Product-Category Rules (PCR)

for Preparing an Environmental Product Declaration (EPD) for

Lithium-ion Secondary Battery Pack

PCR 2022：1.0

Trend Power Technology Private Limited Taiwan Branch
（Singapore）

Version 1.0
2022-06-17

Table of Contents

1.General information

This document is to be used as the product category rules (PCR) for the manufacturing of lithium-ion secondary battery pack (“products”) globally. The applicable manufacturing commodity CCC code as follows:

- 85076000107 Power bank with lithium-ion accumulators
- 85076000900 Other Lithium-ion accumulators

The requirements specified in this PCR are intended to be used for EPDs certified in accordance with the ISO 14025 standard. This document shall be valid until December 31, 2027.

This PCR was first drafted by the Trend Power Technology CO., LTD.. Representatives from major Taiwanese manufacturers of similar products and stakeholders were then invited by the Taiwan Battery Association(TBA) to the open consultation meeting held on May 19, 2022, to participate in the discussion and review of this PCR.

For further information and comments concerning this PCR, please contact: Taiwan Battery Association Secretariat, Mr. Zhan (Tel: +886-2-2902-9005; Fax: +886-2-2902-9006; E-mail: tba@taiwanbattery.org.tw); Trend Power Technology CO., Miss Lina Chang (Tel: +886-3-569-5920; E-mail: Linda_Chang@simplo.com.tw).

2. Company and product description

The EPD shall include information about the manufacturing company/organization. The information may include manufacturing process related information, and environmental related information, such as the environmental management system information. The information may also include special issues which the company/organization would like to emphasize, such as the products meeting certain environmental criteria, or environmental safety and health related information.

This PCR covers the full life cycle of the product and is applicable to both Business-to-Business (B2B) and Business-to-Consumer/Customer, (B2C) communications, but not including Lithium-ion Secondary Battery System. During the inventory of product related environmental impacts, the scope of inventory shall cover both the product and its accessories/packaging.

2.1 Product group function

Lithium-ion Secondary Battery Packs are widely used in portable electronic products, mobile power supplies, industrial energy storage and other fields. Lithium battery is lightweight with no memory effect, and has a great operating voltage and high energy density. Although the use of lithium metal as the battery electrode may provide higher operating voltage and higher power, there is an associated safety concern (due to risk of fire and explosion); therefore, the lithium-ion is used instead of lithium-metal in the lithium battery to transfer electricity. Following is their mainly applications of lithium-ion secondary battery packs:

- Portable electronic products: mobile phones, notebook computers and wearable electronic products;
- Mobile power supplies: the power source of electric vehicles and mobile transportation vehicles.
- Industrial energy storage: stationary storage, UPS, telecom and industrial applications.
- Others: Power supply for medical equipment, power tools and gardening equipment.

For the battery charging phase of a charge-discharge cycle bases on lithium ions move between cathode (positive electrode) and anode (negative electrode), the cathode (positive electrode) of a lithium secondary battery typically used the lithium ionic metal oxides (e.g. $LiCoO_2$, Li(Ni, Co, Mn)O_2, or $LiFePO_4$,etc.), while the anode (negative electrode) used the carbon material (e.g., graphite), nanomaterials (such as lithium titanate nanocrystals, etc.), silicon materials (such as silicon oxide, etc.), and the electrolyte will typically contain lithium salt of an organic solvent, gel polymer (Li-ion/Li-polymer battery) or solid ceramics. Lithium secondary batteries may be in the shape of the traditional cylindrical, angle (edge-type) or flat (thin, laminated type) batteries. A lithium secondary battery pack may consist of a single or several lithium secondary batteries connected in series or in parallel and controlled by a battery management system (BMS).

2.2 Product components

The product’s main and secondary components include but not limited to

the following:

Main components, including:

- battery cell: perform the most important function of power storage; include active materials (positive and negative electrodes), adhesive, conductive substrate, conductive additive, electrolyte (layer), insulating membrane, battery cell casing, and safety valves.
- battery management system (BMS): the system delivers management functions, usually has the function of measuring the battery voltage to prevent or avoid abnormal conditions such as overcharge and discharge of the battery and excessive temperature. The composition includes printed circuit boards, fuses, relays, terminals, wires, etc.
- battery body: battery pack casing, connectors, heat sink, wire, nickel sheet and foam, etc.
- packaging material: e.g., carton, stretch film, bubble bag, etc.

Secondary components: components included with the product according to customer demand or product features, e.g., charger, indicator light, transmission cable, power cable, user manual or CD.

2.3 Product technical description

The product technical description part of the EPD may include but not limited to the following information:

- Casing material
- Capacity
- Nominal voltage
- Upper limit charging voltage
- Max. charging current
- Charging time
- Max. discharging current
- Discharging cutoff voltage
- Charging/discharging operating temperature
- Storage temperature
- Weight: product net weight (excluding accessories and packaging)
- Dimensions

3.List of materials and chemical substances

The contents of the following materials and substances in the product shall be declared:

- Excluding accessories and packaging material, all materials of the battery body with weight ratio (material weight/body weight) ≥ 1%, or all materials of the non-battery body with weight ratio (material weight/non-body weight) ≥ 0.5%,
- All substances/materials in the product restricted/regulated by legal, e.g., RoHS, REACH, EU Battery Directive, and customer requirements,
- The following materials in the main components: flame retardants, lead content in solder, lead and flame retardant content in solder masking agent, and substances regulated by EU's RoHS Directive (the latest version).

The declaration of halogen-free flame retardants, lead-free solders and no RoHS-regulated substances may only be made when appropriate evidences are available (for example, test reports from accredited laboratories/testing facilities). The following organizations may provide accreditation for testing facilities: Taiwan Accreditation Foundation (TAF), (Asia Pacific Laboratory Accreditation Cooperation (APLAC), International Laboratory Accreditation Cooperation (ILAC) or ILAC Mutual Recognition Arrangement (ILAC MRA). For definitions of testing methodology and confirmations of regulated hazardous substances based on the accredited laboratories' product testing methods, please refer to IEC 62321, EN 14582.

4. Declared unit

The declared unit is one (1) unit of lithium-ion secondary battery pack ("product"), and the information of product weight, voltage and total energy consumption (kWh) used during the service life shall be indicated. This unit is chosen because the products are marketed and sold in such a unit.

Remarks: The total energy consumption (kWh) used is based on the

provisions of the calculation formula for the use phase in Chapter 5.

5.System boundaries

The main system boundaries for the declared product system as shown in figure 1：

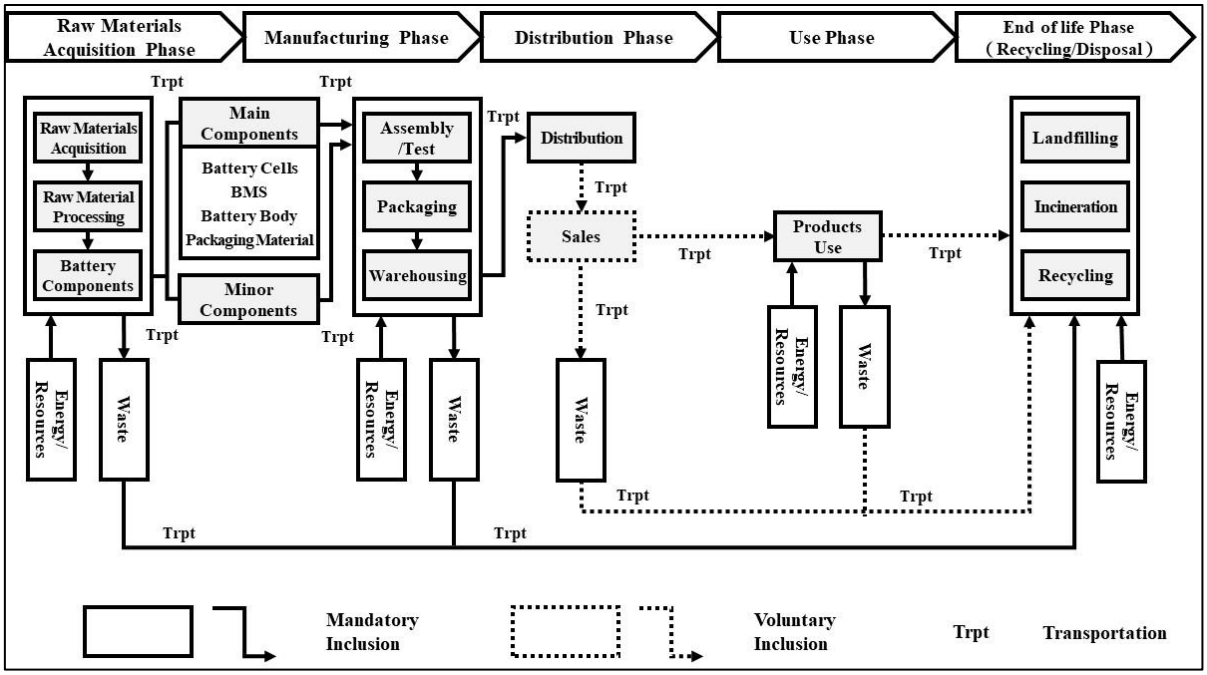

Figure 1 The main system boundaries

Raw Materials Acquisition Phase

Information regarding environmental impacts of this stage should be obtained through inventory of the inputs and outputs of components manufacturing from the upstream suppliers. The following items should be included in this inventory process:

- Material composition and weight of each component, including auxiliary/secondary materials and packaging material;
- Energy and resource consumption during the manufacturing of each component, such as electricity consumption, water consumption and added refrigerants;

- Transportation of components to the product assembly plant, such as mode of transportation, distance travelled and number of deliveries;
- Treatment of emissions associated with manufacturing of components;
- Allocation rules based on the characteristics of components, such as yield, area or volume;
- Material and weight of packaging material.

The data quality requirements for the main components are described in Section 9 on calculation rules and data quality requirements. Information regarding the product's packaging materials or additional accessories/components shall also be included in the EPD; however, their data quality requirements are not the same as the main components.

Manufacturing Phase

Information regarding this stage shall include processes information related to product assembly, testing, packaging and warehousing. The following items shall be included in this inventory process:

- Energy and resource consumption during the product manufacturing, such as electricity consumption, water consumption and added refrigerants;
- Treatment of emissions associated with manufacturing of products.

Distribution Phase

The distribution and sales stage can be divided into two parts:

- Distribution Transportation: Refer to product shipments from the final assembly plant to the first-tier deliver points (e.g., logistics centers, collection warehouses, or sales points, etc.). Declaration of

information regarding this part is mandatory, should be included in the assessment. The inventory information shall include transportation of finished products to first-tier deliver points (such as transport mode, distance travelled and number of deliveries);

- Sales transportation: Refer to transportation of products from the distribution centers/sites to the end users or consumers, including (1) sales work related process, (2) the transportation between sales points and wholesale, logistics centers, or warehouses, and customers to sales point. Declaration of information regarding this part is optional, may not be included in the assessment.

Use Phase

This formula refers to the EU document "PEFCR - Product Environmental Footprint Category Rules for High Specific Energy Rechargeable Batteries for Mobile Applications". For battery as power supply medium, the environmental impacts of use phase only consider the power consumption of battery itself during the use of battery, and does not cover the environmental impact of power supply to the back-end equipment (This part should be attributed to the impact calculation of the use phase of the back-end equipment itself).

Use phase scenario: this assumes that the average total number of charge-discharge cycles of a lithium-ion secondary battery pack is N, and for the increase with the number of uses, the efficiency of the battery pack decreases and the energy difference between charge and discharge conversions is considered.

The formula for calculating the total energy loss used by the lithium-ion secondary battery pack during its lifetime is:

$$L = (1 - EE) \times ASE$$

$$ASE = \frac{(1 + x)}{2} \times CY \times N \times \frac{1}{10^3}$$

$$EE = VE \times CE = \left(\frac{V_p}{V_c}\right) \times \left(\frac{I_p T_p}{I_c T_c}\right)$$

L = Total energy consumption by a lithium-ion secondary battery pack(kWh);

ASE = Total charge capacity of a lithium-ion secondary battery pack during its life time (kWh)；

x = Percentage of remaining capacity (%) after N times charge-discharge cycle;

CY = Typical capacity of the battery pack (Wh)；

N = Total number of charge-discharge cycle；

EE =Energy efficiency；

VE =Average voltage efficiency of charge-discharge cycle；

CE =Coulomb efficiency；

V_p, V_c = Average voltage of charge-discharge cycle (Defined by cell standard capacity verification conditions);

I_p, I_c = The current of charge-discharge cycle

T_p, T_c = During time of charge-discharge cycle。

When calculating environmental impact information based on the scenario mentioned above, for verification purposes, users must attach relevant evidence for each parameter, such as product or customer specifications

When the user can't identify or deliver relevant data and its evidence, this document presets some reference values (as shown in Table 1), allowing users to cite at their discretion when the above conditions cannot be met

Table 1 presets reference values for different use type

Use type of Li-ion secondary battery pack	Reference N
portable electronic products	300 times
mobile power supplies	500 times
industrial energy storage	150 times

Recycling/end-of-life Stage

Reporting of recycling information (such as dis-assembly report or information on recycling channels) is mandatory in the EPD.

5.1 Specification of different boundary settings

Boundary in time

The validity period for the LCA results presented in the LCA report shall be

defined.

Boundary towards nature

If the manufacturing processes are located within Taiwan, the solid waste categories as defined in Taiwan's Waste Disposal Act shall be adopted. If the processes are located in other countries, equivalent legal requirements shall be considered.

The natural boundary of the system shall describe the boundary where the materials and energy resources flow from nature into the system, and where the water and air emissions and waste are released out of the system.

Only the quantity of the disposed waste needs to be considered; landfilling process does not need to be considered. If the waste is generated through wastewater treatment or incineration process, such waste should be included into the wastewater treatment or incineration process.

Boundaries in the life cycle

The boundaries in the product life cycle are described in Figure 4. The construction of the site and infrastructure, as well as the production of manufacturing equipment do not need to be included.

Boundaries towards other technical systems

Boundaries towards other technical systems describe the inputs of material and other components towards other systems, as well as outputs of materials towards other systems. For the inputs of recycled materials and energy towards the product manufacturing stage, the transportation between the recycling process and use of recycled materials shall be included in the data set. For the production of recyclable products during the manufacturing stage, the transportation towards the recycling process shall be included.

(Note: Further explanations *are provided in Section 7 on open-loop recycling.)*

Boundaries regarding geographical coverage

The manufacturing stage may cover manufacturing processes located on any sites around the world. For processes located in a specific region, the

data used should be representative of the region. The data for the main constituents shall be the specific regional data for the region where the process takes place (see Section 9). For ease of comparison, no matter where the emissions are generated, the same environmental impact parameters should be used for life cycle impact assessment (see Section 10).

6. Cut-off rules

For any impact category, if the sum of various impacts from a specific process/activity is less than 1% of the impact equivalent in that category, such a process/activity may be neglected during the inventory analysis. Nonetheless, the accumulated impact of neglected process/activity may not exceed 5%. Components and materials omitted from the LCA shall be documented.

(Note: This judgment for this “1% Rule” is based on the environment relevance assessment of material input to the system, and does not consider special and exceptional environmental impacts.)

7. Allocation rules

The main allocation rules shall be valid for the entire product system. For other secondary processes, other allocation rules may be defined; however, the use of these rules should be justified. Product-specific information should be preferentially collected in order to avoid the need for allocation. While selecting allocation rules, the following principles are recommended.

- Multi-output: The allocations are based on the changes in the resource consumption and pollutant emissions (for example, adopted quantity allocation for some main component, or surface allocation for some components), following the changes in the studied system’s output product or function or economical relationship.
- Multi-input: The allocation is based on actual relationship. For example, the manufacturing process’s emissions may be affected by the change in waste flow input.
- Open loop recycling: For the input of recycled materials or energy during the manufacturing stage of the product system, the transportation between the recycling process and the recycling to material use shall be

included in the dataset. For the product which shall be recycled during the manufacturing stage, the transportation towards the recycling process shall be included.

The allocation rules can be based on physical properties such as actual quantity, weight, weighted value, etc. as the basic parameters of allocation. If the quantity of other parameters (such as economic value, etc.) is quoted, the reason for adopting this parameter shall be explained.

8. Units

The base units and derived units of the International System of Units (SI, Système International d'unités) shall be used preferentially.

Power & energy units:

- power unit: W
- energy unit: J

Specification units:

- length unit: m
- capacity unit: m^3
- area unit: m^2
- weight unit: kg

If necessary, prefixes may be used before the SI units:

10^9 = giga, symbol “G”
10^6 = mega, symbol “M”
10^3 = kilo, symbol “k”
10^{-2} = centi, symbol “c”
10^{-3} = milli, symbol “m”
10^{-6} = micro, symbol “μ”
10^{-9} = nano, symbol “n”

9.Calculation rules and data quality requirements

Data quality requirements for the raw material acquisition and manufacturing stage

- Generic data may be used for the extraction, forming and refining of

the product components' raw materials. Please refer to Appendix I for the common sources of generic data. The date of the generic data used cannot be older than 2000.

- Site specific data (or example, specific data for a specific manufacturing plant's manufacturing process or transportation data) shall be used for the manufacturing of the main components and assembly of products. If suppliers refuse to provide specific data, or there is a lack of specific generic data so that other types of information are used, description of the information and rationale for using the information shall be provided.
- Generic data may be used for the manufacturing process for the packaging material and secondary/nor components of the products. Please refer to Appendix I for the common sources of generic data.
- When generic data are used, the equivalence between the chemical and/or physical process, as well as the technology and system boundaries of the referred generic system with the declared product system shall be considered.
- The data shall be representative for the average of a specific year.
- The electricity mix for the manufacturing stage should be site specific data. If site specific data cannot be obtained, the official electricity mix for the country where the site is located may be used as approximate value. The electricity mix shall be documented.
- For the definition of hazardous waste, the definition as defined in Taiwan's Waste Disposal Act shall be used for sites located in Taiwan. For sites located outside Taiwan, legal requirements for the host country shall be observed.
- For transportation of main components to the manufacturing plant, the actual transportation modes used and distance traveled shall be considered.

Data quality requirements for the distribution and marketing stage

- For transportation of products to the downstream manufacturers/ distributors, the actual mode of transportation and distance traveled shall be considered.
- The inputs of energy and resources and outputs of waste during the distribution and marketing stage shall be considered.

Data quality requirements for the use stage

- The energy consumption of the product shall be determined based on testing methodology stipulated by the country where the products are being used/exported.
- For the electricity mix for the use stage, the official electricity mix for the country where the product is exported may be used as approximate value. Please refer to Appendix I for the common sources of generic data. The date of the generic data used cannot be older than 2000.

Data quality requirements for the recycling/end of life stage

- Generic data may be used during the recycling/end-of-life stage, if for specific reason the site-specific data for the recycling/waste disposal system cannot be obtained. Please refer to Appendix I for the common sources of generic data. The date of the generic data used cannot be older than 2000.

10.Parameters to be declared in the EPD

The following parameters shall be declared in the EPD:

Resource use

The following parameters shall be declared in resource use:

- non-renewable resources
  - materials resources
  - energy resources (used for energy conversion purposes)

- renewable resources
  - material resources
  - energy resources (used for energy conversion purposes)
- secondary resources
  - material resources (pre-consumer or post-consumer recycling and reuse)
  - energy resources (used for energy conversion purposes)
- recovered energy flows (such as thermal energy) expressed in MJ
- water use divided into:
  - total amount of water (consider make-up water for in-plant recycling and reuse)
  - direct amount of water used by the core process

The following requirements on the resource declaration also apply:

- all parameters for resource consumption shall be expressed in mass, with the exception of renewable energy; resources used for the generation of hydroelectric, wind electricity and solar energy, which shall be expressed in MJ;
- all parameters shall not be aggregated but reported separately. Resources which contribute for less than 5% in each category shall be included in the resources list as “other”;
- the PCR can define other resources (for example rare materials originating from the LCI data) which may be listed and detailed in the EPD for each specific product category;
- the energy content into some products (such as paper or plastic based products) is useful information for the end of life management. For this reason, the “energy content of product” shall be declared in MJ: its estimation shall be made considering the gross calorific value of the product. Only the energy that is suitable for an eventual energy recovery at the end of life shall be considered (energy content of steel due to its carbon content for example shall not be considered since it is not practically recoverable);
- energy content of biomass used for feed or food purposes shall not be considered.

Impact equivalents expressed as potential environmental impacts

The potential environmental impacts associated with the various types of use of resources and pollutant emissions shall be reported into the following impact categories:

- Emission of greenhouse gases.
- Resource depletion - fossil fuel.
- Resource depletion - minerals and metals.
- Emissions of particulate matter/respiratory inorganic matter.

Impact categories for optional declaration

- Emission of acidifying gases.
- Emission of gases that contribute to the creation of ground-level ozone.
- Emission of substances to water contributing to oxygen depletion.
- Emission of ozone-depleting gases.

Waste

- hazardous waste (as defined in Taiwan's Waste Disposal Act, or follow host countries' laws for sites outside Taiwan).
- non-hazardous waste

Note: For characterization factors of each impact category, please refer to "General Programme Instructions For The International EPD System, Version 3.0" (2017-12-11) and "PEFCR - Product Environmental Footprint Category Rules for High Specific Energy Rechargeable Batteries for Mobile Applications, Version H (2018-02).

11.Recycling information

The recycling information shall include information such as dis-assembly instructions, which parts/components are suitable for recycling (such as metals) or not suitable for recycling. The information which the EU WEEE Directive requires the end product manufacturer to provide may also be included in the product declaration information for Lithium-ion secondary battery pack.

If feasible, information for the parts which cannot be recycled and therefore should be disposed of properly during the end-of-life stage may also be

included.

Recycling marking for product's plastic components and plastic packaging material (optional information):

- Plastic parts marking: Where technologically possible, plastic parts of the product weighing ≧ 25 g shall be marked in accordance with the ISO 11469 and ISO 1043 Part 1/2/3/4, SPI or other international standard label to facilitate their identification and recovery at the end of life.
- Plastic packaging material marking: The Plastic packaging materials shall be labeled on the parts with SPI or other international standards for ease of sorting.

12.Other environmental information (Optional)

The EPD may cover information including technology adopted, site of product manufacturing and assembly, as well as information on other working environment, health and risk-related aspects.

If this PCR is to be used for product carbon footprint declaration purpose, in the declaration, information regarding commitment on GHG reduction should be included and shall ensure that the commitment is measurable, reportable and verifiable. The organization may also list environmental and energy management related information, such as awards, commendations and system certifications (e.g., ISO 14001, ISO 14064-1, IECQ HSPM) etc.

13. Information about the certification

The information on PCR review, EPD verification and verification organization shall be included (as shown in Table 2).

14. References

The EPD shall make reference to the following documents:

- General Programme Instructions for the International EPD System, Version 4.0 (2021-03-29), The International EPD Cooperation。

- Relevant PCR documents
- The underlying LCA report
- “Lithium-ion Secondary Battery Pack for Consumer Electronics”, Version 1.0 (2014), Taiwan Battery Association and Gallopwire Enterprise CO., LTD.

When available, the following documents shall also be referenced:

- Other documents and recycling instructions which verify and complement the EPD.

Table2 Information about the certification

EPD Certification is valid until 20__-__-__

According to the Requirements for the international EPD system. General Programme Instructions, version 3.0（2017）– www.environdec.com

The PCR review for_____（PCR 2022： ）was administered by the Environment and Development Foundation and carried out by an LCA expert panel chaired by Taiwan Battery Association

Independent verification of the declaration is based on according to ISO 14025：2006

☐ Internal ■ External

Third party verifier：

Accredited by :

Name:.....

Title:.....

Organization:..... Signature:_____

Name:.....

Title:.....

Organization:..... Signature: _____

Name:.....

Title:.....

Organization:..... Signature: _____

Environmental declarations from different programmes may not be comparable.

Appendix I – Generic Data Sources to Refer to

For processes located within Taiwan, Taiwan generic data or the data published by the commercial, industrial and energy competent authorities of the Republic of China (ROC) government, may be used. However, for other regions (such as EU), if there are more relevant generic data available, these data should be used instead. When data from the following generic databases are used, the most current and updated data should be used.

Material	Database	Published
Aluminum	EAA（European Aluminum Association）	2000
Copper	ICA（International Copper Association）	1998
Copper semi products	ICA（International Copper Association）+ IME（Institut für Metallhüttenwesen und Elektrometallurgie, Aachen）	1998 1995
Electricity	ETH（Eidgenössische Technische Hochschule） Data combined with IEA （International Energy Agency） statistics 1998	1996
Electronic components	EIME（Environmental Information and Management Explorer）EcoBilan	1998-2000
Industrial processes	Ecoinvent 2nd edition	2007
LCA Database	CPM（Centre for Environmental Assessment of Product and Material Systems）	1996
LCA Database	EIO（Economic Input-Output Life Cycle Assessment）	2002
LCA Database	openLCA	2006
LCA Database	GLAD（Global LCA Data Access）	2020
Materials	Canadian Raw Materials Database	2000
Plastics （and some chemicals）	APME（Association of Plastics Manufacturers in Europe）	1993-1998
Products Carbon Footprint Database in Taiwan	Carbon Footprint Information Platform	2013
PVC	CCalC V2.0	2010
Steel	IISI（International Iron and Steel Institute）	1998

Appendix II – Reporting Format for the EPD

This appendix provides guidance information for the titles of sections, types of data and required information to be reported in the mandatory reporting part of the EPD. As a generic reporting template, the following titles and sub-titles are recommended:

(Refer to the PCR manual for the section numbering, the information in Italics is the recommended data/information for inclusion)

1. Introductory part

(1) Each EPD should have an introduction part on the top part of the EPD which includes the following information:

- Company/organization name
- Product name
- EPD registration number

(2) Description of the company/organization and product/service

- *Company/Organization*

  - Description of company/organization
  - Description of overall working environment, existing quality system and environmental management system

- *Product and services (see Section 2)*

  - Product's main applications
  - Description of product specification, manufacturing process, manufacturing sites (if there are several sites)
  - For product's environmental performance aspects, characteristics which may improve the usefulness of product
  - Other types of relevant information, for example, special manufacturing processes with special advantages to the environment

(3) List of materials and chemical substances

- *Content declaration (see Section 3)*

2. Presentation of the environmental performance

- *Outline of the LCA methodology, for example, period of LCA, declared units, system boundaries (graphical presentation), cut-off and allocation rules, and data sources.*

(1) Manufacturing stage (see Section 10)

(2) Use stage (see Section 10)

- *-Geographical region for product delivery*
- *-Transportation data*
- *-End-of-life information*

3. Information about Company and Certification Organization

(1) Recycling information (see Section 11)

(2) Other environmental information (see Section 12)

(3) Information regarding certification

- *Names of certification and verification organizations*
- *Validity of certification certificates*
- *Compliance with legal and relevant requirements*

4. References *(see Section 13)*

(1) relevant PCR documents

(2) General Programme Instructions for the International EPD® System, Version 2.01 (2013-09-18)

(3) underlying LCA study

(4) other supporting documents for LCA information

(5) other relevant documents regarding company/organization's environmental activities

Appendix III Abbreviations

Acronyms	Common Name
APLAC	Asia Laboratory Accreditation Cooperation
CFP	Carbon Footprint of Product
EPD	Environmental Product Declaration
ErP	Energy Related Product
ILAC	International Laboratory Accreditation Cooperation
ILAC MAR	International Laboratory Accreditation Cooperation Mutual Recognition Arrangement
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
PCR	Product Category Rule
RoHS	The Restriction of the use of certain Hazardous Substances in electrical and electronic equipment
REACH	Registration, Evaluation, Authorization, and Restriction of Chemicals
SPI	Society of the Plastics Industry
TAF	Taiwan Accreditation Foundation
TEC	Typical Energy Consumption
Trpt	Transportation
WEEE	The Waste Electrical and Electronic Equipment Directive