Environmental Product Declaration

According to ISO 14025 and ISO 21930:2017

SURE-WHITE® FleeceBACK® EPDM MEMBRANE

Carlisle SynTec Systems

More than a half century ago, Carlisle revolutionized the commercial roofing industry with its EPDM membrane, establishing a track record of superior performance and quality that would become the company's hallmark. Today, more than 260,000 warranted Carlisle EPDM roof systems comprising over 17.5 billion square feet of membrane have been installed around the world. The history of Carlisle is built on EPDM, a preferred membrane choice of consultants, contractors, architects, and building owners in numerous areas. Since the beginning, Carlisle's attention has been devoted to the four pillars of success that customers value most: performance, energy efficiency, environmental sustainability, and innovation. These are the foundation of Carlisle's success and commitment to every customer. Carlisle's decades-long experience with EPDM has allowed the company to define the standards of quality and reliability.

Issue Date: 05-30-2025

Valid Until: 05-30-2030

Declaration Number: ASTM-EPD1012

DECLARATION INFORMATION

Declaration	
Program Operator: ASTM International **Company:** Carlisle SynTec Systems, a division of Carlisle Construction Materials 1285 Ritner Hwy Carlisle, PA 17013 www.carlislesyntec.com	**www.astm.org**
Product Information	**Validity / Applicability**
Name: Sure-White® FleeceBACK® EPDM Roofing Membrane	**Period of Validity:** This declaration is valid for a period of 5 years from the date of publication.
Product Definition: Sure-White fleece-backed ethylene propylene diene monomer (EPDM) Single-Ply Roofing Membrane	
Declaration Type: Business-to-business (B2B)	**Geographic Scope:** North America
PCR Reference: • Core PCR: ISO 21930:2017 (ISO 21930, 2017) • Sub-category PCR: Product Category Rules for Single-Ply Roofing Membranes (NSF International, 2024)	**PCR Review was conducted by:** • Thomas P. Gloria, Ph.D., Industrial Ecology Consultants • Bill Stough, Sustainable Research Group • Jack Geibig, EcoForm
Product Application and/or Characteristics	
Single-ply, fleece-backed EPDM membrane representative of 60 and 90 mil thicknesses are used as a roofing protective layer for building applications.	
Content of the Declaration	
• Product definition and physical building-related data • Details of raw materials and material origin • Description of how the product is manufactured • Life Cycle Assessment results • Additional environmental information	
Verification	
This declaration was independently verified in accordance with ISO 21930:2017, ISO 14025:2006 and the reference PCR by Tim Brooke, ASTM International.	☐ Internal ☒External
This life cycle assessment was independently verified in accordance with ISO 21930:2017 and ISO 14044:2006 and the reference PCR by Thomas P. Gloria, Ph.D., Industrial Ecology Consultants.	
Limitations *The environmental impact results of EPDM 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 EPDM 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. See Section 3.10 for additional EPD comparability guidelines. Environmental declarations from different programs (ISO 14025) may not be comparable.*	

EPD Summary

This document is a Type III environmental product declaration by Carlisle SynTec Systems that is certified by ASTM International (ASTM) as conforming to the requirements of ISO 21930 and ISO 14025. ASTM has assessed that the Life Cycle Assessment (LCA) information fulfills the requirements of ISO 14040 in accordance with the instructions listed in the referenced product category rules. The intent of this document is to further the development of environmentally compatible and sustainable construction methods by providing comprehensive environmental information related to potential impacts in accordance with international standards.

No comparisons or benchmarking are included in this EPD. Environmental declarations from different programs based upon differing PCRs may not be comparable. In general, EPDs may not be used for comparability purposes when not considered in a construction works context. Given that the PCR ensures products meet the same functional requirements, comparability is permissible provided the information given for such comparison is transparent and the limitations of comparability explained. 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. When comparing EPDs created using this PCR, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to different results for upstream or downstream of the life cycle stages declared.

Scope and Boundaries of the Life Cycle Assessment

The Life Cycle Assessment (LCA) was performed according to ISO 14040 (ISO 14040, 2020a) and ISO 14044 (ISO 14044, 2020b) following the requirements of the ASTM EPD Program instructions and the referenced PCR.

System Boundary: Cradle-to-gate

Declared Unit: 1 m^2 of single-ply roofing membrane for a stated product thickness. Environmental performance results therefore represent Carlisle's average production of EPDM, normalized to 1 m^2.

General Information

Description of Company/Organization

Carlisle SynTec Systems, the flagship division of Carlisle Construction Materials, is the largest supplier of commercial roofing products in the world. Carlisle produces high-performance EPDM, TPO, PVC, and Sure-White® single-ply roofing membranes, a full line of polyiso and expanded polystyrene insulation, and a wide variety of solvent-based and low-VOC adhesives. With decades of manufacturing experience and billions of square feet of roofing materials sold, Carlisle continues to lead the industry by providing the best products, services, and warranty options available today.

Product Description

Carlisle's Sure-White® FleeceBACK® EPDM is manufactured using a patented hot-melt adhesive technology to bond a 55-mil fleece backing to the EPDM sheeting. The addition of the fleece increases the membranes toughness, durability, and versatility. Carlisle Non-Reinforced FleeceBACK EPDM systems are preferred for new construction and re-roofing projects, and are particularly well-suited for critical facilities that require superior protection against severe weather, as well as solar applications. FleeceBACK EPDM membranes are installed using Flexible FAST™ Adhesive, a VOC-free, low-odor, two-part low-rise polyurethane adhesive that enables a quiet, non-penetrating application while delivering outstanding wind uplift resistance. Sure-White FleeceBACK EPDM provides exceptional protection against severe weathering with an industry-leading total radiant exposure for a reflective membrane of 25,200 kJ/m^2 without cracking or crazing and meets cool roof requirements for both initial and aged solar reflectance and thermal emittance, making it an excellent choice for projects in warmer climates.

The product system evaluated in this report is a single-ply Sure-White® FleeceBACK® EPDM EPDM roofing membrane at the finished nominal thicknesses produced by Carlisle. See Table 1 for membrane specification and standard.

Table 1 Membrane specification and standard

Roof System	Roof System Component	Declared Thicknesses and Weights, per declared unit	Standard
Sure-White® FleeceBACK® ethylene propylene diene monomer (EPDM)	Membrane	60 mils: 2 kg/m^2 90 mils: 3.1 kg/m^2	ASTM D4637

Product Average

The 2023 production data used in this EPD considers Sure-White® FleeceBACK® EPDM roofing membranes produced by Carlisle in one (1) site in North America during the year, Carlisle, PA.

Application

Sure-White® FleeceBACK EPDM membranes are primarily used for fully adhered roofing applications and known to provide added puncture and tear resistance, excellent long-term weatherability, and increased wind uplift performance over bareback variants. FleeceBACK EPDM membranes are adhered using Carlisle's Flexible FAST adhesive applied in either spray, splatter, or extruded application. The membrane comes standard with factory-applied splice tape, ensuring a highly reliable and efficient seam installation. Sure-White FleeceBACK EPDM is particularly well-suited for cooling-dominated southern climates, where its reflective properties help improve energy efficiency.

Material Composition

Table 2 shows the input material for Sure-White® FleeceBACK® EPDM roofing membranes and their material percentages for the three membrane thicknesses.

Table 2 Composition of Sure-White® FleeceBACK® EPDM roofing membrane

Material	**60 mil % Composition**	**90 mil % Composition**
Base polymer (EPDM)	28	28
Filler	22	22
Paraffinic oil	16	16
Pigment	14	14
Fleece backing	11	11
Fire retardant	8	8
Others	<1%	<1%

Manufacturing

The production of FleeceBACK® EPDM begins with EPDM rubber in the form of pellets and uncured scrap. These are blended with additives like accelerators, fire retardants, and pigments to form a uniform compound. The compound is extruded into continuous sheets, pressed to the required thickness, trimmed, and rolled into master rolls, with uncured trimmings recycled back into the process. The master rolls are then vulcanized, using heat and pressure to crosslink the rubber for added durability and elasticity. After vulcanization, the membrane is cleaned, cut to size, and sent through a laminating line where fleece is bonded to the EPDM using adhesive. The laminated membrane is trimmed again to the final dimensions. It is then rolled onto a cardboard core, covered with a labeled bag, and sealed to prevent contamination.

This results in a finished FleeceBACK membrane ready for shipment.

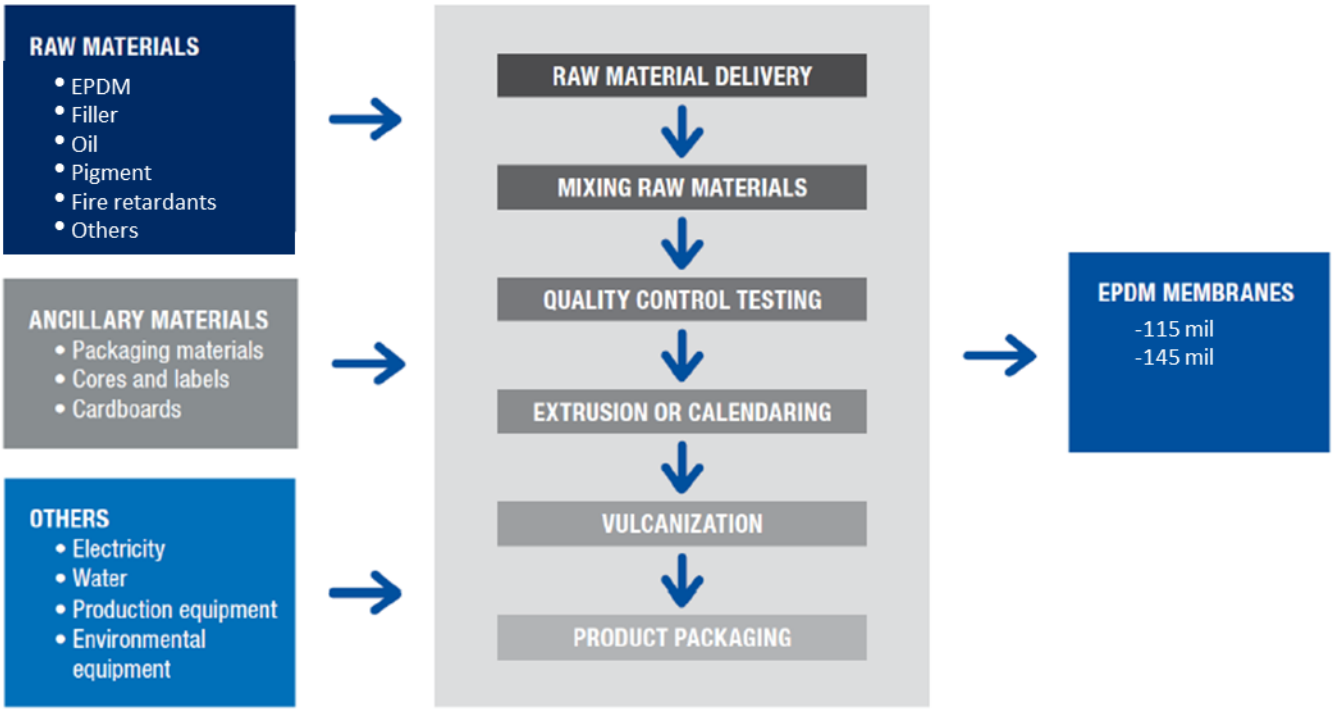

Figure 1: Sure-White® FleeceBACK® EPDM production process map

Transportation

Primary data on inbound transportation of raw materials and packaging material were collected. These materials included base resin (EPDM), fleece backing, fillers, pigments, curatives, activators, processing aids, etc. Transportation to the customer or construction site is outside the scope of this EPD.

Product Installation

Installation is outside the scope of this EPD.

Use

Product use is outside the scope of this EPD.

Reuse, Recycling, and Energy Recovery

Product reuse, recycling, and energy recovery are outside the scope of this EPD.

Recycling – Carlisle has increased the level of internal recycled content used in its EPDM membranes and continues to research means to increase the use of recycled materials into the membrane and various rubber-related accessory products like rubber pavers and walkway pads.

Energy efficiency – As a leader in the commercial roofing industry and the largest manufacturer of both white and dark-colored roofing membranes, Carlisle continues to advocate for careful selection of roofing systems based on a building's design, location, and climatic conditions. In general, the heating penalty of white reflective membranes exceeds the cooling benefit in heating-dominated central and northern climates. In the central and northern climates, heating costs are typically 3-5 times greater than cooling costs, and in these climates a dark-colored EPDM roof is typically the energy-efficient choice. In cooling-dominated southern climates, a white/reflective roofing material such as Carlisle's Sure-White EPDM or a ballasted EPDM roof are typically the most energy-efficient choices. The use of insulating ½" cover boards provide an added 2.5 R-value as another means to enhance the energy efficiency of roofing systems. Cover boards also improve the durability and wind uplift resistance of the roofing assembly. Specifying the use of multiple layers of insulation with staggered joints in lieu of a single thick layer of insulation is proven to be more thermally efficient and is also required by energy code. Utilizing urethane insulation adhesives to bond the top layer of insulation to the layers below in lieu of metal fasteners and metal insulation plates, eliminates the R-value loss from thermal bridging.

Disposal

Product disposal is outside the scope of this EPD.

METHODOLOGICAL FRAMEWORK

DECLARED UNIT

The declared unit for this study is :

1 m² of single-ply roofing membrane for a stated product thickness.

Environmental performance results therefore represent Carlisle's average production of EPDM, normalized to 1 m^2. The reference service life is not specified. Since the use stage is not included in the system boundary, no reference service life needs to be defined for the analysis.

SYSTEM BOUNDARY

System boundaries are summarized in Figure 2 for the analysis scope of "cradle-to-gate". Excluded modules are indicated by "MND" or "module not declared". As is typical of works of life cycle assessment, the construction and maintenance of capital equipment, such as production equipment in the manufacturing stage, are not included in the system, nor are human labor and employee commute. The use stage is also outside the scope of this study.

PRODUCT STAGE			CONSTRUCT-ION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
Raw material supply	Transport	Manufacturing	Transport from gate to site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Building Operational Energy Use During Product Use	Building Operational Water Use During Product Use	Deconstruction	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling Potential
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	MND	MND	MND	MND	MND

Figure 2 Life cycle stages included in system boundary

CUT-OFF RULES

No cut-off criteria had to be applied for this study. All available energy and material flow data were included in the model.

DATA SOURCES

The LCA model was created using the LCA FE software system for life cycle engineering, version 2024.1, developed by Sphera (Sphera, 2023). Background life cycle inventory data for raw materials and processes were obtained from the MLC 2024.1 database. Primary manufacturing data were provided by the participating companies.

Data Quality

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 high. Seasonal variations were balanced out by using yearly averages that were then weighted according to each manufacturer's production volume. All background data are sourced from the MLC databases with the documented precision. 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 high. All background data are sourced from the MLC databases with the documented completeness.

Geographical Coverage

This study represents production at Carlisle facilities in North America. As such, the geographical coverage for this study is based on North American system boundaries for all processes and products.

Regionally specific datasets, where available, were used to represent each manufacturing location's energy consumption. Proxy datasets were used as needed for raw material inputs to address lack of data for a specific material or for a specific geographical region. These proxy datasets were chosen for their technological representativeness of the actual materials.

Period under Review

Primary data collected represent production during the 2023 calendar year. This analysis is intended to represent production in 2023. All secondary data come from the MLC Professional databases and are representative of the years 2019 to 2023, with the exception of a dataset from 2003 and a packaging dataset from 2017.

Allocation

As several products are often manufactured at the same plant, participating facilities used mass allocation to report data. Mass allocation was selected since the environmental burden in the industrial process (energy consumption, emissions, etc.) is primarily governed by the mass throughput of each sub-process.

Allocation of background data (energy and materials) taken from the MLC 2024 databases is documented online at https://sphera.com/product-sustainability-gabi-data-search/.

Estimates and Assumptions

In cases where no matching life cycle inventories were available to represent a flow, proxy data were applied based on conservative assumptions regarding environmental impacts.

Life Cycle Assessment Results

The environmental impacts associated with the fleece-backed roofing membrane is presented below in Table 3 for the production stage (A1-A3).

Table 3: Environmental impact indicators for 1m² of Sure-White® FleeceBACK® EPDM Roofing Membrane

Indicator	A1	A2	A3	Total
Global Warming Potential [kg CO_2 eq.] – IPCC AR6				
EPDM NR FB 60	5.69E+00	2.43E-01	1.05E+00	6.98E+00
EPDM NR FB 90	8.81E+00	3.77E-01	1.63E+00	1.08E+01
Global Warming Potential [kg CO_2 eq.] – IPCC AR5				
EPDM NR FB 60	5.88E+00	2.46E-01	1.08E+00	7.20E+00
EPDM NR FB 90	9.11E+00	3.82E-01	1.67E+00	1.12E+01
Ozone Depletion Potential [kg CFC-11 eq.]				
EPDM NR FB 60	5.84E-11	7.34E-16	1.61E-12	6.00E-11
EPDM NR FB 90	9.05E-11	1.14E-15	2.50E-12	9.30E-11
Acidification Potential [kg SO2 eq.]				
EPDM NR FB 60	2.19E-02	1.36E-03	1.15E-03	2.44E-02
EPDM NR FB 90	3.39E-02	2.11E-03	1.78E-03	3.77E-02
Eutrophication Potential [kg N eq.]				
EPDM NR FB 60	1.04E-03	1.01E-04	1.32E-04	1.27E-03
EPDM NR FB 90	1.61E-03	1.56E-04	2.04E-04	1.97E-03
Smog Formation Potential [kg O_3 eq.][1]				
EPDM NR FB 60	2.15E-01	3.17E-02	1.88E-02	2.65E-01
EPDM NR FB 90	3.32E-01	4.91E-02	2.92E-02	4.11E-01

The resource use associated with the fleece-backed roofing membrane is presented below in Table 4 for the production stage (A1-A3). 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 these categories (NSF International, 2024).

Table 4: Resource use indicators for 1m² of Sure-White® FleeceBACK® EPDM Roofing Membrane

Indicator	A1	A2	A3	Total
Renewable Primary Energy Resources as Energy (RPRE) [MJ]				
EPDM NR FB 60	9.42E+00	1.41E-01	3.48E+00	1.30E+01
EPDM NR FB 90	1.46E+01	2.19E-01	5.40E+00	2.02E+01
Renewable Primary Resources as Material (RPRM) [MJ]				
EPDM NR FB 60	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EPDM NR FB 90	0.00E+00	0.00E+00	0.00E+00	0.00E+00

[1] Per ISO 21930, TRACI Smog Formation Potential (SFP) is reported instead of Photochemical Oxidant Creation Potential (POCP)

Non-Renewable Primary Resources as Energy (fuel) (NRPRE) [MJ]				
EPDM NR FB 60	9.03E+01	3.35E+00	1.71E+01	1.11E+02
EPDM NR FB 90	1.40E+02	5.20E+00	2.65E+01	1.72E+02
Non-Renewable Primary Resources as Material (NRPRM) [MJ]				
EPDM NR FB 60	4.58E+01	0.00E+00	3.26E-01	4.62E+01
EPDM NR FB 90	7.11E+01	0.00E+00	5.03E-01	7.16E+01
Secondary Materials (SM) [kg]				
EPDM NR FB 60	0.00E+00	0.00E+00	9.02E-02	9.02E-02
EPDM NR FB 90	0.00E+00	0.00E+00	1.40E-01	1.40E-01
Renewable Secondary Fuels (RSF) [MJ]				
EPDM NR FB 60	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EPDM NR FB 90	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-Renewable Secondary Fuels (NRSF) [MJ]				
EPDM NR FB 60	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EPDM NR FB 90	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recovered Energy (RE) [MJ LHV]*				
EPDM NR FB 60	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EPDM NR FB 90	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Abiotic Depletion Potential for Fossil Resources (ADP_{fossil}) [MJ]*				
EPDM NR FB 60	1.31E+02	3.33E+00	1.38E+01	1.48E+02
EPDM NR FB 90	2.03E+02	5.15E+00	2.13E+01	2.30E+02
Use of Net Freshwater Resources (FW) [m^3]*				
EPDM NR FB 60	2.35E-02	4.68E-04	6.23E-03	3.02E-02
EPDM NR FB 90	3.64E-02	7.25E-04	9.66E-03	4.68E-02

*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.

The waste generation associated with the fleece-backed roofing membrane is presented below in Table 5 for the production stage (A1-A3). 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 these categories (NSF International, 2024).

Table 5: Output flows & waste categories for 1m^2 of Sure-White® FleeceBACK® EPDM Roofing Membrane

Indicator	A1	A2	A3	Total
Hazardous Waste Disposed (HWD) [kg]				
EPDM NR FB 60	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EPDM NR FB 90	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-Hazardous Waste Disposed (NHWD) [kg]				

EPDM NR FB 60	0.00E+00	0.00E+00	1.60E-01	1.60E-01
EPDM NR FB 90	0.00E+00	0.00E+00	2.48E-01	2.48E-01
High-Level Radioactive Waste, Conditioned, to Final Repository (HLRW) [kg]*				
EPDM NR FB 60	1.59E-06	1.18E-08	1.55E-06	3.16E-06
EPDM NR FB 90	2.47E-06	1.82E-08	2.41E-06	4.89E-06
Intermediate- and Low-Level Radioactive Waste, Conditioned, to Final Repository (ILLRW) [kg]*				
EPDM NR FB 60	1.54E-03	9.92E-06	1.30E-03	2.85E-03
EPDM NR FB 90	2.39E-03	1.54E-05	2.01E-03	4.42E-03
Components for Re-Use (CRU) [kg]*				
EPDM NR FB 60	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EPDM NR FB 90	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for Recycling (MR) [kg]*				
EPDM NR FB 60	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EPDM NR FB 90	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for Energy Recovery (MER) [kg]*				
EPDM NR FB 60	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EPDM NR FB 90	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recovered Energy Exported from the Product System (EE) [MJ LHV]*				
EPDM NR FB 60	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EPDM NR FB 90	0.00E+00	0.00E+00	0.00E+00	0.00E+00

*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.

LCA Interpretation

The major contributor for almost every impact is raw materials (A1) followed by manufacturing (A3) and inbound transportation (A2). The EPDM material itself contributed the most to AR6 GWP (33%) and SFP (26%) impacts. The fleece and manufacturing electricity were found to be the second highest contributor to AR6 GWP (11% each). Impacts on ODP were driven by white mineral oil (97%), EP impacts were driven by zinc stearate (18%), and AP impacts were driven by titanium dioxide (36%).

The EPDs are comparable only if they comply with the document ISO 21930, use the same sub-category PCR where applicable, include all relevant information modules and are based on equivalent scenarios with respect to the context of construction works.

ADDITIONAL ENVIRONMENTAL INFORMATION

Proven weatherability – a key theme in commercial construction today is sustainability and long-term service life. Physical property testing of 30-year-old EPDM membranes removed from well-maintained roofs revealed that their tensile strength and tear resistance actually improved over time. Remarkably, the 30-year-old membrane remained highly pliable and flexible, retaining its ability to expand and contract with building movement and temperature fluctuations. Equally

significant is the membrane's continued repairability, as it can still be spliced using primers and pressure-sensitive flashings, further extending the roof's lifespan.

UV resistance – EPDM has excellent UV resistance as evidenced in the ASTM G155 Accelerated Xenon Arc Weathering test. White non-reinforced EPDM has a UV resistance of 25,200 kJ/m^2, higher than alternative reflective thermoplastic membranes.

Puncture Resistance - Adding external fleece reinforcement gives you the highest amount of puncture resistance and provides a full 1.2, 1.5, or 1.9mm of weathering membrane above the fleece reinforcement.

Amount of weathering material – Non-reinforced EPDM membrane has over twice the weathering material thickness as an internally reinforced thermoset (EPDM) or thermoplastic (TPO & PVC) membrane. In a 60-mil non-reinforced EPDM there are 60 mils of weathering material. In a 60-mil internally reinforced membrane, there are only 20 to 24 mils of weathering material over the scrim. The mode of eventual failure on reinforced membranes is typically when the scrim begins showing through the surface of the membrane and begins taking on water.

Resistance to unwanted biological growth – All of Carlisle's EPDM roofing membranes provide excellent resistance to unwanted biological growth on the surface of the membrane. In the ASTM G21 test, conducted by MicroStar Labs, our EPDM roofing membranes achieved a zero or "no growth" rating (#R2014-131).

Resistance to hail damage – EPDM roofing membranes have had a great track record of resisting hail damage and keeping water out of buildings, which can cut down on owners' financial losses considerably. EPDM stays flexible throughout its life span, providing good hail resistance even at the end of its warranty term. Adhered systems, with a minimum 1.5 mm reinforced EPDM membrane over a cover board set in adhesive, are a practical way to eliminate potential hail damage due to a direct hail strike over a fastener or plate that is required in a mechanically fastened system.

Cool Roof Designation – Sure-White EPDM surpasses energy code requirements for solar reflectance, 3-year aged solar reflectance, and thermal emittance, making it an ideal 'cool roof' solution for ASHRAE Climate Zones 1-3.

Pollution abatement equipment – The Carlisle EPDM plants employ pollution abatement equipment, including scrubbers, filter boxes, and dust collectors.

Clarification regarding hazardous substances in the final product – Per EPDM Safety Data Sheet (SDS), the finished product declared in this EPD is considered "Articles" as defined in OSHA Hazardous Communication Standard. This finished product is not hazardous and does not contain any regulated substances of very high concern. No components in the product are listed under the SDS Section 15 Regulatory Requirements, specifically U.S. Federal Regulations, SARA Section 311/312, California Prop 65, or the Canadian WHMIS IDL. Information on ingredients and regulatory information can be found in the SDS.

Clarification regarding release of dangerous substances from the final product – The finished product declared in the EPD is classified as an article with no release of dangerous substances.

Clarification regarding hazardous waste generated during production – No hazardous waste is generated during the production of the product declared in this EPD.

Responsible operations – All of Carlisle Construction Materials' membrane plants are 3rd party certified to ISO 14001 Environmental Management System Standards. Third-party ISO 14001 certification provides independent assurance that our environmental management system (EMS) meets the standard's stringent requirements, demonstrating a commitment to environmental responsibility and continuous improvement.

REFERENCES

ASTM International. (2020). *ASTM Program Operator for Product Category Rules (PCR) and Environmental Product Declarations (EPDs), General Program Instructions, Version: 8.0, revised 04/29/20*.

ASTM International. (2021). *ASTM D4637/D4637M-15(2021)e1: Standard specification for EPDM sheet used in single-ply roof membrane*.

ISO 14025. (2006). *ISO 14025: Environmental labels and declarations - Type III environmental declarations - Principles and procedures*. Geneva: International Organization for Standardization.

ISO 14040. (2020a). *ISO 14040/Amd.1:2020: Environmental management – Life cycle assessment – Principles and framework*. Geneva: International Organization for Standardization.

ISO 14044. (2020b). *ISO 14044:2006/Amd.1:2017/Amd.2:2020 Environmental management – Life cycle assessment – Requirements and guidelines*. Geneva: International Organization for Standardization.

ISO 21930. (2017). *ISO 21930: Sustainability in buildings and civil engineering works -- Core rules for environmental product declarations of construction products and services*. Geneva: International Organization for Standardization.

NSF International. (2024). *Product Category Rule for Preparing an Environmental Product Declaration for Single Ply Roofing Membranes Ext 2024-113*.

Sphera. (2023). *MLC Database Documentation*. Retrieved from Sphera: https://sphera.com/product-sustainability-gabi-data-search/

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