to final repository (HLRW) [kg]											
	8.96E-07	3.63E-09	1.51E-07	3.79E-09	3.88E-08	0.00E+00	9.88E-07	5.70E-10	0.00E+00	9.56E-10	-2.81E-07
Intermediate- and low-level radioactive waste, conditioned, to final repository (ILLRW) [kg]											
	7.50E-04	3.05E-06	1.26E-04	3.19E-06	3.28E-05	0.00E+00	8.27E-04	4.79E-07	0.00E+00	8.41E-07	-2.36E-04
Components for re-use (CRU) [kg]											
	0.00E+00	0.00E+00	3.91E-04	0.00E+00	7.83E-06	0.00E+00	3.61E-04	0.00E+00	0.00E+00	0.00E+00	1.01E+00
Materials for recycling (MFR) [kg]											
	0.00E+00	0.00E+00	3.84E-03	0.00E+00	5.21E-04	0.00E+00	4.54E-03	0.00E+00	3.25E-04	0.00E+00	-1.01E-03
Materials for energy recovery (MER) [kg]											
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.41E-04	0.00E+00	1.27E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recovered energy exported from the product system (EE) [MJ LHV]											
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.42E-03	0.00E+00	9.69E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00

While there was one raw material (surfactant) that contains biogenic carbon, precisely accounting for its biogenic emissions upon end of life is not possible so their inclusion in Table 17 has been omitted.

Table 15: VersiCore Eco Roof Insulation Carbon Emissions and Removals

INDICATOR	A1	A2	A3	A4	A5	B1	B4	C2	C3	C4	D
Biogenic Carbon Removal from Packaging (BCRK) [kg CO ₂]											
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic Carbon Emission from Packaging (BCEK) [kg CO ₂]											
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic Carbon Emission from Product (BCEP) [kg CO ₂]											
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic Carbon Removal from Product (BCRP) [kg CO ₂]											
	1.22E-01	0.00E+00	0.00E+00	0.00E+00	2.44E-03	0.00E+00	1.13E-01	0.00E+00	0.00E+00	0.00E+00	-3.21E-02



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Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes (BCEW) [kg CO ₂]											
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Calcination Carbon Emissions (CCE) [kg CO ₂]											
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Carbonation Carbon Removals (CCR) [kg CO ₂]											
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes (CWNR) [kg CO ₂]											
	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

4. LCA Interpretation

The results represent the cradle-to-grave environmental performance of 1 m² of polyiso insulation product and the packaging associated with it.

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

Consistency – All assumptions, methods, and data are consistent with each other and with the study's goal and scope. Differences in background data quality were minimized by exclusively using LCI data from the MLC 2025.2 databases. System boundaries, allocation rules, and impact assessment methods have been applied consistently throughout the study.

Replacement (B4) was found to be the most dominant contributor in all impact categories. Replacement includes Modules A1-A5 for the amount of product replaced, as well as the end of life of the replaced product. Raw materials (A1) are the most dominant contributor within replacement (B4), regardless of the product type. Raw materials (A1) contribute 22-47% to all impact categories. MDI is the largest contributor to A1 for all impact categories, with the exception of EPf where the black facer is the dominant contributor.

The following conclusions can be made from this study: Raw materials used in the production of the products play a significant role in the final product's life cycle environmental performance. For the polyiso insulation products, specifically upstream production of raw materials such as MDI due to its larger mass contribution.

As raw materials dominate contributions across various indicators, Versico can investigate potential reductions in the polyiso insulation production. MDI is the main raw material in their polyiso insulation products and contribute the most to overall GWP. Other recommendations include sourcing green energy, sourcing materials closer to production facilities, and formulation enhancements to extend the service life of the products.



ENVIRONMENTAL PRODUCT DECLARATION



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Polyiso Eco Roof Insulation Board EPD



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5. Additional Environmental Information

5.1. Environment and Health During Manufacturing

Please refer to the Technical Data Bulletin for polyiso products, which can be found at <https://www.versico.com>.

5.2. Environment and Health During Use

Please refer to the Technical Data Bulletin for polyiso products, which can be found at <https://www.versico.com>.

5.3. Extraordinary Effects

Please refer to the Technical Data Bulletin for polyiso products, which can be found at <https://www.versico.com>.

5.4. Environmental Activities and Certifications

Please refer to the Technical Data Bulletin for polyiso products, which can be found at <https://www.versico.com>.

5.5. Further Information

Please refer to the Technical Data Bulletin for polyiso products, which can be found at <https://www.versico.com>.

6. References

1. ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and Procedures
2. ISO 14040: 2006 Environmental Management – Life cycle assessment – Principles and Framework
3. ISO 14044: 2006/AMD 1:2017/ AMD 2:2020 Environmental Management – Life cycle assessment – Requirements and Guidelines
4. ISO 21930: 2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services
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6. UL Environment. (2022). Part A: Life Cycle Assessment Calculation Rules and Report Requirements, UL 10010 (v4.0)
7. UL Environment. (2025). Part B: Building Envelope Thermal Insulation EPD Requirements, UL 10010–1 (v4.0).



ABOUT VERSICO ROOFING SYSTEMS

Versico Roofing Systems was formed in 1993 through the acquisition of a major single-ply roofing manufacturer. Now, more than twenty-five years later, Versico has positioned itself as one of the top single-ply roofing system suppliers in the U.S. by focusing its efforts on quality products and exceptional service.

With decades of experience in the single-ply roofing field, Versico has been instrumental in the development of today's leading technologies in the commercial roofing industry. Versico manufactures EPDM, TPO, PVC, polyiso and EPS insulation and a full line of adhesives and accessories.



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