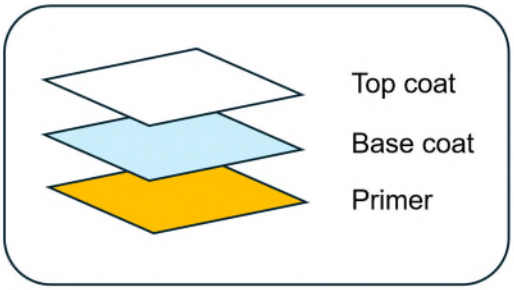
Part B: Product group definition | Roof Coating Systems | Part B #25-002

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	Roof Coatings Manufacturers Association (RCMA) - https://www.roofcoatings.org/		
Working group members	Jim Mellentine, Thrive ESG (PCR committee chair) Jenn Brake, Roof Coatings Manufacturers Association (RCMA) Rock Miller, Roof Coatings Manufacturers Association (RCMA) Ralph Paroli, Roof Coatings Manufacturers Association (RCMA) Brian Anthony, The Brewer Company Jodi Thomas, Henry, A Carlisle Company Will Lorenz, General Coatings Manufacturing Corp. Ed Klonowski, Holcim Tim McQuillen, Johns Manville Chris Huettig, Karnak Steve Nowicki, Kemper System TJ Turner, MuleHide Carlotta China, POLYGLASS Jennifer Schmidt, POLYGLASS Husnu Kalkanoglu, Soprema Amandine Tragus, Soprema Jean-François Cote, Soprema Hal Leland, Western Colloid Josh Poole, Tremco Stefan Long, Sika Monica Morano, Sika Jack Geibig, Ecoform		
Public notices of development/ outreach	• Public notice on the Sustainable Minds website announcing the update to the PCR on February 19, 2025: http://www.sustainableminds.com/transparency-report-program/part-b • Email blast on February 19, 2025 to mailing lists of LCA professionals, building and construction industry and trade associations, and manufacturers of roof coatings, requesting participation on the PCR committee. • Email blast on November 15, 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?	No	**Part B version number**	3.0
Publication date	December 17, 2025		
Validity period	12/17/2025 – 12/16/2030		
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	Roof coating systems	**CSI MasterFormat® #**	07 01 40 Maintenance of Roofing and Siding Panels (coating over existing metal roofs) 07 01 50 Maintenance of Membrane Roofing (coating over existing membrane roofs) 07 56 00 Fluid-Applied Roofing 07 57 00 Coated Foamed Roofs
Description	A fluid-applied, adhered coating used for roof refurbishment, or as a component of a roof covering system or roof assembly. This PCR applies to the following roof coating types: 1. **Acrylic roof coating:** a roof coating composed of an elastomeric acrylic latex binder, various pigments, and other additives. 2. **Aluminum-pigmented asphalt roof coating:** a roof coating composed of an asphalt base, volatile petroleum solvents, a leafing type of aluminum pigment (per ASTM D962), and other additives.		

	3. **Asphaltic emulsion roof coating:** a coating composed of an asphalt emulsion binder and other additives. 4. **Polyurethane roof coating:** a roof coating composed of a urethane elastomeric polymer, various pigments, and other additives. 5. **Silicone roof coating:** a roof coating composed of a dispersion containing silicone polymer, various pigments, and other additives.
Exclusions	The scope excludes: • Paints, decorative paints, clear coatings, and any coating which is not field applied • Adhesives and coatings solely for shop applications, original equipment manufacturing, or application to non-stationary structures
Geographic representativeness	North America
Product-specific terms	This PCR uses roof coating terms aligned with the Roof Coatings Manufacturers Association (RCMA)[1]. Roof coatings can be further classified by these subcategories: • **Primers:** materials applied to a surface to promote adhesion between the substrate and subsequent coats. • **Basecoats:** coatings applied to the surface after preparation and before the application of a topcoat. • **Topcoat:** the final layer of coating put onto a surface over another layer(s). Roof coating systems shall be assessed inclusive of all coatings/layers which are part of the system. For example, roof coating systems may be made up of a basecoat and a topcoat, or in some cases a single coating application (e.g., aluminum coatings or some silicone coatings). As such, EPDs shall consider all coatings needed to achieve the desired coating coverage and performance and not just one of these components (unless a system is comprised of only a single layer). An example of a roof coating system with three layers is shown in the following image. Roof coating systems may also include a fabric layer to enhance mechanical properties.  **Additional terminology** • **Adhesion:** The degree of attachment between two surfaces held together by interfacial forces. • **Maintenance:** Preventive actions to preserve roof integrity and performance. (International Building Code (IBC) 2024) • **Repair:** Corrective actions to restore damaged or deteriorated roof components. (IBC 2024) • **Roof coating system:** A system which may consist of a primer, basecoat and topcoat depending upon manufacturer specifications. In some cases, a system may be comprised of only a single coating application (e.g., aluminum coatings). • **Roof system:** An assembly of interacting components designed to weatherproof, and normally to insulate, a building's top surface. (ASTM D1079-24) • **Roof assembly**: A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck or a single component serving as both the roof covering and the roof deck. A roof assembly can include an underlayment, a thermal barrier, insulation or a vapor retarder. (IBC 2024)

[1] RCMA Glossary available at https://www.roofcoatings.org/glossary/

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: IBU: Product Category Rules (PCR) Guidance for Building-Related Products and Services Part B: Coatings with organic binders (version 7)
	• Relevant PCR: Smart EPD: Product Category Rules (PCR) Guidance for Building-Related Products and Services Part B: Plastic and elastomer roofing and sealing sheet systems, 1000-005, (version 1.0)
	• Relevant PCR: NSF: Product Category Rule for Environmental Product Declarations: PCR for Architectural Coatings (version 2, with three extensions)
	• Relevant PCR: EPD Norge: Product category rules Part B for roof waterproofing (v2.0)
	• Reference LCA: EcoForm. Life Cycle Assessment – An Industry Average of Coatings Used for Roofing.
	• Existing EPDs used to inform some aspects of this Part B:
	  • GAF EPD for Acrylic Roof Coatings https://info.nsf.org/Certified/Sustain/ProdCert/EPD10918.pdf
	  • Sika Corporation EPD for Sikalastic-641 Lo-VOC RoofPro Fleece System https://pcr-epd.s3.us-east-2.amazonaws.com/458.EPD_for_Sikalastic-641_Lo-VOC_RoofPro_Fleece_System.pdf
	  • Sherwin-Williams EPD for UNIFLEX® Rubberized Silicone Roof Coating https://info.nsf.org/Certified/Sustain/ProdCert/EPD10875.pdf

Justification for new Part B if relevant non-expired PCR exists	Several members of the original PCR Committee for the previous version of the NSF PCR for roof coatings 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 for roof coatings (NSF PCR for Roof Coatings v2) was found to have its validity period extended through September 2025, 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 original program operator, who confirmed that they would end the validity period of that extension upon publication of this Sustainable Minds Part B. Other PCRs for coatings were reviewed and found not to meet the specific scope of this PCR, which focuses on the classification for roof coating products, better reflects the functional unit of roof coatings, and adopts various North American regional assumptions.

Functional performance

Products shall meet one of the following standards, or an equivalent, to be eligible to use this PCR. An acceptable equivalent standard may use a variation in the test(s) which still meets the intent of the International Building Code (IBC).

Table 1. Standard(s) applicable to each roof coating type

Standard/certification (most recent edition)	**URL**
Standard Specification for Liquid-Applied Acrylic Coating Used in Roofing – **ASTM D6083**	https://store.astm.org/d6083_d6083m-24.html
Standard Specification for Liquid-Applied Silicone Coating Used in Spray Polyurethane Foam Roofing Systems– **ASTM D6694**	https://store.astm.org/d6694_d6694m-15r23.html
Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing – **ASTM D1227**	https://store.astm.org/d1227_d1227m-13r24.html
Standard Specification for Liquid Applied Moisture Cured Polyurethane Coating Used in Spray Polyurethane Foam Roofing System – **ASTM D6947**	https://store.astm.org/d6947_d6947m-16r23.html
For multi-part polyurethane coatings, one of the following applies: • Standard Specification for High-Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane with Integral Wearing Surface – **ASTM C957** • Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course – **ASTM C836**	https://store.astm.org/c0957_c0957m-17.html https://store.astm.org/c0836_c0836m-18r22.html
Standard Specification for Aluminum-Pigmented Asphalt Roof Coatings, Nonfibered, and Fibered without Asbestos – **ASTM D2824**	https://store.astm.org/d2824_d2824m-18r24.html

System boundary

System boundary	The type of EPD shall be specified as cradle to grave. The modules considered in the LCA shall be described in brief as per ISO 21930:2017 section 5.2.2. 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 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. In addition, personnel impacts, research and development activities, business travel, all point of sale infrastructure, and the coating applicator shall be excluded, as they were determined by internal LCAs conducted by RCMA member companies to represent a negligible environmental impact in the overall life cycle performance of a coating. In the case of the coating applicator, it is not practically feasible to calculate impacts given the variety of application techniques. For example, a roller or spray applicator could be used to coat 100m^2 of substrate or 10m^2 of substrate. As such, it is difficult to determine an average impact per functional unit. However, screening LCAs conducted by coatings manufacturers show that this impact is minimal relative to the overall life cycle impacts of roof coatings and would not significantly impact total results.

Functional unit

Unit

1 m^2 of coated roof over the 75-year estimated service life of the building. Coatings shall exhibit an appropriate thickness (based on technology type and defined by the manufacturer's published application guidelines) and reflectance for its color, or technology, or both after drying. If the manufacturer recommends multiple applications to achieve a minimum desired thickness or functional result, the EPD shall reflect the minimum number of applications recommended by the manufacturer.

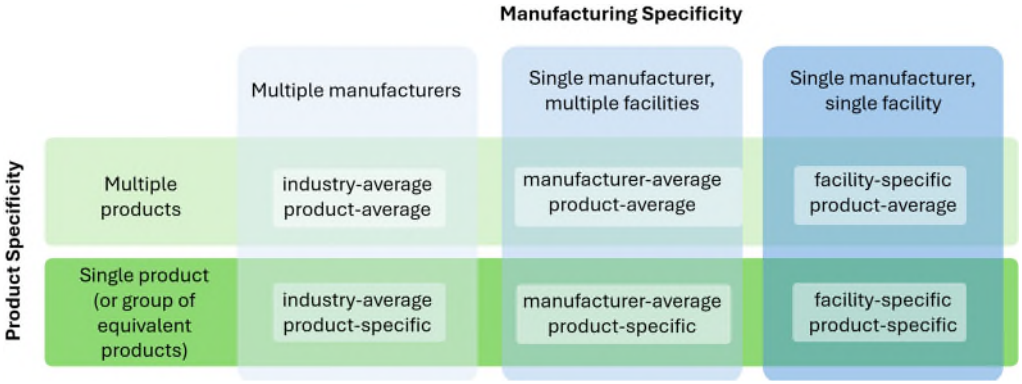
The reference flow shall be the mass of product (wet basis) needed to satisfy the above functional unit. Thickness shall be computed using volume solids and spreading rate as published by the manufacturer. The following table shows typical application rate ranges, dry film thicknesses, and corresponding expected life span for each coating type. The ranges in the following table reflect the range of technical data from the participating manufacturer PCR committee members. One or more of the following attributes should be used as a guideline to establish the reference service life of the product for the EPD. They do not reflect the warranty eligibility provided by a manufacturer. Reference service lifespans for products outside these ranges shall be justified by the manufacturer.

Table 2. Recommended application rates, application amounts, dry film thicknesses, and reference service lifetimes for various coating types

Coating type	Typical application rate, per coat	Total application amount (roof coating system)	Roof coating system dry film thickness (thousandths of an inch)	Reference service life (RSL)
Acrylic	0.5-2.0 gallons per 100 square feet (0.2-0.8 liters/m^2)	At least 2.0 gallons up to 3.5 gallons per 100 square feet (0.8-1.4 liters/m^2)	16-32 (0.41-0.81 mm)	10 years
		Greater than 3.5 gallons up to 4.25 gallons per 100 square feet (1.4-1.7 liters/m^2)	28-37 (0.71-0.94 mm)	15 years
		Greater than 4.25 gallons per 100 square feet (1.7 liters/m^2)	36-42 (0.91-1.06 mm)	20 years
Silicone	0.75-2.0 gallons per 100 square feet (0.3-0.8 liters/m^2)	Up to 2 gallons per 100 square feet (0.8 liters/m^2)	22-25 (0.56-0.64 mm)	10 years
		Greater than 2 gallons up to 2.5 gallons per 100 square feet (0.8-1.0 liters/m^2)	28-32 (0.71-0.81 mm)	15 years
		Greater than 2.5 gallons per 100 square feet (1.0 liters/m^2)	36-44 (0.91-1.12 mm)	20 years

	Asphaltic emulsion	2.0-3.5 gallons per 100 square feet (0.8-1.4 liters/m^2)	At least 2 and up to 7 gallons per 100 square feet (0.8-2.9 liters/m^2)	20-40 (0.51-1.02 mm)	7 years
	Polyurethane	1.0 – 3.0 gallons per 100 square feet (0.4-1.2 liters/m^2)	At least 2 gallons up to 3 gallons per 100 square feet (0.8-1.2 liters/m^2)	18-45 (0.46-1.14 mm)	10 years
			Greater than 3 gallons up to 5 gallons per 100 square feet (1.2-2.0 liters/m^2)	30-70 (0.76-1.78 mm)	15 years
			Greater than 5 gallons per 100 square feet (2.0 liters/m^2)	72-112 (1.83-2.84 mm)	20 years
	Aluminum	0.5-2.5 gallons per 100 square feet (0.2-1.0 liters/m^2)	At least 0.5 up to 2.5 gallons per 100 square feet (0.2-1.0 liters/m^2)	3-18 (0.08-0.46 mm)	10 years
Rationale	The amount of product needed depends on the functional performance of the roof coating system over a specific surface area.				

Additional rules for comparability

1. TR/EPD types	 All EPD types may be created from this PCR as defined in the ACLCA Guidance for Determining EPD Types and Calculating and Communicating Data Specificity Through the Supply Chain published in 2025. • Industry-average/product-average • Industry-average/product-specific • Manufacturer-average/product-average • Manufacturer-average/product-specific • Facility-specific/product-average • Facility-specific/product-specific For industry-average EPDs, also refer to the industry-average EPD additional rules section.
2. 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 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, data set name, data set geography, data set age, and data set allocation method). This criterion to disclose the data source applies to the secondary data 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. • EPDs shall disclose the following information for the covered product system: o Coating thickness, both wet and dry (mm and mils (thousandths of an inch)) o Application rate (aka coverage rate) (wet basis) (gal/100 ft^2 and liters/m^2) o Color o Solar reflectance (%) (new and 3-year aged) o Infrared (thermal) emittance (%) (new and 3-year aged) o Solar reflectance index (new and 3-year aged) o Density, wet basis (lbs/gal and g/ml)

<table>
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o Physical properties as required in the product's respective ASTM standard or equivalent
• EPDs may optionally disclose the following information for the covered product system:
o Organization's adherence to any environmental management system, including a statement showing where an interested party can find additional information on the system
o Other environmental certification programs applicable to the building product and a statement on where an interested party can find details of the certification program
o Other environmental activities of the organization, such as participation in recycling or recovery programs, provided details of these programs are readily available to the purchaser or user and contact information is provided
o Preferred waste management option for unused coating
• EPDs shall disclose GWP impacts using the IPCC AR6 methodology in addition to the existing TRACI methodology referenced in Part A.
</td></tr>
<tr><td>3. Default life cycle stage scenario(s)</td><td>
<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 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.
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 dioxide ore alone. Additional manufacturing must be added to represent the manufacturing of ore into pigment.
If using primary data from upstream material suppliers and if a scrap rate is not available, a scrap rate shall be estimated for all relevant calculations.
If secondary material is used in the product, actual recycled content values from the relevant supplier shall be used in the LCA model. If the recycled content amount is unknown, it shall be assumed to be zero or as used in average generic data sets. Recycled content values used in the LCA model shall be reported in the EPD.
<u>Transport to factory (A2)</u>
All transportation, including inter-facility transport prior to the material being shipped to the manufacturing 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.
If the location of a material/part supplier is unknown, transport distances listed in Table 3 shall be used for inbound raw material transportation to facilities located in the United States. For processes outside of the United States, appropriate regional or national transportation distances and mode(s) shall be used where primary data is unavailable. In cases where the source country/region is known and not the specific supplier location within the country/region, the default distances in Table 3 may be selected to create a more accurate scenario (for example, if a raw coating manufacturer is known to come from another continent, adding sea transport would be appropriate; or if steel is known to be produced within the USA, omitting sea transport would be appropriate).
Table 3. Material transportation distances to manufacturing site to be used in the absence of primary data
<table>
<tr><th>Raw material / classification grouping</th><th>Rail</th><th>Truck</th><th>Sea</th></tr>
<tr><td>Raw coating materials
Any material used in a coating where no primary source data is available</td><td>579 miles
(932 km)</td><td>412 miles
(663 km)</td><td>525 miles
(845 km)</td></tr>
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Plastics (for packaging) Polymer-based materials, excluding textiles	592 miles (953 km)	332 miles (534 km)	842 miles (1,355 km)
Steel (for packaging) Base metal in primary or semifinal forms and in finished basic shapes	550 miles (885 km)	390 miles (628 km)	95 miles (153 km)
These distances are from Table 21 Geographic Area Series: Shipment Characteristics by Origin Geography by Destination Geography by Commodity by Mode: 2017 as referenced from The 2017 Commodity Flow Survey Tables: https://data.census.gov/cedsci/table?q=cf1700a21&hidePreview=true&tid=CFSAREA2017.CF1700A21 NOTE: Truck distances represent round trip distances, as the assumption is made that the delivery truck returns empty after making the delivery. NOTE: The 2017 version of this dataset was used instead of 2022 because the latest version specifies great circle distance instead of routed distance, which is considered less accurate for this application.			

Manufacturing (A3)

Carbon offsets shall not be considered in the inventory. These refer to credits purchased for processes not under the control of the purchaser. For example, a coal fired power plant might buy carbon credits that support the planting of forests. While these activities can be accounted for on a corporate level, they shall not be applied to the product LCA or EPD.

Market-based renewable electricity purchases shall not be considered in the inventory. Market-based renewable electricity purchases can have various forms and while these activities can be accounted for on a corporate level, they shall not be applied to the product LCA or EPD.

On-site renewable electricity may be included in the inventory if any RECs generated from the on-site generation have not been sold to a third party and if the generated electricity is not uploaded to the grid. When renewable electricity is included, the electricity shall be allocated to all products serviced by the utility meter on which the renewable system is attached (i.e., not disproportionately to a subset of products).

In the absence of primary data, the transport distance from the manufacturing site to waste processing or disposal shall follow the latest version of the US EPA WARM model (20 miles (32 km) as of this writing). Outside of the United States, other appropriate regional or national assumptions may be used.

Primary product packaging and packaging for transport (such as pallets, pallet wrap, strapping, etc. which is applied on top of primary packaging to keep the product safe during transport) shall be included in A3. The material composition, mass, and potential for recycling shall be disclosed in the EPD.

Transport to site (A4)

Transport from the manufacturing site to the installation site shall be included. Multiple legs of distribution and storage may occur for one roof coating. In the absence of primary data, the distances in Table 2 shall be used for transportation within North America.

Table 4. Distribution distances to installation site to be used in the absence of primary data for transport legs within North America

Distribution transport leg	FHWA Class 9 diesel-fueled truck
Manufacturing site to distribution center	1,000 miles (1,609 km)
Distribution center to installation site	100 miles (161 km)

For manufacturing locations outside North America, initial transport from the country of origin to North America shall be added to the above distances based on the location of regional ports and publicly available shipping calculators.

Warehouse/distribution center

Roof coatings may be distributed through distribution centers en route to the final customer. The following default warehouse/distribution center energy consumption values shall be assumed in the absence of primary data:

- Electricity – 0.14 kWh/gallon (0.037 kWh/L)

- Natural gas – 0.41 standard cubic feet/gallon (0.0031 standard cubic meter/L)

NOTE: These factors are based on US Energy Information Administration Commercial Building Energy Consumption Survey factors[2] for electricity and natural gas as well as the following assumptions:

- 36 five-gallon buckets per pallet with two pallets stacked or racked
- Pallet size 40 inches x 48 inches
- Warehouse floor utilization rate of 40%[3]
- Warehouse storage time of 3 months

Installation (A5)

The installation stage shall include, as applicable, any ancillary materials, energy and/or water consumption, and disposal of waste materials.

Emissions released from the drying of the coating shall be modeled as individual releases. VOC emissions shall be included, measured in a way consistent with industry best-practice. If the exact emissions from drying are unknown, they shall be modeled as generic non-methane volatile organic compounds (NMVOCs).

Unless primary data are available, an application efficiency of 98% shall be assumed for all relevant calculations. If an application efficiency greater than 98% is used, it shall be disclosed in the EPD.

It shall be assumed that the waste product is properly disposed, where 100% of cured waste residue is sent to construction landfill. It is common for leftover product to be cured prior to disposal. Waste that remains liquid, such as solvent-based waste, plural component reacted products, or moisture-cured coatings, shall be assumed to be incinerated. Waste coatings shall be assumed to travel 20 miles (32 km) by light duty truck to the point of disposal.

Building estimated service life and product reference service life

This Part B uses a building estimated service life (ESL) of 75 years. All use stage activity and impacts shall be counted for the full ESL period.

The default reference service life (RSL) for the product(s) fulfilling the functional unit shall match those shown in Table 2. Justification for longer RSLs shall include a guarantee by the signature of the most senior officer of the product manufacturer.

A coating system must meet the thresholds of all the tests in its corresponding ASTM method, shown in Table 5. These tests were selected as they are already cited in the International Building Code 2024. However, regional variations in the tests that meet the intent of the building code are also acceptable. For example, if the product meets a variation of the test that occurs for a specific region (but is still designed to be equivalent to IBC 2024), then it would still qualify. This does occur in certain regions with special climates or that require specific performance attributes for roof coatings. The respective test should be administered either internally by the reporting company or by a third party.

Table 5. Product performance requirements

Coating type	Product Requirements
Acrylic roof coating	Meet ASTM D6083 specifications
Silicone roof coating	Meet ASTM D6694 specifications
Asphaltic roof coating	Meet ASTM D1227 specifications
Polyurethane roof coating	Meet ASTM D6947 specifications
Aluminum roof coating	Meet ASTM D2824 specifications

[2] US Energy Information Administration. 2018 Commercial Building Energy Consumption Survey. Table C22 Electricity consumption and conditional energy intensities by building activity subcategories, Distribution or shipping center factor (5.9 kWh/ft^2) and Table C32 Natural gas consumption totals and gross energy intensities by building activity subcategories, Distribution or shipping center factor (17.7 scf/ft^2). Available at https://www.eia.gov/consumption/commercial/data/2018/.

[3] Modern Commercial. How Much Industrial Warehouse Space Do You Need? 40% factor for difficult-to-stack goods. Available at https://www.modern-cre.com/insights/how-much-industrial-warehouse-space-do-you-need

Use or application of the installed product (B1)

Any activity related to product use and not included in stages B2-B7 shall be included in this stage. Zero activity may be assumed for this stage unless otherwise justified.

Maintenance (B2)

Roof coatings may require periodic maintenance, such as cleaning, to maintain the specified characteristics over the ESL. If maintenance activities are required, the EPD shall disclose any assumptions made for quantifying the activity, including the frequency, the materials consumed per event, and the quantity used per event and per ESL.

Repair (B3)

Repair of roof coatings commonly takes place immediately prior to application of an additional coating to the existing roof (covered below in Refurbishment). The EPD shall assume one patch of size 0.0929 square meter (m^2) per square meter (m^2) of roof coating, which is based on the assumption of a roof in typical condition needing approximately two 1 square foot (ft^2) patches per 100 square feet (ft^2). All materials, energy and/or water consumption, and disposal of waste materials needed to achieve the repairs shall be included in the inventory and disclosed in the background LCA report.

The number of full repairs shall be quantified for the duration of the ESL proportionally to the nearest hundredth of a product. For example, if an RSL of 15 years is used, then 4.00 repairs must be included for the 75-year ESL results (60 remaining years in the ESL divided by the 15-year RSL).

Replacement (B4)

Full roof coating replacements are not part of the expected service life. Zero activity may be assumed for this stage unless otherwise justified.

Refurbishment (B5)

Roof coatings are commonly refurbished over the estimated service life of the building instead of being completely replaced. Once the end of the RSL is reached, typical processes include cleaning, making repairs (covered above in Repairs), and applying a new coating to the existing roof. The refurbishment stage shall include, as applicable, any product, ancillary materials, energy and/or water consumption, and disposal of waste materials.

For cleaning, the following default quantities shall be assumed in the absence of primary data:

- Water: 4.07 liters/m^2 (based on an estimate of 10 gallons per 100 square feet)
- Detergent: Trisodium phosphate (TSP) – liquid form of 38% concentration by weight, 12.9 milliliters/m^2 (based on an estimate of 120 ml per 100 square feet)
- Electricity: 8.33 Wh/m^2, based on a pressure washer requiring 1.5 kW and a wash time of 20 seconds per square meter

A product amount consistent with the application rate in Table 2 shall be assumed for one coat.

It shall be assumed that the waste product is properly disposed, where 100% of cured waste residue is sent to a construction landfill. It is common for leftover product to be cured prior to disposal. Waste that remains liquid, such as solvent-based waste, plural component reacted products, or moisture-cured coatings, shall be assumed to be incinerated. Based on data from the coating industry's PaintCare® program[4], it shall be assumed that waste coatings travel 15 miles (24 km) by passenger vehicle to the point of disposal.

The number of full refurbishments shall be counted for the duration of the ESL proportionally to the nearest hundredth of a product. For example, if an RSL of 15 years is used, then 4.00 refurbishments must be included for the 75-year ESL results (60 remaining years in the ESL divided by the 15-year RSL).

[4] California Paint Stewardship Program 2023 Annual Report https://www.paintcare.org/wp-content/uploads/docs/ca-annual-report-2023.pdf

	Operational energy use (B6) and operational water use (B7) Once installed, roof coatings are not expected to require any energy or water for use during the lifetime of the product. Zero activity may be assumed for this stage unless otherwise justified. **Deconstruction/demolition (C1)** Once a surface is coated, it is rarely removed through chemical or mechanical means and instead is coated-over and then eventually assumed to be disposed with the substrate. 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 km) as of this writing). Outside of North America, other appropriate regional or national assumptions may be used. **Waste processing (C3)** Waste is assumed to be disposed of with the substrate in a construction landfill at end of life. As such, no waste processing activity or impacts are applicable in this stage. **Waste disposal (C4)** The EPD owner shall assume 100% disposal in a construction landfill in North America unless otherwise justified as described in C3 above. The landfill process shall be modeled based on the mass of roof coatings using secondary data to model demolition waste, unless otherwise justified. **Benefits and loads beyond the system boundary (D), Optional** Since the default end-of-life assumption is 100% landfill, there are no anticipated burdens or benefits beyond the system boundary. However, if alternative end-of-life pathways are justified, such benefits and burdens may be reasonably quantified or qualitatively described in this stage.
4. Additional data quality requirements	No additional data collection specifications or data quality requirements were identified.

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 EPDs

Industry-average EPD additional rules

Minimum participation	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 roof coating 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 roof coating type. Percentage of market size represented should be based on the RCMA Gallons Sold Report (for the most recent year available) for each roof coating type.
Retroactive pathway requirements	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).
Governance	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. 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.
Averaging rules	For the same coating type, different manufacturers may suggest different application rates to achieve the functional unit. In an industry-average EPD, the reference flow to achieve the functional unit shall be calculated using a weighted average application rate from the individual manufacturers (based on the production volume of participating manufacturers).
EPD updates	Updates to the industry-average EPD may be needed 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), 3) significant changes to the industry supply chain, or 4) significant changes to scenario assumptions downstream of the manufacturing process. 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.
Comparison of company-specific EPDs to 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. *LCIA method & version # used for comparison:* All comparisons to the industry-average results must use the same method and version number as the industry-average study. *Threshold of performance improvement for each impact category:* 10%+ reduction in global warming 5%+ reduction in at least two additional impact categories

Part B development information

Part B review panel	This Part B was reviewed for conformance to ISO 14025, ISO 21930:2017, and ACLCA PCR Open Standard v1.0 by the following parties: Hugues Imbeault-Tétreault, ing., M.Sc.A. Chair Groupe AGÉCO hugues.i-tetreault@groupeageco.ca Terrie Boguski, Harmony Environmental tboguski@harmonyenviro.com Rifat Karim Birla Carbon rifat.chimique@gmail.com
Open consultation	Sustainable Minds solicited public comments on this Part B from 11/15/2025 – 12/15/2025. 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 EPDs conformant to ISO 21930:2017 and looking to update default assumptions related to life cycle stage scenarios.
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	July 2015: Original, published by NSF (https://www.nsf.org/nsf-standards/product-category-rules)
2.0	July 2017
Extensions	July 2022, June 2023, November 2024: 12-month extensions by NSF with no additional changes
3.0	Dec 17, 2025: Updated upon anticipation of expiration of the extended v2.0. Made updates as suggested by the PCR committee along with other best practice assumptions, including: • Conformance to ISO 21930:2017 • Addition of applicable CSI sections • Geographical representativeness designated as being for products sold in North America • Specification that all EPD types may be created from this PCR • Disclosure of GWP using IPCC AR6, in addition to latest TRACI indicators as defined in SM Part A • Addition of recommended application rates, application amounts, dry film thicknesses, and reference service lifetimes for various coating types • Updated building estimated service life of 75 years • Allowance for on-site renewable electricity to be applied to products made at the facility unless sub-metered and as long as any RECs generated were kept by the facility • Update to A2 and A4 default transportation assumptions • Addition of default assumptions for distribution center impacts and repair and refurbishment activities • Requirement to disclose in the EPD which data sets were used to represent any unit process that contributes 30% or more to any disclosed environmental impact category • Allowance for the creation of an industry-average EPD and definition of additional rules