

SMART EPD™

**PART B PRODUCT CATEGORY RULES FOR
ELECTRICAL AND TELECOMMUNICATIONS
CONDUIT**

*Standard 1000-001, version 1.0
January 31, 2024*



Version No	Amendments	Date Issued
1.0	Initial publication	January 31, 2024

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INTRODUCTION

This document provides Product Category Rules (PCR) for organizations preparing Environmental Product Declarations (EPDs) under Smart EPD, a Type III environmental declaration program according to ISO 14025. The rules in this document serve as a subcategory PCR, known as a Part B PCR ("Part B"), to Smart EPD's Part A PCR ("Part A"). The intended application of this Part B is to give guidelines for the development of EPDs according to the product category scope defined in Section 1 and to further specify the underlying requirements of the supporting life cycle assessment (LCA). The sections in this document follow the structure of the Smart EPD Part A PCR and ISO 21930, providing clarification where needed and deferring to Part A and ISO 21930 where no changes are implemented.

When using this Part B, the most recent published version of the Smart EPD Part A PCR shall be used in conjunction with it. Smart EPD Part B PCR should be adapted if used by another EPD Program Operator that wishes to use it with a different Part A PCR in accordance with ISO TS 14029:2022, 8.2 PCR harmonization and ISO 14027:2017, 6.4.3 Adaptation of existing PCR.

Environmental Product Declarations (EPDs), or Type III environmental declarations, are information disclosures about the environmental impacts associated with products, services, and systems from a life cycle perspective. The overall goal of an EPD is to communicate relevant, verified, and comparable information based on the science of life cycle assessment (LCA). These declarations are transparent information disclosures that facilitate informed decision-making and support comparisons among competing products, services, or systems that fulfil the same functions.

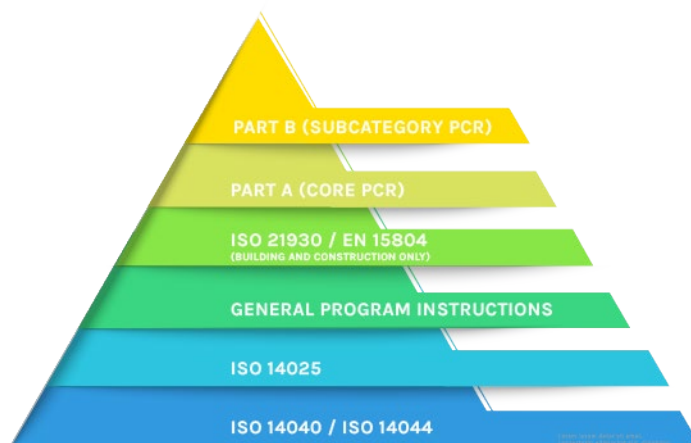
The Smart EPD program seeks to help organizations communicate the environmental performance of their products, services, and systems in a transparent and credible manner. EPDs derived from this program must be based on an LCA conducted in a manner consistent with ISO 14040, 14044, 14025, ISO 21930 or EN 15804 (if relevant), and the corresponding relevant Product Category Rules.

The governance document for the Smart EPD Program, also known as General Program Instructions (GPIs), forms the basis of the administration and operation of the program and covers PCR development.

References to this document shall be provided as follows:

Smart EPD (2023) Part B Product Category Rules for Electrical and Telecommunications Conduit.
Version 1.0, Standard 1000-001. www.smartepd.com.

Figure 1. PCR and normative standard hierarchy



PCR DEVELOPMENT HISTORY

PCR COMMITTEE

The PCR moderator for this development process was Anna Lasso (anna.lasso@smarteprd.com). This PCR draft has been prepared with input from the following interested parties, each of which has completed a conflict-of-interest form:

- Patrick Vibien, Plastics Pipe Institute (PPI), pvibien@plasticpipe.org
- James Salazar, Athena Institute, james.salazar@athenasmi.org
- Fred Small, Atkore, fsmall@atkore.com
- Rachel Wrublik, PAE, rachel.wrublik@pae-engineers.com
- Craig Collins, PAE, craig.collins@pae-engineers.com
- Brian Deacy, Atkore, BDeacy@atkore.com

RATIONALE FOR PCR DEVELOPMENT AND LITERATURE REVIEW

This PCR was developed to facilitate the creation and publication of EPDs for electrical and telecommunications conduit and conduit accessories for terrestrial applications. This PCR supports the comparison of EPDs created using this PCR by enabling consistency in reporting and methodology.

Before developing this PCR, the PCR committee considered relevant existing PCRs for the intended product category, as presented in Section 1.1. While there are various PCRs for cable, connection, and piping systems, none explicitly address electrical and telecommunications conduit in the North American (NA) context; limitations of these PCRs are presented in Table 1. That said, according to the requirements of ISO 14027, Section 6.4.3, the committee sought to harmonize with these existing PCRs to the extent possible when developing this PCR.

Table 1. Limitations of Referenced PCRs for Conduit Applications

PCR	Limitations
IBU PCR for Connection, assembly and installation systems	While the referenced PCR applies to cable and conduit guiding systems, including cable carriers, cable channels, it refers to EU technical data and standards which are not applicable in NA.
ICCES Rigid and Flexible Building Piping Systems	The scope of reference PCR is intended for plumbing and mechanical piping and does not cover the specific application of conduit.
PEP Ecopassport – Cable Management Solutions	The referenced PCR refers to EU technical data and standards which are not applicable in NA. Defines “basket of functions” for three different families of cable systems and provides detailed functional unit and reference flow requirements.
EPD Norge PCR for electrical cables and wires	The scope of the referenced PCR does not cover conduit applications and refers to EU technical data and standards which are not applicable in NA. Functional unit for all outdoor cable products in a cradle to grave EPD is: 1 m of installed electrical cables or lines with a specific function, from cradle to grave, with activities needed for the study period of the construction. Declared unit for indoor cable products is 1 m installed electrical cables, including waste treatment at end of life. A1-A5, C1-C4, and D shall be included.

Other documents considered in the development of this PCR include:

- Life Cycle Assessment of North American HDPE Conduit for Outside Plant Services. Plastics Pipe Institute, in development.
- Life Cycle Assessment for Steel and PVC Conduit. Atkore, in development.
- Life Cycle Assessment for Plastic Pipe. Plastic Pipe and Fittings Association, in development.

REVIEW HISTORY

An open public consultation was conducted during the PCR review process where interested parties were invited via email and other channels to submit comments to Smart EPD. The public consultation of the completed draft PCR included a minimum 30-calendar-day period from September 28, 2023 to October 27, 2023. After public comments were submitted, the PCR committee reviewed and developed responses for all comments. All comments from the review panel and public consultation were addressed and satisfactorily resolved by the PCR committee prior to the publication of this PCR. Interested parties who submitted comments include:

- Shelly Severinghaus, TrueNorth Collective

The independent panel review of this PCR included a review by the following individuals from November 10, 2023 to January 30, 2024:

Nathan Ayer (Chair)
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Dale Crawford
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This PCR was reviewed for conformance with the following standards/guidelines:

- Smart EPD Part A Product Category Rules for Building and Construction Products and Services
- ISO 21930:2017
- EN 15804:2012+A2:2019 – optional conformance included in Annex B of Smart EPD Part A
- ACLCA PCR Guidance Document v1.0, 2022 (Transparency Level)
- Smart EPD General Program Instructions

PCR UPDATES

To provide input on this PCR, comments may be submitted to pcr@smartepd.com using the designated template found at www.smartepd.com/pcr-library.

The Smart EPD Program may periodically issue updates to this Part B PCR during its validity period. If updates are deemed material by the original PCR Committee members and original PCR Review Panel, criteria number 18 and 19 for Program Operators from the ACLCA PCR Guidance v1.0 shall be followed.

1. SCOPE

Title:	Part B Product Category Rules for Electrical and Telecommunications Conduit, Standard 1000-001.
Version Number:	1.0
Program Operator:	Smart EPD LLC, www.smartepd.com , info@smartepd.com
Publication date:	January 31, 2024
Validity period:	5 years, Expiration January 31, 2029
Specification code:	See Table 2
Standards conformance:	<ul style="list-style-type: none">• Smart EPD Part A Product Category Rules for Building and Construction Products and Services• ISO 21930:2017 with optional EN 15804+A2 conformance

1.1. CATEGORY DEFINITION AND DESCRIPTION

The scope of this PCR applies to the product group electrical and telecommunications conduit and conduit accessories for terrestrial applications. The product group consists of metal and nonmetallic conduit products for use as a raceway for wire or cables of an electrical or telecommunications system. Conduit is a tube in which electrical and telecommunication wires are housed. It provides a pathway for and protects cables from physical damage, and may be used for structural bracing applications.

1.2. GEOGRAPHY

This PCR was developed with a focus on North America but may be used globally.

1.3. APPLICABLE PRODUCTS

Table 2 describes the product systems covered within the scope of this PCR, along with their relevant Construction Specification Institute (CSI) MasterFormat codes. This list is non-exhaustive, and the CSI numbers provided reflect common applications, which can include multiple uses; other applications may exist.

Table 2. Applicable Masterformat (CSI), UNCPC, and/or other Classifications

Classification scheme	Title
CSI	26 05 33 Raceway and Boxes for Electrical Systems 26 05 33.13 Conduit for Electrical Systems 26 05 33.16 Boxes for Electrical Systems 26 05 33.23 Surface Raceways for Electrical Systems 26 05 36 Cable Trays for Electrical Systems 26 05 39 Underfloor Raceways for Electrical Systems 26 05 43 Underground Ducts and Raceways for Electrical Systems 27 05 33 Conduits and Backboxes for Communications Systems 27 05 36 Cable Trays for Communications Systems 27 05 39 Surface Raceways for Communications Systems 27 05 43 Underground Ducts and Raceways for Communications Systems
UNCPC	46940 – Electrical insulators, except of glass or ceramics; insulating fitting for electrical machines or equipment, except of ceramics or plastics; electrical conduit tubing and joints therefor, of base metal lined with insulating material 5324 Long distance pipelines, communication, and power lines
UNSPSC	39131700 Wire Raceways Conduit and Busways 39131706 Electrical conduit 39131707 Electrical conduit coupling 39131708 Electrical conduit fitting body 39131715 Underground hose conduit

	39131717	Electrical conduit elbow
	39131718	Electrical conduit nipple
	39131720	Running thread conduit

1.4. NON-APPLICABLE PRODUCTS

The following products, which may provide similar functions in a different application, are not within the scope of this PCR:

- Plumbing and mechanical piping products covered under the scope of the ICCES PCR for Rigid and Flexible Building Piping Systems
- Any product not explicitly listed in Section 1.3.

2. NORMATIVE REFERENCES

Smart EPD Part A Product Category Rules for Building and Construction Products and Services, Standard 1000.

Bhat, C.G., Adhikari T, Mellentine J, Feraldi R, Lasso A, Swack T, Mukherjee A, Dylla H, Rangelov M. 2022 ACLCA PCR Guidance – Process and Methods Toolkit. Version May 2022. American Centre for Life Cycle Assessment.

ISO 14020 Environmental labels and declarations – General Principles.

ISO 14025 Environmental labels and declarations – Type III environmental declarations – principles and procedures.

ISO 14027 Environmental labels and declarations — Development of product category rules.

ISO 14029 Environmental statements and programmes for products — Mutual recognition of environmental product declarations (EPDs) and footprint communication programmes.

ISO 14040:2006 Environmental management – Life cycle assessment – Principles and framework.

ISO 14044:2006 Environmental management – Life cycle assessment – Requirements and guidelines.

ISO 14046:2014 Environmental management – Water footprint – Principles, requirements and guidelines.

ISO 14067:2018 Greenhouse Gases – Carbon Footprint of Products – Requirements and guidelines for quantification.

ISO 14071:2014 Environmental management – Life cycle assessment – Critical review processes and reviewer competencies: Additional requirements and guidelines to ISO 14044:2006.

ISO 21930:2017 Sustainability in building construction – Environmental declaration of building products

EN 15804+A2:2019 Sustainability of construction works – Environmental product declarations – Product category rules.

3. TERMS AND DEFINITIONS

Definitions contained in ISO 14040:2006, ISO 14044:2006, ISO 14046:2014, 14025:2006, ISO 14027:2017, ISO 14029:2022, ISO 14067:2018, 14071:2014, ISO 21930:2017, and the Smart EPD Part A PCR.

Core PCR/Part A

A PCR that establishes uniform project report requirements that may be further addressed in sub-category/Part B PCRs.

LCA project report

Supporting LCA report that conforms to ISO 14040, 14044, 14025, 21930 and the applicable PCR and provides the necessary documentation to verify the LCI, LCIA and additional environmental information.

Part B PCR/Sub-category PCR

Set of specific rules, requirements, and guidelines, which provide additional, consistent requirements to the core PCR for developing EPDs for sub-categories of the overall product category of construction products.

4. ABBREVIATED TERMS

B2B	Business-to-business
B2C	Business-to-consumer
CSC	Constructions Specifications Canadian
CSI	Construction Specifications Institute
EPD	Environmental Product Declaration
GPI	General Program Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
LCI	Life Cycle Inventory
LCIA	Life Cycle Impact Assessment
PCR	Product Category Rule
UNCPC	United Nations Central Product Classification
UNSPSC	United Nations Standard Products and Services Code

5. GENERAL ASPECTS

5.1.OBJECTIVES

The objective of these Product Category Rules (PCR) is to provide specific rules for the assessment and reporting of the environmental performance of electrical and telecommunications conduit. The product group consists of metal and nonmetallic conduit products for use as a raceway for wire or cables of an electrical or telecommunications system.

This PCR serves as a sub-category PCR, or Part B PCR, to the Smart EPD™ Part A PCR for Building and Construction Products and Services.

EPDs published using this Part B PCR shall conform with the “Transparency” use case as defined by American Center for Life Cycle Assessment (ACLCA) PCR Open Standard version 1.0.¹

5.2.LIFE CYCLE STAGES, INFORMATION MODULES, AND MODULE D

Per Part A, Section 5.2 (ISO 21930, Section 5.2), with the following clarifications:

The scope of this Part B PCR and published EPDs is detailed in Figure 2 as follows:

- Buried and concrete-encased conduit products (A1 – A3)
- All other conduit products: Cradle to gate with end of life (A1 – A3, C1 – C4, D)

				PRODUCTION (A1 – A3)			CONSTRUCTI ON (A4 - A5)		USE (B1 – B7)							END OF LIFE (C1 – C4)				BENEFITS & LOADS BEYOND SYSTEM BOUNDARY (D)	
				A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
PCR Requirements		Conduit type	EPD Scope	Raw material supply	Transport	Manufacturing	Transport to site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling Potential	Reference Service Life
Part A PCR	Part B PCR																				
Required	Required	Buried and concrete encased products	Cradle to gate																		Optional
				Required			Excluded		Excluded							Excluded				Excluded	
	Required	All other conduit products	Cradle to gate w/ EOL																		Optional
				Required			Excluded		Excluded							Required				Required	

Figure 2. Life cycle modules for different types of conduit EPDs

¹ Accessible at <https://aclca.org/pcr/>

The system boundary for conduit products is presented in Figure 3.

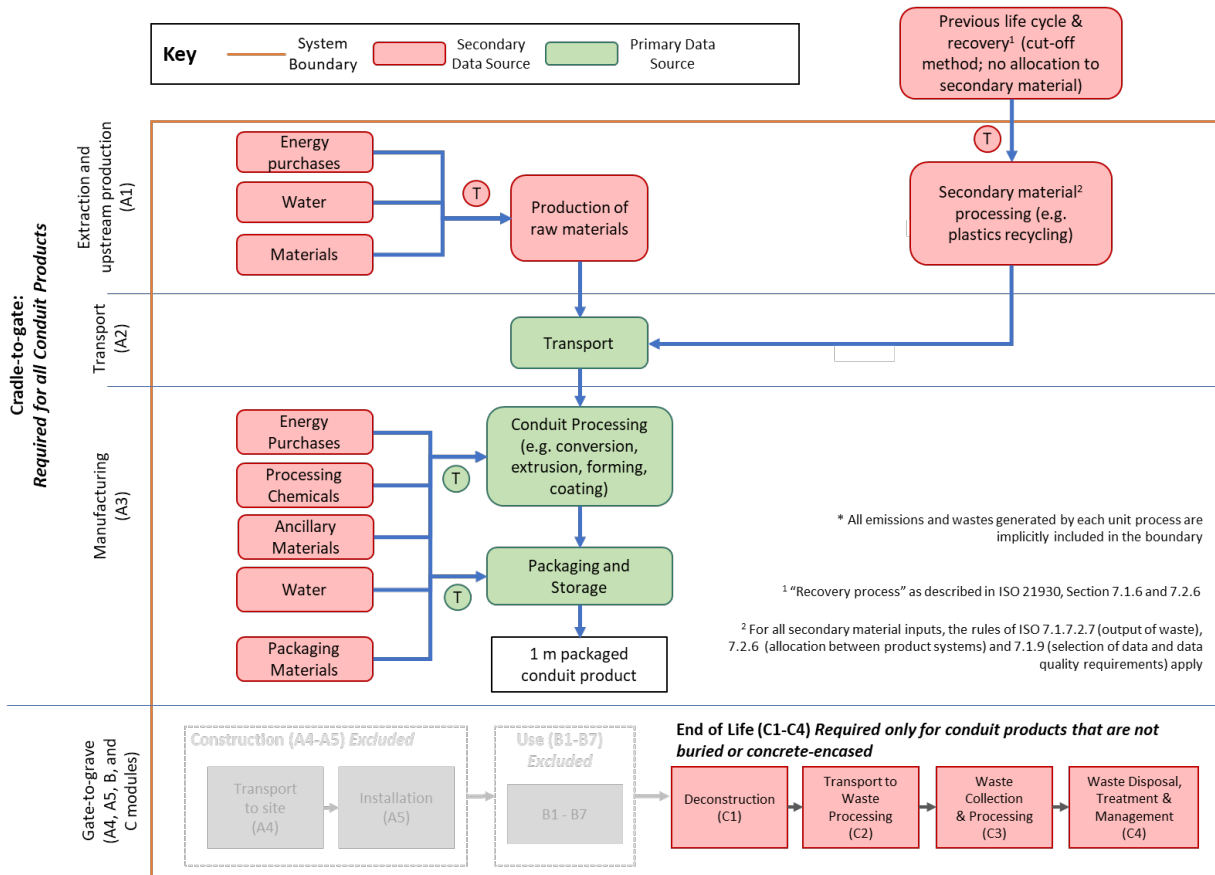


Figure 3. System boundary for conduit products

5.3.AVERAGE EPDS

Per Part A, Section 5.3.

5.3.1. PRODUCT SPECIFICITY

5.3.1.1. PRODUCT-AVERAGE EPDS

Per Part A, Section 5.3.1.1.

5.3.1.2. PRODUCT-SPECIFIC EPDS

Per Part A, Section 5.3.1.2.

5.3.2. MANUFACTURING SPECIFICITY

5.3.2.1. MANUFACTURER-AVERAGE AND FACILITY SPECIFIC EPDs

Per Part A, Section 5.3.2.1,

5.3.2.2. INDUSTRY-AVERAGE EPDs

Per Part A, Section 5.3.2.2,

5.3.3. MULTIPLE SETS OF EPD RESULTS AND SCALING FACTORS

Per Part A, Section 5.3.3, with the following clarification:

To allow application-specific contexts, declared unit scaling factors to common conduit diameters and thicknesses shall be included and reported in the EPD.

The following formula should be used to determine the scaling factor associated with a specific diameter and wall thickness of conduit.

$$\mu = \pi \times \left[\left(\frac{D_o}{2} \right)^2 - \left(\frac{D_i}{2} \right)^2 \right] \times \rho$$

Where:

μ = Linear density (conduit scaling factor)

ρ = Material density

D_o = Outer diameter

D_i = Inner diameter

These values are generally readily accessible in published manufacturer pipe size charts.

The following formula should be used to translate the impact associated with 1 kg of conduit to the impact per linear meter of conduit:

$$\text{Conduit impact per meter} = \text{Conduit scaling factor} \times \text{Impact per kg}$$

An example conduit scaling factor table is provided in the Table below.

Table 3. Example calculation for HDPE conduit based on density of $\rho = 955 \text{ kg/m}^3$

Nominal Diameter (in)	Outer diameter (in)	Outer diameter (mm)	Inner Diameter (in)	Inner Diameter (mm)	Wall thickness (in)	Wall thickness (mm)	Scaling factor = $\mu = \text{Mass/meter (kg/m)}$
1/2	0.84	21.34	0.633	16.08	0.093	2.362	0.147
3/4	1.05	26.67	0.797	20.24	0.117	2.972	0.226
1	1.315	33.40	1.003	25.48	0.146	3.708	0.350
2	2.375	60.33	1.816	46.13	0.264	6.706	1.134

5.4. USE OF EPDs FOR CONSTRUCTION PRODUCTS

Per Part A, Section 5.4 (ISO 21930, Section 5.4)

5.5. COMPARABILITY

Per Part A, Section 5.4 (ISO 21930, Section 5.5)

5.6. DOCUMENTATION

Per Part A, Section 5.6 (ISO 21930, Section 5.6), with additional, specific content for EPDs published using this Part B PCR in Section 9.

6. PCR DEVELOPMENT AND USE

6.1. CORE STRUCTURE

Per Part A, Section 6.1 (ISO 21930, Section 6.1)

6.2. RELATION BETWEEN PART A PCR AND PART B PCRs

Per Part A, Section 6.2 (ISO 21930, Section 6.2)

6.3. DEVELOPMENT OF PART B PCR

Per Part A, Section 6.3 (ISO 21930, Section 6.3). See Section 1 for additional context.

7. RULES FOR LIFE CYCLE ASSESSMENT

7.1. LCA METHODOLOGICAL FRAMEWORK

7.1.1. LCA MODELLING AND CALCULATION

Per Part A, 7.1.1 (ISO 21930, Section 7.1.1).

7.1.2. FUNCTIONAL UNIT

A functional unit is not relevant to the scope of this PCR.

7.1.3. DECLARED UNIT

The declared unit for this PCR is one (1) meter of conduit product at a specific diameter and wall thickness to be reported.

The declared unit shall also be reported in Section 9.3.1. Refer to Section 5.3.3 on using declared unit scaling factors to allow for application-specific contexts to be reported in an EPD.

In addition to the declared unit, the following parameters shall also be reported:

- Outer diameter (m, optional: inches)
- Inner diameter (m, optional: inches)
- Wall thickness (m, optional: inches)

- Material density (kg/m³, optional: lbs/ft³)
- Mass per meter (kg/m, optional: lbs/ft)
- Scaling factor table (Refer to Section 5.3.3)

7.1.4. REFERENCE SERVICE LIFE

Per Part A, Section 7.1.4 (ISO 21930, Section 7.1.4), The service life of conduit depends on the application and often outlasts the typical lifetime of the cable in use, even serving multiple lifetimes.

7.1.5. SYSTEM BOUNDARY WITH NATURE

Per Part A, Section 7.1.5 (ISO 21930, Section 7.1.5).

Capital goods and infrastructure have been excluded per ISO 21930. Future PCR updates may consider capital goods and infrastructure when lifetimes or standardized methods of computing lifetimes for the industry become available, as well as consensus-based depreciation methods to allocate the burden of capital goods over their service period.

7.1.6. SYSTEM BOUNDARY WITH PRODUCT SYSTEMS

Per Part A, Section 7.1.6 (ISO 21930, Section 7.1.6).

The system boundary for conduit products is presented in Section 5.2, Figure 3.

7.1.7. INFORMATION FOR SCENARIOS

7.1.7.1. GENERAL

Per Part A, Section 7.1.7.1 (ISO 21930, Section 7.1.7.1).

7.1.7.2. A1 TO A3, PRODUCTION STAGE

Per Part A Section 7.1.7.2 (ISO 21930, Section 7.1.7.2).

7.1.7.2.1. GENERAL

Per Part A, Section 7.1.7.2.1 (ISO 21930, Section 7.1.7.2.1).

7.1.7.2.2. A1, EXTRACTION AND UPSTREAM PRODUCTION

Per Part A, Section 7.1.7.2.2 (ISO 21930, Section 7.1.7.2.2). The information module “extraction and upstream production” covers raw material extraction and processing as well as processing of secondary material input (e.g., recycling processes, including sorting, handling, transportation, and reprocessing).

7.1.7.2.3. A2, TRANSPORT TO FACTORY

Per Part A, Section 7.1.7.2.3 (ISO 21930, Section 7.1.7.2.3).

7.1.7.2.4. A3, MANUFACTURING

Per Part A, Section 7.1.7.2.4 (ISO 21930, Section 7.1.7.2.4).

7.1.7.2.5. INPUT OF SECONDARY MATERIALS OR RECOVERED ENERGY

Per Part A, Section 7.1.7.2.5 (ISO 21930, Section 7.1.7.2.5).

7.1.7.2.6. CO-PRODUCTS LEAVING THE SYSTEM

Per Part A, Section 7.1.7.2.6 (ISO 21930, Section 7.1.7.2.6).

Co-products from unit processes leaving the system at the production stage (A1 to A3) shall be allocated in accordance with ISO 21930, Section 7.2.5. Loads and benefits from allocated co-products shall not be declared in module D (see ISO 21930, Section 7.1.7.6); module D is excluded from the scope of this PCR.

7.1.7.2.7. OUTPUT OF WASTE

Per Part A, Section 7.1.7.2.7 (ISO 21930, Section 7.1.7.2.7).

7.1.7.2.8. END-OF-LIFE SCENARIOS FOR PACKAGING

Per Part A, Section 7.1.7.2.8 (ISO 21930, Section 7.1.7.2.8).

7.1.7.3. A4 TO A5, CONSTRUCTION STAGE

Not relevant to the scope of this PCR.

7.1.7.4. B1 TO B7, USE STAGE

Not relevant to the scope of this PCR.

7.1.7.5. C1 TO C4, END OF LIFE STAGE

Per Part A, Section 7.1.7.5 (ISO 21930, Section 7.1.7.5), with the following clarification.

These modules are not relevant to buried and concrete encased conduit products. Defaults from the Part A shall be used for all other conduit products unless specific primary data are available.

7.1.7.6. MODULE D

Per Part A, Section 7.1.7.6 (ISO 21930, Section 7.1.7.6).

Module D is not relevant to buried and concrete encased conduit products but shall be reported for all other conduit products.

7.1.8. CUT-OFF RULES

The requirements for the exclusion of inputs and outputs (cut-off rules) shall follow the guidance in Part A, Section 7.1.8 (ISO 21930, Section 7.1.8). The procedure used shall be documented in "EPD Content", Section 9.3.6.

7.1.9. DATA SOURCES AND DATA QUALITY

Per Part A, Sections 7.1.9 through 7.1.9.6 (ISO 21930, Section 7.1.9), with additional clarification:

The foreground system denotes the processes that are specific to the system under study. An example of these processes would be the operations at the producer's facilities. The foreground system shall be modelled using primary data (also termed as "foreground data" in ISO 21930:2017). The foreground (i.e. primary) data collected for LCA calculations in the project report and reported in an EPD shall be no more than three years old. The foreground data in modules A1 and A3 (e.g. quantities of material, energy, and ancillary inputs) shall be based on primary data. The foreground data in module A2 (transportation distances and modes) shall be based on primary data.

The background system is defined as those processes where a homogenous market with average or generic data can be assumed to appropriately represent the respective process. Examples of these processes would be electricity and fuel production. The background system may be modelled using secondary data (also termed as "secondary data" in ISO 21930:2017). For the background system, the most recent American Chemistry Council data² shall be used for resin materials.

7.1.10. UNITS

Per Part A, Section 7.1.10 (ISO 21930, Section 7.1.10).

7.2. INVENTORY ANALYSIS

7.2.1. DATA COLLECTION

Data collection shall follow Part A, Section 7.2.1 (ISO 21930, 7.2.1, which references ISO 14044:2006, 4.3.2).

Per the ACLCA PCR Guidance, 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, including database name and version, dataset name, dataset geography, and dataset allocation method.

An LCI data collection template will be considered in a future version of this PCR.

7.2.2. CALCULATION PROCEDURES

Per Part A, Section 7.2.2 (ISO 21930, Section 7.2.2).

7.2.3. ALLOCATION

Per the stepwise allocation method in Part A Sections 7.2.3, 7.2.4, 7.2.5, and 7.2.6 (detailed in ISO 21930, Sections 7.2.4, 7.2.5, and 7.2.6).

7.2.4. PRINCIPLES FOR ALLOCATION

Per Part A, Section 7.2.4 (ISO 21930, Section 7.2.4).

² As published in the Federal LCA Commons, US LCI Database https://www.lcacommons.gov/lca-collaboration/search/page=1&repositoryId=National_Renewable_Energy_Laboratory%2FUSLCI_Database_Public

7.2.5. CO-PRODUCT ALLOCATION

Per Part A, Section 7.2.5 (ISO 21930, Section 7.2.5).

7.2.6. ALLOCATION ACROSS SYSTEM BOUNDARY

Per Part A, Section 7.2.6 (ISO 21930, Section 7.2.6).

7.2.7. BIOGENIC CARBON (IF APPLICABLE)

Biogenic carbon uptake and emissions shall be calculated per Part A, Section 7.2.7 (ISO 21930, Section 7.2.7) and reported for each declared impact module in Section 9.5.2.3 of EPD Content.

7.2.8. CARBONATION AND CALCINATION

Not relevant for this PCR.

7.2.9. DELAYED EMISSIONS

Not relevant for this PCR.

7.2.10. RESOURCE USE INDICATORS

Per Part A, Section 7.2.10, (ISO 21930, Sections 7.2.10 and 7.2.13) and reported in Section 9.5.2.1 of EPD Content.

7.2.11. GHG EMISSIONS FROM LAND-USE CHANGE

Not relevant for this PCR. Land use changes from buried conduit may be neglected as the natural landscape is restored or unaffected.

7.2.12. ADDITIONAL INDICATORS DESCRIBING EMISSIONS AND REMOVALS OF CARBON

Per Part A, Section 7.2.12 (ISO 21930, Section 7.2.12) and reported in Section 9.5.2.3 of EPD Content.

7.2.13. FRESHWATER INVENTORY INDICATOR

Per Part A, Section 7.2.13 (ISO 21930, Section 7.2.13) and reported in Section 9.5.2.1 of EPD Content.

7.2.14. WASTE CATEGORIES AND OUTPUT FLOW INDICATORS

Waste and outputs flows shall be calculated and reported per Part A, Section 7.2.14 (ISO 21930, Section 7.2.14) reported in Section 9.5.2.2 of EPD Content.

7.3. IMPACT ASSESSMENT INDICATORS

Per Part A, Section 7.3 (ISO 21930, Section 7.3) with no additions.

8. ADDITIONAL ENVIRONMENTAL INFORMATION

8.1. GENERAL

Per Part A, Section 8.1.

8.2. ADDITIONAL ENVIRONMENTAL INFORMATION NOT INCLUDED IN THE PRE-SET LCIA INDICATORS

This Part B PCR includes no additional environmental indicators beyond those established in Part A Section 8.2 (ISO 21930, Section 8.2).

8.3. ADDITIONAL ENVIRONMENTAL INFORMATION NOT DERIVED FROM OR RELATED TO LCA

Per Part A, Section 8.3 (ISO 21930, Section 8.3).

8.4. MANDATORY ADDITIONAL ENVIRONMENTAL INFORMATION

8.4.1. *REGULATED HAZARDOUS SUBSTANCES*

Per Part A Section 8.4.1 (ISO 21930 Section 8.4.1).

Regulated hazardous substances shall be reported in "EPD Content," Section 9.2.4.

8.4.2. *RELEASE OF DANGEROUS SUBSTANCES FROM CONSTRUCTION PRODUCTS*

Per Part A Section 8.4.2 (ISO 21930 Section 8.4.2)

The release of dangerous substances shall be reported in "EPD Content," Section 9.2.4.

9. EPD CONTENT

9.1. MAIN SECTIONS OF AN EPD

In conformance with to the ACLCA PCR Guidance v1.0, the following sections provide a standard EPD template to be used for all EPDs that can be customized per PCR to identify requirements unique to each.

9.2. GENERAL INFORMATION

The manufacturer(s) of the product that is the subject of the EPD is responsible for the provision of all information in the following sections.

9.2.1. *EPD HOLDER AND GENERAL PRODUCT INFORMATION*

Per Part A, Section 9.2.1.

9.2.2. *VERIFICATION INFORMATION*

Per Part A, Section 9.2.2, with reference to this Part B PCR.

9.2.3. LIMITATIONS, LIABILITY, AND OWNERSHIP

Per Part A, Section 9.2.3.

9.2.4. PRODUCT MATERIAL AND COMPONENT INFORMATION

A description of the main product components or materials that make up the product shall be given in mass percentage (e.g. percent (%)) polyvinyl chloride, high density polyethylene, cold rolled steel, extruded aluminum, etc.).

A description of the main product packaging materials, if applicable, shall be given in mass (kg) per declared or functional unit.

Any biogenic carbon content of the construction product leaving the factory gate and any accompanying packaging shall be declared as per Table 11 in Part A, Section 9.2.4.

Regulated hazardous substances and/or the release of dangerous substances from Part A, Section 9.2.4 shall be reported.

9.2.5. MANUFACTURING INFORMATION

Per Part A, Section 9.2.5.

9.3.METHODOLOGICAL FRAMEWORK

9.3.1. DECLARED UNIT

The declared unit is one (1) meter of conduit product.

9.3.2. SCOPE OF EPD

The scope of the EPD with respect to the life cycle stages includes:

- Cradle to gate (A1 – A3), Buried and concrete-encased conduit products
- Cradle to gate with end of life (A1 – A3, C1 – C4, D), All other conduit products

9.3.3. EPD TYPE

Per Part A, Section 9.3.3.

9.3.4. DATA SOURCES

Per Part A, Section 9.3.4.

9.3.5. ALLOCATION PROCEDURE

Per Part A, Section 9.3.5.

9.3.6. CUT-OFF PROCEDURE

Per Part A, Section 9.3.6.

9.3.7. DATA QUALITY

Per Part A, Section 9.3.7, with additional documentation requirements from Section 7.1.9 of this PCR.

9.3.8. RENEWABLE ELECTRICITY

Per Part A, Section 9.3.8.

9.4. TECHNICAL INFORMATION AND SCENARIOS

9.4.1. TECHNICAL INFORMATION

Per Part A, Section 9.4.1, with the following additional reporting requirements.

Identification of product according to the codes in Section 6.5.3, Table 2 and the following specifications:

- Outer diameter (mm)
- Inner diameter (mm)
- Wall thickness (mm)
- Mass per meter (kg)
- Performance standards (e.g. UL 651, 651A, 6, 6A, 797, 1242, ASTM F2160, NEMA TC7)

9.4.2. SCENARIOS

This PCR specifies parameters of assumed scenarios for end-of-life stages to ensure comparability and consistency of results. If a manufacturer wishes to define their own scenario(s), they shall be based on primary data; otherwise defaults are to be used per the provided tables. PCRs shall provide worst-cast (i.e. conservative) default values for scenario data of the specified processes where no data are available for the EPD developer.

Table 4. End of Life (C1-C4)

Name		Value	Unit
Demolition (module C1)		0	kwh
Transport (module C2)		100	km
Collection process (module C3) (specified by type)	Collected separately	-	kg
	Collected with mixed construction waste (default)	Declared unit mass	kg
Recovery (module C3) (specified by type)	Reuse	-	kg
	Recycling	-	kg
	Landfill (default)	Declared unit mass	kg
	Incineration	-	kg
	Incineration with energy recovery	-	kg
	Energy conversion (specify efficiency rate)	-	
Disposal (module C4) (specified by disposal option)	Final disposal (Landfill default)	Declared unit mass	kg
Removals of biogenic carbon (excluding packaging)			kg CO ₂

Table 5. Reuse, Recovery, and/or Recycling Potentials (D), Relevant Scenario Information

Name	Value	Unit
Recycling rate of product	From Part A unless primary data are available	%
Recycled content of product	Indicate if plant or corporate average	%
Net energy benefit from energy recovery from waste treatment declared as exported energy in C3 (R>0.6)		MJ
Net energy benefit from thermal energy due to treatment of waste declared as exported energy in C4 (R<0.6)		MJ
Net energy benefit from material flow declared in C3 for energy recovery		MJ
Process and conversion efficiencies	N/A	

9.5. ENVIRONMENTAL INFORMATION FROM LCA

9.5.1. RESULTS FROM LCIA

Per Part A, Section 9.5.1 for each reported information module

9.5.2. RESULTS FROM LCI

9.5.2.1. RESOURCE USE AND WATER

Per Part A, Section 9.5.2.1 for each reported information module

9.5.2.2. WASTE AND OUTPUT FLOWS

Per Part A, Section 9.5.2.2 for each reported information module

9.5.2.3. CARBON EMISSIONS AND REMOVALS (IF APPLICABLE)

Per Part A, Section 9.5.2.3 for each reported information module

9.6. ADDITIONAL ENVIRONMENTAL INFORMATION

Per Part A, Section 9.6.

9.7. INTERPRETATION

Per Part A, Section 9.7.

9.8. REFERENCES

Per Part A, Section 9.8.

10. PROJECT REPORT

10.1. PROJECT REPORT

Per Part A, Section 10.1 (ISO 21930, Sections 10.1 and 10.3).

10.2. LCA-RELATED ELEMENTS OF THE PROJECT REPORT

Per Part A, Section 10.2 (ISO 21930, Section 10.2).

10.3. RULES FOR DATA CONFIDENTIALITY

Per Part A, Section 10.3 (ISO 21930, Section 10.3).

10.4. DOCUMENTATION OF ADDITIONAL ENVIRONMENTAL INFORMATION

Per Part A, Section 10.4.

10.5. DATA AVAILABILITY FOR VERIFICATION

Per Part A, Section 10.5 (ISO 21930, Section 10.5).

11. EPD VERIFICATION AND VALIDITY

Per Part A, Section 11 (ISO 21930, Section 11 and ISO 14025).