



Part B: Product group definition | Water-Resistive and Air Barriers | Part B #26-002

This Part B conforms to the ACLCA PCR Open Standard version 1.0 (May 2022) at the following level:

1 Transparency 2 Procurement 3 Data source

Initiated by	W. R. MEADOWS - https://www.wrmeadows.com/		
Working group members	Jim Mellentine, Thrive ESG (PCR committee chair) Kim Lombardozzi, W. R. Meadows Bruce Cline, W. R. Meadows Jean-François Cote, SOPREMA Carlotta China, Polyglass Jennifer Schmidt, Polyglass Mark Franciosi, Polyglass Jodi Thomas, Henry Husnu Kalkanoglu, SOPREMA Mason Althouse, SOPREMA Michael Rhodes, Polyisocyanurate Insulation Manufacturers Association (PIMA) Sam Schneider, Saint Gobain		
Public notices of development/ outreach	<ul style="list-style-type: none"> Public notice on the Sustainable Minds website announcing the update to the PCR on November 20, 2025: http://www.sustainableminds.com/transparency-report-program/part-b Email blast on November 20, 2025 to mailing lists of LCA professionals, building and construction industry and trade associations, and manufacturers of water-resistive and air barriers, requesting participation on the PCR committee. Email blast on March 23, 2026 to the same mailing lists requesting public comment. 		
Non-participating parties	All interested parties who requested participation were invited to join the working group.		
New Part B?	No	Part B version number	v5.0
Publication date	April 24, 2026		
Validity period	04/24/2026 – 04/23/2031		
Expected renewal schedule	Sustainable Minds intends to notify the working group and post update/renewal information on its website approximately four months prior to expiration to determine update, extension, or expiration options for this Part B.		

1. Product group

Name	Water-resistive and air barriers	CSI MasterFormat® # Examples provided; not exhaustive	07 25 00 Weather barriers 07 26 00 Vapor retarders 07 27 00 Air barriers
Description	<p>Water-resistive barriers are materials installed behind an exterior wall covering that are intended to resist liquid water that has penetrated behind the exterior covering from further intruding into the exterior wall assembly.</p> <p>Air barrier materials are materials that are used anywhere in a building assembly to restrict or prevent the movement of air into or out of the conditioned space.</p> <p>Both water-resistive and air barriers can be either permeable or impermeable to water vapor.</p> <p>Vapor retarders are materials installed to control the diffusion of water vapor.</p> <p>Water-Resistive Barriers (WRB) shall be materials tested and listed to resist liquid water penetration. Air Barrier (AB) materials shall comply with air leakage compliances. Air and Water-Resistive Barriers (AWRB) shall comply with both water-resistive and air leakage compliance testing. Examples include mechanically fastened building wraps, building paper, fluid-applied membranes, self-adhered membranes, heat-applied membranes, cellular plastics, or other products, provided they are specifically evaluated and approved for the intended function.</p> <p>Products covered by this Part B shall meet one or more of the following requirements:</p> <ul style="list-style-type: none"> Demonstrate an air permeance of less than or equal to 0.02 L/(s·m²) at a pressure difference of 75 Pa (0.004 cfm/ft² at a pressure difference of 1.56 lb/ft²) when tested in accordance with ASTM E2178 		

	<ul style="list-style-type: none"> • Demonstrate a water vapor permeance of less than or equal to 10 perms as determined by ASTM E96 • Demonstrate satisfaction of the requirements in AATCC 127 with a head height of 55 cm for 5 hours • Demonstrate satisfaction of the requirements in ASTM D779
Exclusions	<p>The scope excludes products covered by the following existing product category rules (the latest versions as of the publication of this Part B are cited):</p> <ul style="list-style-type: none"> • PCR for Single Ply Roofing Membranes. Published by NSF. Version 2, December 2025. • Product Category Rules (PCR) Guidance for Building Related Products and Services Part B: Asphalt Shingles, Built-up Asphalt Membrane Roofing and Modified Bituminous Membrane Roofing EPD Requirements, UL 10010-11. Published by UL Solutions. Edition 3. May 24, 2021. • Part B: Product group definition Roof Coating Systems Part B #25-002. Published by Sustainable Minds. Version 3, December 17, 2025. • Product Category Rules (PCR) Guidance for Building-Related Products and Services Part B: Building Envelope Thermal Insulation EPD Requirements, UL 10010-1. Published by UL Solutions. Edition 4. November 3, 2025.
Geographic representativeness	Products manufactured for use in North America

2. Program operator responsibilities

Existing PCRs, EPDs, TRs, or LCAs	<ul style="list-style-type: none"> • This Part B shall be used in conjunction with the latest version of Sustainable Minds Part A: LCA calculation rules and report requirements (version 4.0 at the time of publication of this Part B; newest version shall be used when available) • Relevant PCR: NSF International: Water-Resistive and Air Barriers (version 4) • Relevant PCR: Smart EPD: Part B for Plastic and Elastomer Roofing and Sealing Sheet Systems, 1000-005, v1 • Relevant PCR: Sustainable Minds: Part B for Roof Coatings v3.0 • Relevant PCR: UL Solutions: Part B for Asphalt Roofing Products • Relevant PCR: UL Solutions: Part B for Roof Cover Board • Underlying LCA: W. R. Meadows LCA for Water-Resistive and Air Barrier Products (under development). Preliminary results from the LCA model were used to identify gaps in prescribed requirements, particularly for the default allocation method and packaging descriptions. Assumptions and limitations associated with the underlying LCA results used to inform aspects of this PCR include: primary data were modeled based on information provided from the manufacturer; proxies were selected when matching secondary data sets were not identified; generic data sets used are considered good quality when considering technology, time period, geography, and other indicators of representativeness, but actual impacts from suppliers, transport carriers, and local waste processing may vary; the impact assessment methodology categories do not represent all possible environmental impact categories; characterization factors used within the impact assessment methodology may contain varying levels of uncertainty; and LCA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins, or risks. • Existing EPDs used to inform some aspects of this Part B: <ul style="list-style-type: none"> ○ GCP Applied Technologies EPD for BITUTHENE® Post Applied Waterproofing https://info.nsf.org/Certified/Sustain/ProdCert/EPD10784.pdf ○ Carlisle Coatings & Waterproofing Inc. EPD for Butyl Membrane Products https://info.nsf.org/Certified/Sustain/ProdCert/EPD10572.pdf ○ W. R. MEADOWS EPD for AIR-SHIELD https://transparencycatalog.com/transparency-report/air-shield
Justification for new Part B if relevant non-expired PCR exists	A manufacturer with EPDs published to the previous version of the NSF PCR for water-resistive and air barriers expressed interest in updating the PCR according to the newest standards and practices. See harmonization activities below.
Harmonization activities pursued	Sustainable Minds announced the creation of this product group definition to the original PCR Committee members, other program operators, LCA analysts, and manufacturers via email, and posted an update on its website. The previous version of the PCR was found to have its validity period extended through September 2026, with the following note: "This PCR is being revised; when published, the latest version of the PCR supersedes this extension." Sustainable Minds reached out to the program operator who confirmed that they would keep the validity

	period extended until publication of this Sustainable Minds Part B to maintain harmony in the market.
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3. Functional performance

Standard/certification (most recent edition). Refer to section 1 for specific performance requirements.	URL
Air permeance – ASTM E2178: Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials	https://store.astm.org/e2178-21a.html
Air permeance – CAN/ULC-741 Standard for Air Barrier Materials - Specification	https://www.shopulstandards.com/ProductDetail.aspx?productid=ULC741_1_X_20201215
Water vapor permeance – ASTM E96: Standard Test Methods for Water Vapor Transmission of Materials	https://store.astm.org/e0096-00.html
Water penetration – AATCC 127: Test Method for Water Resistance: Hydrostatic Pressure	https://members.aatcc.org/store/tm127/535/
Water penetration – ICC-ES AC212: Water-resistive Coatings Used as Water-resistive Barriers over Exterior Sheathing	https://shop.iccsafe.org/ac212-water-resistive-coatings-used-as-water-resistive-barriers-over-exterior-sheathing-approved-february-2015-editorially-revised-july-2020-pdf-download.html
Water penetration – ICC-ES AC38: Acceptance Criteria for Water-resistive Barriers	https://shop.iccsafe.org/ac38-water-resistive-barriers-approved-august-2016-editorially-revised-july-2021-pdf-download.html
Water penetration – ASTM E2556: Standard Specification for Vapor Permeable Flexible Sheet Water-Resistive Barriers Intended for Mechanical Attachment	https://store.astm.org/e2556_e2556m-10r16.html
Water Vapor Resistance – ASTM D779: Standard Test Method for Determining the Water Vapor Resistance of Sheet Materials in Contact with Liquid Water by the Dry Indicator Method	https://store.astm.org/d0779-16r22.html

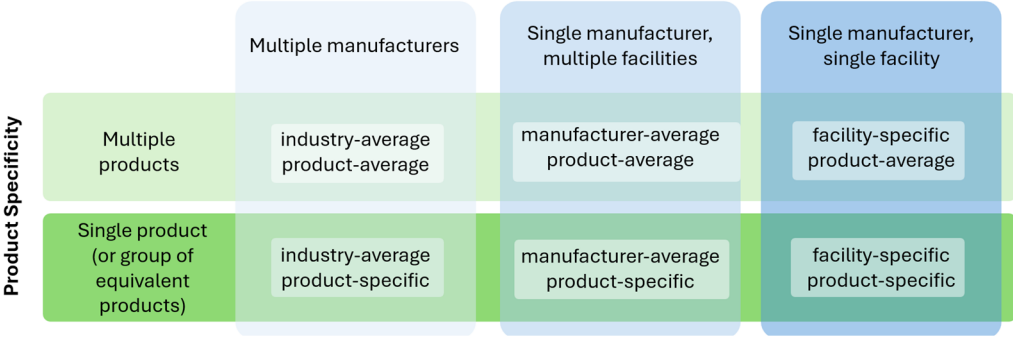
4. System boundary

System boundary	<p>The type of EPD shall be specified as cradle to gate. The modules considered in the LCA shall be described in brief as per “System boundaries” outlined in ISO 21930:2017 section 5.2, and the system boundary shall follow both the modularity and polluter pays principle, discussed in greater detail in section 7.1.1 and Table 1. Module D shall not be declared.</p> <p>While it is unclear whether capital goods and infrastructure are significant to the overall impacts of the products, it is known that they are quantified inconsistently, varying based on the secondary data sets used and the database. To reduce possible artificial variation in EPD results across the product group, capital goods and system infrastructure flows shall be excluded from the system boundary by default, with justification required for alternative assumptions.</p> <p>In addition, the production and manufacture of production equipment, delivery vehicles, and laboratory equipment; personnel-related activities (travel, furniture, and office supplies); and energy and water use related to company management and sales activities that are permitted to be located either within the factory site or at another location; shall be excluded from the system boundary by default, with justification required for alternative assumptions.</p>
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5. Declared unit

Declared unit	1 m ² of sheet wraps/membranes or fluid-applied water and air barriers
Rationale	The products covered in this PCR are intended to cover the area of a building exterior and therefore should be measured per unit area, in this case one square meter.

6. Additional rules for comparability

<p>1. EPD types</p>	<div style="text-align: center;"> <p>Manufacturing Specificity</p>  </div> <p>Any of the six types of EPDs defined by the ACLCA PCR Open Standard¹ may be developed using this PCR.</p> <p>The EPD shall include the appropriate EPD label(s) using the following text. If the EPD reports multiple sets of results, each set of results shall be labeled separately:</p> <p>"Per the ACLCA Guidance for Determining EPD Types and Calculating and Communicating Data Specificity Through the Supply Chain v1, this [choose one of: EPD, EPD result, set of EPD results] is [choose one of: industry-average, manufacturer-average, facility-specific] and [choose one of: product-average, product-specific] with supply-chain-specificity [choose one of: =, ≥] X%. [The supply-chain-specificity statement is not reported in the case of industry-average and manufacturer-average EPDs.]"</p> <p>For the purpose of determining group of equivalent products versus an average of multiple products, the following product types shall not be considered equivalent with each other.</p> <ul style="list-style-type: none"> • Mechanically attached • Self-adhered • Fluid-applied <p>Other groupings of equivalent products should be approved by the program operator and/or EPD verifier and justified in the EPD.</p>
<p>2. Additional rules to Part A</p>	<ul style="list-style-type: none"> • The reported reference flow shall be the mass of 1 m² of sheet wraps/membranes or fluid-applied water and air barriers as sold by the manufacturer (i.e., without installation overlap). For fluid-applied products, the mass shall be approximated by dividing the product density (kg/L) by the manufacturer's specified dry product thickness coverage rate (m²/L), excluding waste: $\text{Reference flow for fluid-applied material (kg)} = \frac{\text{Product density (kg/L)}}{\text{Coverage rate (m}^2\text{/L)}}$ • EPDs that use secondary data for any unit process that contributes 30% or more to any disclosed environmental impact category shall disclose the data source (database name and version, LCA modeling software type and version implemented, dataset name, dataset geography, and dataset allocation method). This criterion applies to the LCI being used, and not the actual unit process data being reported by the manufacturer. Materials considered confidential may be reported as "proprietary ingredient" along with the database name and version. • Manufacturing inputs and outputs should be allocated to co-products by mass as a default. Other allocation methods shall be justified in the LCA report and disclosed in the EPD. • The Chemical Abstract Service (CAS) number and chemical name of any hazardous substances contained in the product shall be disclosed as required by the Global Harmonized System (GHS) rules for safety data sheets (SDS). • EPDs shall disclose the following information for each covered product <ul style="list-style-type: none"> ○ Product density (kg/L) (fluid-applied products only) ○ Manufacturer-specified dry product thickness (mm) (fluid-applied products only) ○ Manufacturer-specified thickness (mm) (membrane/wrap products only) ○ Product percent solids (%) (fluid-applied products only) ○ For fluid-applied products, whether reinforcement material is included in the impact results, and if so, what coverage area (m²) it represents ○ For fluid-applied products, a statement that: <ul style="list-style-type: none"> ▪ Environmental impact results will be proportional to dry product thickness if applied for a specific application to a thickness other than as specified in the EPD.

¹ American Center for Life Cycle Assessment. PCR Open Standard. Version 1.0. May 2022. <https://www.aclca.org/initiatives#PCR-Open-Standard>

3. Default life cycle stage scenario(s)	<p><u>Extraction and upstream production (A1)</u></p> <p>This stage includes all upstream activities consistent with ISO 21930:2017. When materials used in the product are represented by secondary data, the electricity grid profile of the data set should be adapted to the source country or region, if known and possible with the selected data set. Average data sets with “Global” or “Rest of World” average electricity profiles may only be used if the material source location is unknown or adapting the electricity grid is not possible.</p> <p>In cases when the EPD owner purchases manufactured components, the manufacturing process activity at the upstream supplier shall be counted in the extraction and upstream production stage, separate and in addition to the upstream raw material extraction. For example, if a manufacturer purchases titanium dioxide pigment, the pigment cannot be simply represented by titanium rich ore alone. Additional manufacturing must be added to represent the manufacturing of ore into pigment. The upstream supplier location, manufacturing technology, and potential scrap rate during the manufacturing process activity should be considered.</p> <p>If reinforcement is required for a particular product, it shall be included in the EPD results.</p> <p>Pre-products such as reinforcing fabric or film shall be included in A1 if applicable.</p> <p><u>Transport to factory (A2)</u></p> <p>All transportation including inter-facility transport prior to the material being shipped to the production site shall be included. In cases where the EPD owner maintains multiple suppliers for the same material or part, the life cycle inventory and impact assessment results shall reflect a weighted average transportation distance from the multiple suppliers for each mode of transport used. To simplify the calculation for those with many suppliers for the same material or part, suppliers which provide less than 5%, by mass or by volume, of a particular material or part may be excluded from the calculation of weighted average transport distance, subject to existing cut-off requirements in SM Part A.</p> <p><u>Manufacturing (A3)</u></p> <p>Market-based renewable electricity purchases (including renewable electricity certificates (RECs)) shall not be considered in the inventory.</p> <p>On-site renewable electricity may be included in the inventory if renewable electricity certificates (RECs) are eligible; an eligible REC is one for which the company has maintained ownership of the renewable attributes and is retired as part of the renewable energy claim. In such cases, the electricity shall be allocated to all products made at the facility (i.e., not disproportionately to a subset of products), unless the renewable installation is specifically connected to a portion of the plant and supported with submetering data.</p> <p>Primary packaging shall be included (i.e., buckets or drums for fluid-applied products and boxes for sheet products). Secondary packaging (i.e., pallets and shrink wrap) shall be excluded from the system boundary.</p> <p>In the absence of primary data, the transport distance from the production site to waste processing or disposal shall follow the latest version of the US EPA WARM model (20 miles (32.2 km) as of this writing). Outside of North America, other appropriate regional or national assumptions may be used.</p>
4. Additional data quality requirements	<p><u>Apart from the requirements outlined in Sustainable Minds Part A for all LCAs and in section 8 of this document for calculating uncertainty in industry-average EPDs, and upon review of the assumptions and limitations associated with the underlying LCA, the PCR Committee did not identify any additional types of uncertainty analysis to be performed in LCAs for this product category.</u></p>

7. Additional LCA calculation rules

N/A	Optional	Required	<i>Indicate whether conformance is the manufacturer's choice or required for EPDs.</i>
		X	ISO 21930:2017: conformance is required by construction product manufacturers

8. Industry-average EPD additional rules

Minimum participation	<p>A call for participation in an industry-average EPD shall be advertised to relevant manufacturers. Direct outreach via email to interested parties is also encouraged. The minimum required level of market participation is 3 manufacturing companies per barrier type (excluding private labels). Each participating manufacturer shall provide primary manufacturing data. The industry-average EPD shall reflect the production weighted-average of participating manufacturers and shall disclose the approximate percentage of market size represented by participating manufacturers for that barrier type.</p>
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Retroactive pathway requirements	<p>A manufacturer that did not participate in the original industry-average EPD and wishes to retroactively participate in that industry-average EPD may apply to do so through the Program Operator. The Program Operator shall notify the original sponsor(s) of the industry-average EPD. The original sponsor(s) of the industry-average EPD will make a recommendation of eligibility to the Program Operator. If needed, the Program Operator, original sponsor(s), and new participant(s) shall confer in an effort to reach consensus on eligibility for retroactive participation. If eligibility is confirmed, the retroactive participant(s) shall submit their product-specific LCA primary data consistent with the primary data of the original participants to the party responsible for collecting and averaging data for the industry-average EPD. The party responsible for collecting and averaging data shall review the data to determine whether it falls within a reasonable range compared to existing results and make a recommendation to the Program Operator on whether and how to include the new data in an update of the EPD. The industry-average EPD shall not be updated due to retroactive participation sooner than 12 months after the latest published update, though it may be updated earlier if approved by the original sponsor(s). Unless otherwise agreed by the original participants, the update process will be paid for by the new participant(s).</p>
Governance	<p>Data submitted for the industry-average EPD shall be collected by a party independent of the participants and sponsor(s) of the EPD. The responsible party will be responsible for secure storage and analysis of the participants' data. The responsible party shall only share aggregated data with the participants and sponsor(s) of the EPD to protect confidential information of the participants.</p> <p>Companies eligible for participation in the EPD shall be allowed to observe project meetings for which all participants are invited, regardless of whether the company decides to participate in the EPD. Also refer to ISO 21930:2017 section 5.4 for more information about EPD ownership and responsibilities.</p>
Averaging	<p>For the same air barrier type, different manufacturers may suggest different thicknesses or application rates to achieve a targeted functional scenario (e.g., water resistive barrier). In an industry-average EPD, the reference flow to achieve the declared unit shall be calculated using a weighted average application rate from the individual manufacturers (based on the production volume of participating manufacturers).</p>
Comparisons	<p>Quantitative uncertainty analysis shall be calculated and reported for industry-average EPDs. The participants of the industry-average EPD will determine the method used to determine quantitative uncertainty (e.g., Monte Carlo method). To demonstrate improvement, company-specific EPD results must be statistically significantly lower than the industry-average EPD results, with a confidence interval of 95%. Any improvement or reduction that is not statistically significantly lower or higher than the benchmark, with a confidence interval of 95%, is considered equivalent to the benchmark.</p> <p><u>LCA method & version # used for comparison:</u> All comparisons to the industry-average results must use the same method and version number as the industry-average study.</p> <p>If the company-specific EPD is being compared to the industry average, the performance difference as a percentage compared to the industry average shall be reported in the EPD for each impact category.</p> <p><u>Threshold of performance improvement for each impact category:</u> 10%+ reduction in global warming 5%+ reduction in at least two additional impact categories</p>
EPD updates	<p>Updates to the industry-average EPD shall be made prior to the original end of the validity period if there are 1) significant operational changes among the participants (e.g., technology, regulatory, or other changes that affect the efficiency of operations, method of manufacturing, the magnitude of input and output inventory flows, etc.), 2) Retroactive participants (see above), or 3) significant changes to the industry supply chain. The EPD sponsor(s) and/or participants shall notify the Program Operator of any changes that could result in significant changes to the disclosed environmental performance results of the EPD. A significance threshold of 10% applies to these changes. The EPD owner(s) are responsible for determining whether this threshold has been reached.</p>

9. Part B development information

Part B review panel	<p>This Part B was reviewed for conformance to ISO 14025:2006, ISO 21930:2017, and ACLCA PCR Open Standard v1.0 by the following parties:</p> <table border="0"> <tr> <td>Thomas P. Gloria, Ph. D., Chair Industrial Ecology Consultants t.gloria@industrial-ecology.com</td> <td>Terrie Boguski Harmony Environmental tboguski@harmonyenviro.com</td> <td>C. Jason Pierce Blue Ridge Sustainability blueridgesustainabilityllc@gmail.com</td> </tr> </table>	Thomas P. Gloria, Ph. D., Chair Industrial Ecology Consultants t.gloria@industrial-ecology.com	Terrie Boguski Harmony Environmental tboguski@harmonyenviro.com	C. Jason Pierce Blue Ridge Sustainability blueridgesustainabilityllc@gmail.com
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Open consultation	Sustainable Minds solicited public comments on this Part B from March 23, 2026 – April 22, 2026. This consultation period and list of parties to submit comments were made available to the review panel.			
Update justification	This Part B was updated upon consideration of manufacturers looking to create new EPDs beyond the validity period of the previous version of the PCR.			
Conflict statement	Funding sources used to develop this Part B were disclosed to the working group during the development process. The policies identified in Sustainable Minds' Program Governance were followed to identify and resolve any potential conflicts of interest.			
Sustainable Minds information	<p>This Part B was developed by Sustainable Minds and participating interested parties according to the Sustainable Minds Program Governance available at http://www.sustainableminds.com/transparency-report-program/how-it-works.</p> <p>For questions about this or another Part B, to submit comments on this Part B, or to obtain a template for developing a transparency report, contact us using the information on the following page: http://www.sustainableminds.com/contact-us.</p>			

Part B revision history

Version	Change log
1.0	September 1, 2017: Original, published by NSF International
2.0	October 11, 2022: Extension by NSF International with no amendments
3.0	August 31, 2023: Extension by NSF International with no amendments
4.0	September 30, 2024: Extension by NSF International with no amendments
5.0	<p>April 24, 2026: Updated upon anticipation of expiration of the extended v4.0. Made updates as suggested by the PCR committee along with other best practice assumptions, including:</p> <ul style="list-style-type: none"> • Conformance to ISO 21930:2017 and the ACLCA PCR Open Standard v1.0 • Clarification of terms, product group description, and functional performance requirements • Allowance for all EPD types to be developed, including addition of industry-average EPD rules • Addition of supply-chain-specificity score reporting • Identification of preferred allocation type and hazardous substance reporting standard • Exclusion of market-based renewable electricity purchases & optional inclusion of on-site renewable energy • Description of primary packaging and exclusion of secondary packaging