Part B: Product group definition | Prefabricated Exterior Wall Panel Assemblies | Part B #25-001

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	DPR Construction & Digital Building Components - https://www.digitalbuilding.com/		
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Public notices of development/ outreach	• Public notice on the Sustainable Minds website announcing the creation of a Part B on January 2, 2025: http://www.sustainableminds.com/transparency-report-program/part-b • Email blast on January 2, 2025 to mailing lists of LCA professionals, building and construction industry and trade associations, and manufacturers of prefabricated exterior wall panel assemblies, requesting participation on the PCR committee. • Email blast on September 5, 2025 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?	Yes	**Part B version number**	1.1
Publication date	October 9, 2025		
Validity period	10/09/2025 – 10/08/2030		
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.		

Product group

Name	Prefabricated Exterior Wall Panel Assemblies	**CSI MasterFormat® #** Examples provided; not exhaustive	05 40 00: Cold formed metal framing 07 24 19: Water drainage exterior insulation and finish system 07 42 13: Metal composite material/Insulated metal wall panels 07 42 14: Aluminum composite materials panels 07 42 43: Composite wall panels 07 42 63: Fabricated wall panel assemblies 09 77 20: Decorative fiberglass reinforced wall panels 06 83 16: Fiberglass reinforced paneling
Description	Prefabricated exterior wall panel assemblies are defined to be consistent with the following definition from the International Building Code (section 202 in version 2024) (modified to clarify inclusion of framing for fenestration): a system of wall panels fabricated off-site and assembled on-site to form the exterior wall of a building. These assemblies may include but are not limited to structural framing, sheathing, insulation, vapor barriers, weather barriers, framing for fenestration, and exterior finishes, and are designed to meet applicable structural, thermal, and moisture performance requirements. The products are used to provide an all-in-one solution to cover the exterior walls of a building that have traditionally been provided by individual building components and assembled at the building site. Individual components of the prefabricated wall panel assemblies shall not be reported separately.		
Exclusions	This PCR cannot be used to evaluate ONLY the framing, insulation, cladding, or any other individual element, including: • Products specifically covered by the PCR for Cladding Systems (UL, 2021) • Products specifically covered by the PCR for Insulated Metal Panels, Metal Composite Panels, and Metal Cladding (UL, 2018) • Products specifically covered by the PCR for Building Envelope Thermal Insulation (UL 2024) • Products specifically covered by the PCR for Cladding Support Components and Systems (Sustainable Minds, 2022) • Products specifically covered by the PCR for Fenestration Assemblies (NSF, 2023) • Products specifically covered by the PCR for Concrete (NSF, 2019) • Products specifically covered by the PCR for Gypsum Panel Products (Smart EPD, 2025) • Products specifically covered by the PCR for Spray-Applied Fire-Resistive Materials (Smart EPD, January 2025) • Products specifically covered by the PCR for Exterior Insulation and Finish Systems (EIFS) (in development by Smart EPD at the time of publication of this Part B) This product group does not include: • Products that are assembled or partially assembled at the building site (except for attaching to the building and/or adjacent panels joined together) • Products that do not include, at a minimum, preassembled framing, insulation, and finished cladding		
Geographic representativeness	North America		

Program operator responsibilities

Existing PCRs, EPDs, TRs, or LCAs	• This Part B shall be used in conjunction with the latest version of Sustainable Minds Part A: LCA calculation rules and report requirements (version 2023 at the time of publication of this Part B; newest version shall be used when available) • Relevant PCR: Smart EPD: Part B PCR for Designated Steel Construction Products (Smart EPD, 2025) https://smartepd.com/pcr-library • Relevant PCR: UL: Product Category Rule (PCR) Guidance for Building-Related Products and Services Part B: Aluminum Construction Products (UL, 2022)

	https://www.shopulstandards.com/ProductDetail.aspx?productId=ULE10010-38_1_S_20220216 • Relevant PCR: UL: Product Category Rule (PCR) for Cladding Systems (UL, 2021) https://www.shopulstandards.com/ProductDetail.aspx?productId=ULE10010-25_2_S_20210413 • Relevant PCR: UL: Product Category Rule (PCR) for Insulated Metal Panels, Metal Composite Panels, and Metal Cladding: Roof and Wall Panels (UL, 2018) https://www.shopulstandards.com/ProductDetail.aspx?UniqueKey=35063 • Relevant PCR: UL: Product Category Rule (PCR) for Building Envelope Thermal Insulation (UL, 2024) https://www.shopulstandards.com/ProductDetail.aspx?UniqueKey=45786 • Relevant PCR: Smart EPD: PCR for Gypsum Panel Products (Smart EPD, 2025) https://smartepd.com/pcr-library • Relevant PCR: Smart EPD: PCR for Spray-Applied Fire-Resistive Materials (Smart EPD, 2025) https://smartepd.com/pcr-library • Relevant PCR: NSF: PCR for Fenestration Assemblies (NSF, 2023) https://d2evkimvhatqav.cloudfront.net/documents/PCR-Product-Category-Rules/fenestration-assemblies-nsf-1102-23.pdf • Relevant PCR: NSF: PCR for Concrete (NSF, 2025 extension) https://d2evkimvhatqav.cloudfront.net/documents/PCR-Product-Category-Rules/NSF-1112-25Ext.pdf?v=1741862732 • Relevant PCR: Sustainable Minds: PCR for Cladding Support Components and Systems (Sustainable Minds, 2022) http://www.sustainableminds.com/files/transparency/pgds/Part_B_Product_Group_Definition_Cladding_Support_Components_and_Systems_10312022.pdf • Underlying LCA: Life Cycle Assessment (LCA) of X-Series: Panelized Exterior Wall Systems (Sustainable Minds, 2025). A member of the PCR committee commissioned an LCA study in parallel with the development of this PCR, and it was used to inform decisions about this PCR. Notable assumptions and limitations associated with the underlying LCA included: o For components with existing EPDs, results couldn't be used directly due to a mismatch in impact assessment method used, impact categories disclosed, and versions of databases and modeling software used. Material compositions were available in EPDs, but upstream processes were modeled with secondary data sets, some of which required manual adjustments to ensure data quality and consistency. o For components lacking existing EPDs, material compositions were manually developed using resources such as EPDs of similar materials or safety data sheets. o Impacts associated with rework were assumed to be negligible. While approximately 3% of the panels required on-site rework, such as additional cuts and openings for lights or auxiliary boxes, this rework was the only source of product scrap during installation since panels were otherwise factory pre-cut. The associated on-site energy use and resulting material scrap from these modifications were therefore assumed to be zero. There was also committee discussion regarding whether this rework would be considered in the scope of this product system or the product for which the panel was being modified. o A generic inert solid waste disposal process was used as a proxy when specific landfill processes were unavailable for certain material categories in the secondary data sets.
Justification for new Part B if relevant non-expired PCR exists	Not applicable. At the time of publication of this Part B, an active PCR for prefabricated exterior wall panel assemblies was not identified.
Harmonization activities pursued	Sustainable Minds announced the creation of this product group definition to other program operators, LCA analysts, and manufacturers via email, and posted an update on its website. The UL PCRs for cladding and insulated metal panels, metal composite panels, and metal cladding were found to include broad and ambiguous scope definitions, so Sustainable Minds engaged with UL to harmonize the scope of this PCR with those PCRs with the goal of having no overlap in scope. Sustainable Minds and UL agreed to specifically exclude the scope of each other's PCRs in their scope descriptions.

Functional performance

The following table represents common product performance standards used for prefabricated exterior wall panel assemblies. Since these assemblies have multiple components, some of the listed standards apply to the assembly as a whole, to individual components of the assembly, or to the assembly and one or more components. Conformance to these standards is not a requirement for applicability of the PCR, but they may provide further understanding of the product group.

Standard/certification (most recent edition, conformance not required for PCR conformance)	**Assembly or component**	**URL**
ASTM E283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen	Assembly	https://store.astm.org/e0283_e0283m-19.html
ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference	Assembly	https://store.astm.org/e0331-00r23.html
ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements	Assembly	https://store.astm.org/e0090-23.html
NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components	Assembly	https://www.nfpa.org/codes-and-standards/nfpa-285-standard-development/285
ASTM E2099 - Standard Practice for Specification and Evaluation of Pre-Construction Laboratory Mockups of Exterior Wall Systems	Assembly	https://store.astm.org/e2099-23.html
ASTM E2925 - Standard Specification for Manufactured Polymeric Drainage and Ventilation Materials Used to Provide a Rainscreen Function	Assembly	https://store.astm.org/e2925-19a.html
AAMA 501.1 - Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure	Assembly	https://store.fgiaonline.org/AAMA-501.1-17/
AAMA 501.4 - Recommended Static Testing Method for Evaluating Curtain Wall and Storefront Systems Subjected to Seismic and Wind Induced Interstory Drift	Assembly	https://store.fgiaonline.org/aama-501-4-09-501-6-09
CAN/ULC S134 - Standard Method of Fire Test of Exterior Wall Assemblies	Assembly	https://www.shopulstandards.com/ProductDetail.aspx?productId=ULC134_2_X_20211014
ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus	Assembly and component	https://store.astm.org/c1363-24.html
ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials	Assembly and component	https://store.astm.org/e0084-24.html
NFPA 268 - Standard Test Method for Determining Ignitability of Exterior Wall Assemblies Using a Radiant Heat Energy Source	Assembly	https://www.nfpa.org/codes-and-standards/nfpa-268-standard-development/268
ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference	Component	https://store.astm.org/e0330_e0330m-14r21.html
ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants	Component	https://store.astm.org/c0794-18r22.html
AAMA 2605 - Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels	Component	https://store.fgiaonline.org/AAMA-2605-22/
ASTM C578-23 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation	Component	https://store.astm.org/c0578-23.html
IBC Section 2613	Component	https://codes.iccsafe.org/content/CABC2022P4/chapter-26-plastic#CABC2022P4_Ch26_Sec2613

System boundary

System boundary	The type of EPD shall be specified as cradle-to-gate with options. It shall include production, transport to the building site, installation, and end-of-life (A1-A5 and C1-C4). The modules considered in the LCA shall be described in brief as per "System boundaries" outlined in ISO 21930:2017 section 5.2. Module D may be optionally declared. It should be apparent as to what processes are considered in each module per the module descriptions in ISO 21930:2017 section 7.1.7. 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 selected. 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. An exception to this may be some molds and/or assembly jigs that are used for small product runs (e.g., a single campus or building) and which might be significant to the product system. The potential significance of capital goods which have a limited lifetime for production shall be addressed in the LCA report and, if excluded, shall also include a demonstration that they meet the cut-off criteria. When reporting Global Warming Potential (GWP 100 years) per ISO 21930:2017, effects of biogenic carbon removal and emission flows shall be included in the main GWP results as required by ISO 21930 Section 7.2.7 and in additional inventory indicators describing emissions and removals of carbon as required by ISO 21930 Section 7.2.12.

Declared unit

Declared unit	An installed prefabricated exterior wall panel assembly which covers 400 square feet (37.2 square meters) of a building. All fasteners, clips, brackets, sealants, gaskets, and adhesives required to provide the above function shall be included in the system, whether or not they are sold with the product. Panels can be differentiated by being a solid wall or integrating/supporting openings. Results shall be disclosed as a solid wall with no openings. Additional results may optionally be disclosed with an assumed percent opening and declared separately from the solid wall results. For optional disclosure of panels with openings, the panels can be further differentiated by where openings are filled. Some manufacturers sell panels with openings that are filled at the factory. Other products are installed at the building site and will be filled with products unknown to the panel manufacturer. In the case where openings are filled at the factory, all flows related to the fill components shall be included in the system boundary and declared as part of the results. For panels filled at the building site, the fill components may be excluded from the system boundary and the EPD shall include a transparent disclosure that the results do not include the components which fill the openings. The mass per declared unit shall be disclosed in the LCA report under the declared unit section.
Rationale	Prefabricated exterior wall panel assemblies vary widely in composition, form, and performance of individual attributes, but they are universally intended to cover an area of building wall. 400 square feet was chosen to ensure that panel junctions/connectivity points are included in the analysis as well as recognizing that it is common to ship 10 feet x 40 feet of panels on a single truckload.

Additional rules for comparability

1. TR/EPD types	Industry-average or product-specific TR/EPDs are allowed to be developed to this PCR.
2. Material/ Component-specific conformance	Analysis of product components primarily made of pultruded fiberglass reinforced polymer (FRP) should conform to the ACMA Guidelines for Fabrication & Installation of Pultruded FRP Structures[1]. Analysis of product components made primarily of aluminum should also follow the cradle-to-semifabrication requirements included in the latest version of the PCR for Aluminum Construction Products, UL 10010-38 (at the time of publication of this Part B, the latest version was published in February 2022 by UL). The UL Aluminum Products PCR does not cover fully

[1] American Composites Manufacturers Association. Guidelines for Fabrication & Installation of Pultruded FRP Structures. https://my.acmanet.org/productdetails?id=a1B5w00001QNIqCEAX

	fabricated products, but for harmonization purposes across the supply chain, the same requirements for upstream activities should be followed. Analysis of product components made primarily of steel should also follow the cradle-to-gate requirements included in the latest version of the PCR for Designated Steel Construction products[2]. One exception is that instead of using the declared unit of 1 metric ton in the steel PCR, the mass associated with fulfilling the declared unit of this PCR should be used. Analysis of cladding components should also follow the cradle-to-gate requirements included in the latest version of the PCR for Cladding Systems, UL 10010-25 (at the time of publication of this Part B, the latest version was published in April 2021 by UL). Analysis of insulated metal panels, metal composite panels, and metal cladding components should also follow the cradle-to-gate requirements included in the latest version of the PCR for Insulated Metal Panels, Metal Composite Panels, and Metal Cladding, UL 10010-5 (at the time of publication of this Part B, the latest version was published in October 2018 by UL). Analysis of building envelope thermal insulation should also follow the cradle-to-gate requirements included in the latest version of the PCR for Building Envelope Thermal Insulation, UL 10010-1 (at the time of publication of this Part B, the latest version was published in February 2024 by UL). Analysis of gypsum panel components and systems should also follow the cradle-to-gate requirements included in the latest version of the PCR for Gypsum Panels v2.0, Smart EPD 1000-004 (at the time of publication of this Part B, the latest version was published in February 2025 by Smart EPD). Analysis of spray-applied fire-resistive materials should also follow the cradle-to-gate requirements included in the latest version of the PCR for Spray-Applied Fire-Resistive Materials (SFRM), Smart EPD 1000-003, version 4.0 (at the time of publication of this Part B, the latest version was published in January 2025 by Smart EPD). Analysis of concrete should also follow the cradle-to-gate requirements included in the latest version of the PCR for Concrete, NSF 1112 (at the time of publication of this Part B, the latest version was v2.3 valid through February 2026 with the next version under development by NSF). Analysis of cladding support components and systems should also follow the cradle-to-gate requirements included in the latest version of the PCR for Cladding Support Components and Systems (at the time of publication of this Part B, the latest version was published in October 2022 by Sustainable Minds).

3. Additional rules to Part A	• EPDs shall disclose the LCA software and version used for modeling, and the database name(s) and version(s) used.
	• EPDs that use secondary data for any unit process that contributes 10% 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, dataset age, and dataset allocation method). Materials considered confidential may be reported as “proprietary ingredient” along with the database name and version.
	• EPDs shall disclose the LCAs or EPDs used as data sources for components of the product.
	• EPDs shall disclose the following information for each declared product:
	  o Mass per declared unit – kg
	  o Thickness of product – m
	  o Height and width of one panel as declared – m
	  o Density of product – kg/m^3
	  o Number of panels in one declared unit (to nearest tenth of a panel)
	  o Minimum and maximum span available for the subject panel – m
	  o Panel RSI (m^2 K/W) (along with the RSI of additional components which fill designed openings)
	  o For optional results with openings, the percentage of openings considered in the declared unit – %
	• EPDs may optionally disclose the anticipated reference service life (RSL) of the disclosed product.

[2] Smart EPD. Part B PCR for Steel Construction Products. 1000-008. April 2025. https://smartepd.com/pcr-library

4. Default life cycle stage scenario(s)	**<u>Extraction and upstream production (A1)</u>** When materials used in the product are represented by secondary data, the electricity grid profile of the data set shall 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. In cases when the EPD owner purchases manufactured components, the manufacturing process activity at the upstream supplier shall be counted in this module, in addition to the upstream raw material extraction. For example, if a manufacturer purchases steel screws used as fasteners, the steel screw cannot be simply represented by raw steel alone. Additional manufacturing must be added to represent the manufacturing of raw steel into the steel screw. The upstream supplier location and potential scrap rate during the manufacturing process activity shall be considered. If a purchased component has a published EPD, the following procedure shall be followed in order of preference: 1. If the method, version, and indicators presented in the component EPD align with the methods and indicators required by this PCR, the EPD shall be used to represent the component in the LCA developed for the prefabricated exterior wall panel, scaled according to the amount of the component in the panel. 2. If there is some misalignment between the method, version, and/or indicators in the component EPD and this PCR, some aspects of the EPD may still be used while gaps remain. In that case, the panel EPD owner may choose to fill gaps with secondary data, literature, or if allowed by the ACLCA Guidance to Calculating Non-LCIA Inventory Metrics in Accordance with ISO 21930:2017[3], some gaps may remain if addressed with adequate transparency. Regardless of the method used to fill gaps, the LCA report shall transparently describe the method and data used to fill the gaps. If a purchased component does not have a published EPD, the LCA practitioner should use professional judgement to model the component with sufficient data quality to meet the requirements of the PCR. **<u>Transport to factory (A2)</u>** For the transport of materials that comprise greater than or equal to 5% of the product mass, transport distances shall be from primary data or estimates from common mapping software based on known supplier locations. If the mode of transport is unknown, the EPD shall assume truck transport for land transportation and sea container transport for ocean transportation. For the transport of materials that comprise less than 5% of the product mass, transport distances should be based on known supplier locations. If the supplier location is unknown, a default distance of 1,243 miles (2,000 km) by Class 8 diesel-fueled truck shall be assumed[4] unless otherwise justified. In cases when 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. The method used for this calculation must be disclosed within the EPD. **<u>Manufacturing (A3)</u>** The electricity data set(s) used for manufacturing shall be disclosed in the EPD. The EPD may include renewable electricity instruments subject to the latest guidance provided by the American Center for Life Cycle Assessment (ACLCA)[5] (at the time of publication of this Part B, the latest version was published May 2023 but was currently undergoing revision).

[3] American Center for Life Cycle Assessment. Guidance to Calculating Non-LCIA Inventory Metrics in Accordance with ISO 21930:2017. May 2019. Available at https://lcacenter.org/products/iso-21930-guidance
[4] This assumption was determined by the committee to be conservative based on the understanding that most manufacturers source materials domestically or at least within the same continent.
[5] American Center for Life Cycle Assessment. Quantifying Renewable Electricity Instruments in Environmental Product Declarations. May 2023. Available at https://www.aclca.org/initiatives#PCR-Open-Standard

	Transport to site (A4) Transport from the manufacturing site to the installation site may be estimated using a weighted average of known distances and transport modes to building sites, if known. Otherwise, transport shall be assumed to be 1,243 miles (2,000 km), assuming transportation by Class 8 diesel-powered truck with an empty return trip of the same distance[6]. Due to the relatively low density of exterior wall panels, their shipment is typically limited by the volume of the trailer instead of the mass. Transport calculations should recognize this and use appropriate shipping factors accordingly. No other warehouse or distribution center impacts should be included. **Installation (A5)** The installation module shall include, as applicable, any ancillary materials, energy and/or water consumption, and disposal of waste materials directly related to installation of the product. The installation methods for the scope of panels in this product category vary considerably, and therefore specific default installation assumptions cannot be universally applied. The manufacturer's installation instructions or guidelines shall be used to develop reasonable installation assumptions. Unless otherwise justified, the LCA shall consider the following installation activities: • Moving and lifting the panels to the building wall • Drilling holes in the product and/or building to install the panel, if needed • Adhesives, sealants, fasteners, or panel attachment system, as needed • Product scrap waste • Packaging waste Most products in this category are custom-made for a specific building and therefore do not require cutting or modifying at the building site. For these types of panels, the default scrap rate may be considered 0%. In the absence of primary data, the transport distance 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. **Use stage (B1-B7)** Prefabricated exterior wall panel assemblies can be installed in a variety of exterior environments and subject to large variations in temperature range, humidity, precipitation, ultraviolet light exposure, or other attributes. All of these can affect the maintenance requirements and ultimate service life of the product. Furthermore, there are no universally established test methods available that might establish the basis for a reference service life. Due to the difficulty of establishing common scenarios or assumptions, the use stage is omitted from this PCR and shall be excluded from EPDs produced using this PCR. **Deconstruction/demolition (C1)** In the absence of primary data, the EPD owner may assume that the product reaches its end of life along with the building and is removed during the demolition process. As such, energy or material inputs may be assumed negligible for this stage unless otherwise justified. **Transport to waste processing or disposal (C2)** In the absence of primary data, the transport distance 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. **Waste processing (C3)** Manufacturers shall include any processing required to further disassemble or prepare the prefabricated exterior wall panel assemblies for waste prior to final disposal. As a default assumption, no activity is anticipated in this stage and may be assumed to be zero unless otherwise justified. **Waste disposal (C4)** Manufacturers shall assume the product is sent to a construction or inert waste landfill in North America, unless otherwise justified. Justification for recovery and recycling of material components shall include primary data from a take-back or similar program to justify the

[6] This assumption was determined by the committee to be conservative based on the understanding that most manufacturers of these systems have regional customer bases.

	percentages used to model the recovery/recycling. Landfill processes shall be modeled based on the mass of distinct materials in the product and availability of secondary data to model those materials. **Benefits and loads beyond the system boundary (D), Optional** In the case that some product components might be recycled or otherwise recovered at end of life, manufacturers may optionally declare such benefits and burdens separately from the life cycle system. Refer to section 6.6 of SM Part A for specific requirements.
5. Additional data quality requirements	Foreground system processes under the operational control of the EPD owner shall be inventoried using primary data – i.e., data this is obtained by direct measurement or a calculation based on a direct measurement from the source of the activity. Foreground system processes outside the operational control of the EPD owner should be inventoried using primary data if available, but they may otherwise be inventoried using estimates or assumptions which reflect contemporary system conditions and subject to requirements in SM Part A. Background system processes should be modeled with site-specific data (inventory data or LCA/EPD results) from value chain collaborators, if available. Otherwise, secondary data sets may be used. For FRP components, secondary data sets shall be selected according to the following hierarchy, from most to least preferable: 1. ACMA's LCA/EPD Generator Tool. At the time of publication of this Part B, this tool is still in development but will be an independently verified database for all major types of raw material used to manufacture FRP products. This will be the preferred data source once it is available. Contact ACMA to confirm availability and access instructions. The tool will be publicly available and non-member companies will need to pay a fee for use of the tool. 2. If the above tool generator is not available, ACMA's life cycle inventory database for common raw materials for manufacture of composite products should be used. There are currently two data libraries published in the Federal LCA Commons. The first, published in 2023[7], includes vinyl ester resin and an average pultruded product. The second, published in 2012[8], includes unsaturated polyester, e-glass, and rigid parts made from various processing methods. It is acknowledged that the 2012 study represents data more than 10 years old, but it is considered by ACMA to be the best available data until the above generator tool is complete. 3. An alternative data source for which the EPD shall provide justification. For a deviation where the input contributes at least 20% to the total A1-A3 result for any impact category, the justification shall include a description of the data source's representativeness and a data quality assessment following ACLCA's "Assessing Data Quality of Background Life Cycle Inventory Datasets." Acceptance of such deviation is at the discretion of the LCA and EPD verifier and Program Operator.

Additional LCA calculation rules

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

Industry-average TR/EPD additional rules

Minimum participation	An industry-average EPD should strive to achieve market participation of 50% of the North American market considering the type of panels represented in the EPD. At the time of publication, the committee was not able to identify or establish reliable indicators of market size for prefabricated exterior wall panel assemblies and their subtypes. Therefore, the participants and LCA author should work together to estimate the market size and share of market participation at the time of the development of the industry-average EPD. Additionally, at least three manufacturers must participate to facilitate the aggregation of data.
Sub-categories	For industry-average EPDs, results shall be reported separately for single finish types (e.g., brick, brick veneer, stucco, metal, insulated metal, metal composite materials, precast, etc.).

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[7] American Composites Manufacturers Association. Life Cycle Assessment of Vinyl Ester Resin, Polyurethane Precursors, and Pultrusion. 2023. Data sets available at https://www.lcacommons.gov/lca-collaboration/National_Renewable_Energy_Laboratory/USLCI_Database_Public/dataset/SOURCE/8779cd2c-6aa4-41c4-ae41-7590ff3eba02

[8] American Composites Manufacturers Association. Life Cycle Inventory of Polymer Composites. 2012. Data sets available at https://www.lcacommons.gov/lca-collaboration/National_Renewable_Energy_Laboratory/USLCI_Database_Public/dataset/SOURCE/b2a418f7-ab6a-3faa-a041-861697035edd

Retroactive pathway requirements	One or more additional manufacturers who did not participate in the original industry-average EPD may be retroactively added to the EPD prior to the EPD's original expiration under the following conditions: • The industry-average EPD's numerical results may only be updated if two or more retroactive participants' data is integrated at the same time, or if an existing participant desires to submit updated data in conjunction with the addition of one or more new participants' data. This is to reduce the potential for reverse engineering the impacts of an individual company based on the changes made. • A single company may be retroactively added to the EPD if the LCA practitioner of the original EPD models the company's inventory data (under a non-disclosure agreement if necessary) and confirms none of the EPD indicator results would change by more than 5%. In this case the company's name may be added as a participant in the EPD without updating the numerical results. o If the company's data would change any of the existing EPD indicator results by more than 5%, the update must wait until either another company is able to retroactively participate, an existing participating company desires to submit updated data, or upon the next regular update of the EPD with all participating manufacturers submitting updated data. • The costs to update the industry-average LCA and EPD are expected to be borne by company(ies) initiating and/or participating in the update (to be confirmed by involved parties).
Renewable energy certificates	If participants in an industry-average EPD purchased renewable energy certificates (RECs) for electricity in their operations, the industry-average EPD must reflect results both with and without accounting for the RECs.
Required impact categories	All disclosures per the most recent SM Part A. Additional categories may be optionally included (e.g., if the latest version of IPCC methodology is desired to communicate GWP results).
Required or preferred background LCI data sets Include data set name and intended application	For FRP components, refer to the data quality requirements section above. Otherwise, there are no required or preferred data sets specified. Developers of industry-average EPDs are encouraged to review and consider other industry-average EPDs in their value chain for use in the EPD.
Threshold of performance improvement or reduction for each impact category Based on quantitative uncertainty of industry-average TR/EPD results	If company-specific EPD owners want to compare against an industry-average EPD, they must demonstrate significant improvements according to the criteria in an active version of LEED.

Part B development information

Part B review panel	This Part B was reviewed for conformance to ISO 14025, ISO 21930:2017, and the ACLCA PCR Open Standard v1.0 by the following parties: Thomas P. Gloria, Ph. D., Chair Industrial Ecology Consultants t.gloria@industrial-ecology.com Hugues Imbeault-Tétreault, ing., M.Sc.A. Groupe AGÉCO hugues.i-tetreault@groupeageco.ca Lindita Bushi, Ph. D. Athena Sustainable Materials Institute lindita.bushi@athenasmi.org
Open consultation	Sustainable Minds solicited public comments on this Part B from September 5, 2025 – October 6, 2025. This consultation period and list of parties to submit comments were made available to the review panel.
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	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. 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.

Part B revision history

Version	Change log
1.0	October 9, 2025: Original, published by Sustainable Minds
1.1	October 24, 2025: Editorial clarification to note that CSI sections listed are not exhaustive, and that this PCR cannot be used to evaluate only the individual components of the system; no change to validity period, and no update to supporting documentation is needed.