

Japan EPD Program by SuMPO

Quantification and Declaration Rules (General Rules and Requirements)

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These rules specify the quantification and declaration of EcoLeaf and Carbon Footprint (“CFP”) marks of the Japan EPD Program by SuMPO (“Program”), operated and administered by the Sustainable Management Promotion Organization (“SuMPO”).

Section 1 General Rules

1. Overview of Quantification and Declaration

Businesses (“business(es)”) that wish to make a declaration of a product under the Program shall perform quantification of the company’s own product, and shall create a declaration draft, pursuant to the requirements prescribed as below and the applicable Product Category Rule(s) (“PCR”).

Declarations are authorized after quantification results and the declaration draft are approved as compliant to applicable PCR and related rules through SuMPO’s verification process, and then registration and publication of declaration procedures are completed.

2. Requirements

The requirements for quantification and declaration shall be specified in Section 2 of these rules, “Requirements for Quantification and Declaration”, and applicable PCR.

3. Verification of Quantification Results and Declaration Drafts

Businesses shall perform quantification and prepare a declaration draft based on related rules and applicable PCR. The quantification results and declaration draft shall be submitted to SuMPO as part of a verification application.

Rules for verification are specified in “JR-08 Verification Rules”.

For a checklist for preparing verification application documents, see Appendix E.

Section 2 Requirements for Quantification and Declaration

Businesses shall perform quantification and make a declaration based on these requirements and applicable PCR.

** Italicized text in this document is for examples or explanations of requirements, and does not indicate requirements.*

1. General Rules of Quantification Method

1.1. Environmental information Subject to Quantification

The Program provides quantitatively calculated environmental impact as environmental information for products, according to life cycle inventory analysis (LCI) and life cycle impact assessment (LCIA) based on LCA.

1.2. Quantified Information

EcoLeaf shall provide calculation results for environmental impact in multiple impact categories (impact category indicators) as environmental information for products. CFP only covers quantification of climate change, and is not applicable for evaluation of other impact categories.

1.2.1. Units of quantification

The units of quantification are referred to as “functional units”. Functional units include product units, sales units, and volume units (for example, “per 100 g”).

1.3. Life Cycle Flow Chart

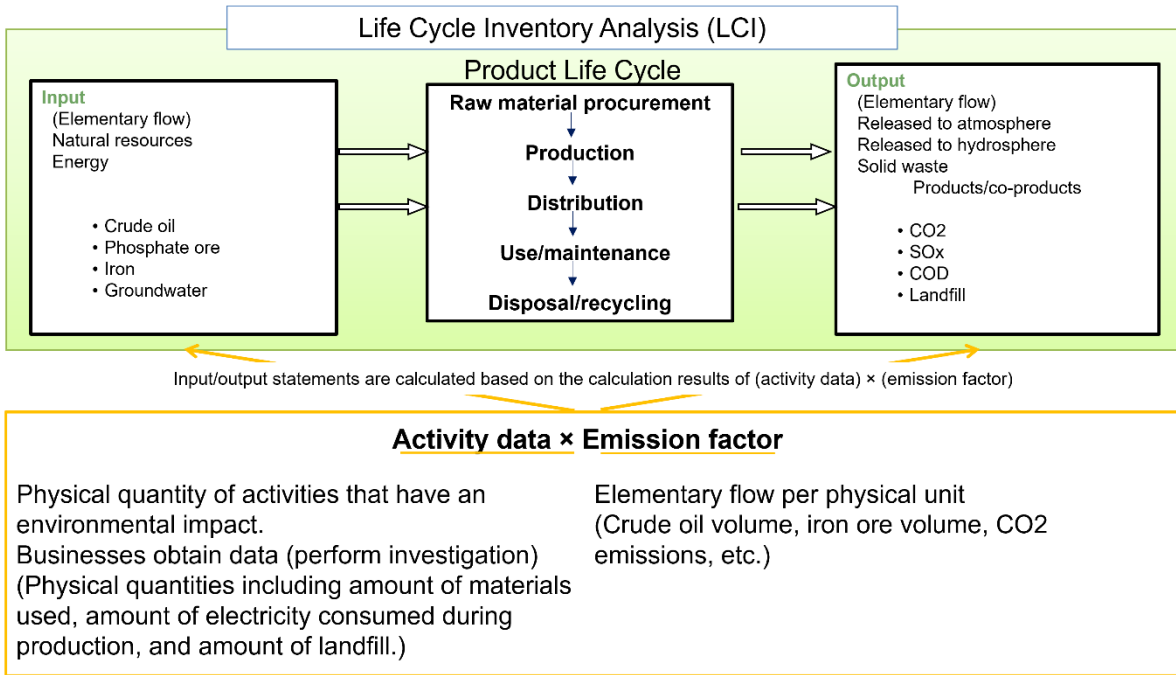
Life cycle flow charts shall be created for each quantified product, which serve as reference for the life cycle flow of each applicable PCR.

1.4. Life Cycle Inventory Analysis (LCI) Methodology

Life cycle inventory analysis collects data on input of resources and energy (input), and production, output products, and emissions (output) for each applicable product and service, and creates an input-output statement regarding elementary flow.

The “designated database” of the Program, which is a database of emission factors used for life cycle inventory analysis, uses IDEA v2 for quantification, as a rule. In the absence of emission factors that are appropriate for IDEA, the applicant will generate an emission factor to supplement the database. Then, they can use “registered data” approved by the review panel.

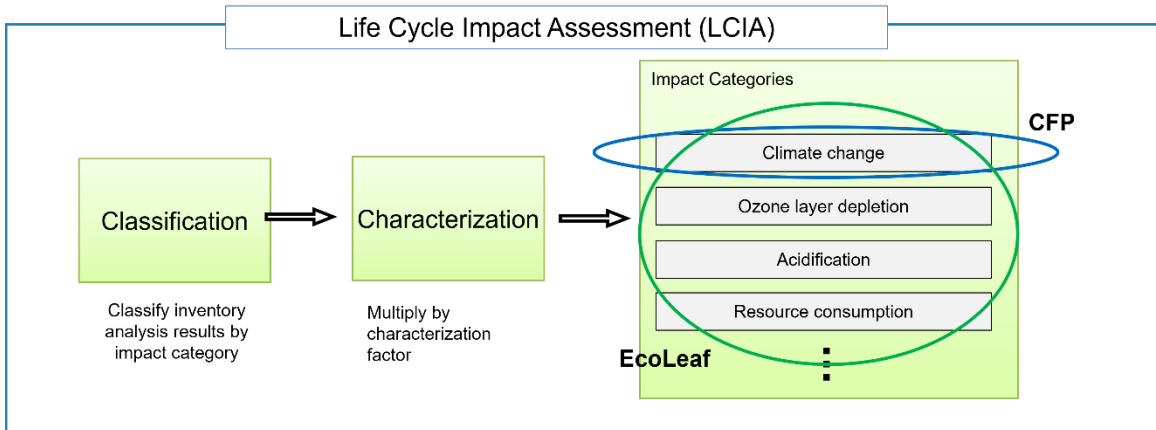
For details on conducting life cycle inventory analysis, see Section 1.7.



1.5. Life Cycle Impact Assessment (LCIA) Methodology

Life cycle impact assessment shall be conducted following these steps:

- Select impact category
- Allocate LCI results by selected impact category (categorization)
- Calculate impact category indicators obtained from results (characterization)



The Program shall, as a rule, use the LIME2 (Life-cycle Impact assessment Method based on Endpoint modeling) characterization factor list for characterization factors. Impact categories used for quantification are described in Appendix A.

In addition, characterization models for climate change shall use the 100-year indices of the IPCC Fifth Assessment Report. The impact category indicator (CI) for each impact category is calculated using equation (1), by adding the results of multiplying elementary flow (E) by the characterization factor for each impact category (α).

$$CI = \sum (\alpha \times E) \quad (1)$$

CI: Impact category indicator for each impact category (such as climate change impact and acidification impact, etc.)

α : Characterization factor (factor derived from a characterization model, which is applied in order to convert LCI results into units that are common to impact category indicators)

E: Elementary flow (crude oil volume, iron ore volume, CO₂ emissions, etc.)

1.6. Product System (scope of data collection)

1.6.1. Examination of product systems

Quantification is performed based on system boundaries (scope of data collection) described in applicable PCR. However, if a process which is included in the product system according to the PCR does not exist in the actual product system of the quantified product, then these limits do not apply.

1.6.2. Cut-off items

In some cases, comprehensive investigation of product systems may impose excessive work burdens on businesses. Therefore, during quantification, life cycle stages, processes, or flows that are not generally considered important in an applicable product's life cycle can be cut off (not subject to quantification) from the product system if they fulfill certain criteria.

Cut-off items described in the applicable PCR can be cut off. In addition, cut-off criteria can be added by each quantified product during quantification based on cut-off criteria specified in Section 1.6.3.

1.6.3. Cut-off criteria

- (1) Input of parts, materials, containers/packaging, and secondary materials shall cumulatively comprise no more than 5% of the mass ratio of the reference flow. However, items with a small mass, which are assumed to have a big impact category indicator, must be included in the product system (*Example: Printed circuit boards for electronics*).
- (2) Output of substances and wastes shall cumulatively comprise no more than 5% of the mass ratio of the reference flow. However, items with a small mass, which are assumed to have a big impact category indicator, must be included in the product system. Particular attention should be paid to direct emissions into the atmosphere, hydrosphere, etc. and to hazardous substances subject to control. (*Example: refrigerant leaks from air conditioners, and nitrous oxide emissions from nitrogen fertilizers*).
- (3) Flows and processes which can't be expressed in mass shall, based on estimated results, comprise no more than 5% of the impact category indicator ratio. (*Example: On-site transport processes*)
- (4) Other cases of scenarios which are difficult to describe in a coherent model due to a lack of reliable information. (*Example: Construction and capital assets of production plants, indirect departments*).

1.7. Conducting Life Cycle Inventory Analysis (LCI)

Elementary flow (E) of each stage is calculated using equation (2), by adding the results of multiplying the activity data (W) by the corresponding emission factor (a).

$$E = \sum (a \times W) \quad (2)$$

E: Elementary flow (crude oil volume, iron ore volume, CO₂ emissions, etc.)

W: Activity data (physical quantities such as amount used, amount of emission, amount processed, amount transported, etc.)

a: Emission factor (elementary flow per physical unit)

Table 2. Examples of activity data and emission factors

<i>Life cycle stage</i>	<i>Examples of activity data</i>	<i>Examples of emission factors</i>
<i>Raw material procurement</i>	<i>Amount of materials used</i>	<i>Elementary flow per 1 kg of material</i>
<i>Production</i>	<i>Weight of items assembled</i>	<i>Elementary flow during assembly per 1 kg of weight</i>
	<i>Amount of electricity consumed during production</i>	<i>Elementary flow per 1 kWh of electricity</i>
<i>Distribution</i>	<i>Transport volume (t/km)</i> <i>= transport distance × loading rate</i> <i>× truck load capacity</i>	<i>Elementary flow per 1 t/km of transport volume of goods</i>
<i>Use and maintenance</i>	<i>Amount of electricity consumed during usage</i>	<i>Elementary flow per 1 kWh of electricity</i>
<i>Disposal and recycling</i>	<i>Weight of items sent to landfill</i>	<i>Elementary flow of 1 kg sent to landfill</i>
	<i>Weight of items recycled</i>	<i>Elementary flow of 1 kg processed for recycling</i>

1.8. Data Quality Criteria and Data Collection Methods

“Primary data” in a product system refers to the data obtained from a direct measurement or calculations based on direct measurements at the original source of information.

Note: For example, amount of fuel consumption in record books based on fuel meter measurements, invoices or receipts from electric power companies, production numbers and yield rates in product production control charts, planned values and designed values collected by businesses, estimated values obtained from similar products, etc.

“Secondary data” in a product system refers to the data obtained from sources other than a direct measurement or calculations based on direct measurements at the original source of information.

Note: For example, emission factor data provided by SuMPO (data from the designated database, or registered data).

The relationships between activity data and emission factors, primary data, and secondary data are described in Table 3.

Table 3. Relationships between activity data and emission factors, primary data, and secondary data

-	Examples of activity data, and examples of factors required to determine activity data	Examples of emission factors
Primary data	<ul style="list-style-type: none"> · Activity data collected by businesses (amount of materials used, weight of items assembled, amount of electricity consumed during production) · Planned values and designed values collected by businesses, estimated values obtained from similar products · Yield rates of similar products collected by businesses 	<ul style="list-style-type: none"> · Emission factors obtained from <u>“declarations approved by verification”</u> which are actually used by businesses for products (however, this only applies when all primary data requirements are fulfilled) · Emission factors quantified based on primary data collected by businesses or partners in the supply chain
Secondary data	<ul style="list-style-type: none"> · Transport distance between sites, provided by SuMPO 	<ul style="list-style-type: none"> · Data from designated database
	<ul style="list-style-type: none"> · Thermal unit values of fuel, provided by SuMPO · Values for scenarios described in PCR · IPCC Guidelines for National Greenhouse Gas Inventories (IPCC) · Greenhouse Gas Inventory Report for Japan (National Institute for Environmental Studies) · Other data from published papers, etc. 	<ul style="list-style-type: none"> · Registered data · Emission factors obtained from <u>“declarations approved by verification”</u>

1.8.1. Scope of primary data collection

Primary data shall be collected according to the scope of primary data collection described in applicable PCR. However, if a process or flow that is specified in the scope of primary data collection is cut off, then these limits do not apply.

1.8.2. Criteria for primary data quality

Data quality criteria for collection of primary data is as follows. However, if it is concretely described in applicable PCR, then follow those rules instead.

[Criteria on scope of time]

- It shall be within the previous year. Or, it shall be within a scope that is reasonably equivalent to the previous year.

[Criteria on scope of geography]

- Regional differences shall be considered, and appropriate calculations will be done based on data from each region. However, if regional differences are very small or non-existent, then they do not need to be considered.
- If the scope of primary data collection includes multiple sites, then primary data shall be collected using methods with low bias from sites which cumulatively comprise 50% or more of production volume or acquisition volume of all sites. Or, it shall be within a scope that is reasonably equivalent.

[Criteria on scope of technology]

- It shall be the production technology of the applicable product. Or, it shall be production technology of similar products that is reasonably equivalent to the production technology of the applicable product.

[Criteria on reproducibility]

- The basis of data shall be clear.

[Exceptions in primary data quality criteria for raw materials if primary data is collected from suppliers]

- The criteria on scope of time shall be any one year within the previous three years. Or, it shall be within a scope that is reasonably equivalent to any one year within the previous three years.

1.8.3. General Rules of primary data collection method

1.8.3.1 Activity data, and factors to determine activity data

The following methods shall be used for collection of primary data. However, if it is concretely described in applicable PCR, then please follow those rules instead.

[Data collection using the process analysis method]

Measurement shall be conducted using method A described below. If measurement using method A is difficult, then quantification may be performed using method B, or a hybrid of method A and B.

A: This method identifies and summates the input volume and output volume of input/output items for each operational unit of work, equipment, and facilities that are necessary to perform a process (operation time, operation area, operation distance, etc.)

Note: Example: facility usage time x fuel consumption per facility usage hour = amount of fuel input

The summation without omission of equipment and facilities, etc. which contribute significantly to results must be confirmed.

In addition, the same summated calculations can be applied to other products which are manufactured at the same site. Therefore, it must be confirmed that the combined total of summated results for all products does not deviate significantly from the actual values for the whole site.

Operational units of equipment and facilities (operation time, operation area, operation distance) can be sourced from records such as control logs and control software, etc.

B: This method allocates actual values for a certain period between products, such as business units, building units, floor units, and line units

Note: Example: Total input volume of fuel per year is allocated between manufactured products

The allocation method shall follow “1.10. General Rules of Allocation”, and co-products shall be included in allocation.

[Other considerations for collection of data]

- Designed values, planned values, and estimated values

Actual measurements are prioritized in collection of input/output flow data for each process, but it is also acceptable to use designed values and planned values from product proposals, specification sheets, standard formula sheets, etc., and estimated values from processes of similar products. However, if designed values, planned values, or estimated values are used, then primary data quality criteria must be fulfilled.

- Considerations for loss rate of input amount

The input amount of each input item for each process shall be quantified with consideration of loss rates for each process. However, if it is not possible to perform realistic consideration of loss rates due to a large number of elements and processes for each input item, then these limits do not apply.

- Wastes

Data shall be collected based on the mass balance of each process regarding the output amount of wastes. However, if it is not possible to perform realistic collection of data based on the mass balance due to a large number of elements and processes for each input item, then allocation may be based on the generated volume of wastes of the whole plant.

Note: For example, data regarding the volume of waste generated by the whole plant may be collected from the manifest.

- Wastewater

If wastewater is discharged after being treated in septic tanks, etc. at a treatment facility, within the scope of business operations, then data shall be collected regarding the treatment process at the treatment facility. Handling of sludge, etc. generated by treatment facilities shall follow the previous section, "Handling of wastes".

- Self-generated electricity

If self-generated electricity is used within the scope of business operations, then data shall be collected by fuel type regarding the amount of fuel used for electricity generation.

- Steam

If self-supplied steam is used within the scope of business operations, then data shall be collected by fuel type regarding the amount of fuel used for steam generation.

- Groundwater

If groundwater is used for water within the scope of business operations, then drawn water shall be recorded, and in some cases, consumption shall be recorded. In addition, the amount of energy used for drawing groundwater and purifying groundwater shall be recorded.

- Cases when large variations in collected data are expected

If large variations in collected data are expected, such as when data is collected from multiple technologies, multiple plants, or multiple companies, then caution must be taken to ensure that primary data quality criteria are fulfilled.

1.8.3.2 Emission factors

If emission factors are generated based on primary data, then the impacts associated with the treatment of wastes and wastewater generated during production, and the transport of these to treatment facilities, must be included in calculations, in addition to the impacts associated with input items. In addition, if PCR exist for the supply chain of products that are candidates for quantification, then applicable PCR should be followed to collect primary data to generate emission factors.

Note: For example, if emission factors of containers/packaging are collected as primary data, then collection of data should be performed based on PCR of the containers/packaging.

- Emission factors obtained from public data approved by verification

If a product approved by verification, or a similar product, is used in the life cycle of a product, then emission factors obtained from the declaration of the product approved by verification may be used as primary data. However, this only applies if the information specified in the declaration covers information to be published about the product, and all primary data requirements are fulfilled.

Therefore, if the CFP declaration of a product approved by verification is used as an emission factor, then only climate change information can be published. If an EcoLeaf declaration is used as an emission factor, then only the items with the same elementary flow and impact category can be used for quantification.

In addition, if a product used in the life cycle of a product is similar but not identical, and the primary data quality criteria in the previous section are not fulfilled, then it can't be used as primary, but it can be used as secondary data.

- Emission factors obtained from data collected by businesses or partners in the supply chain
- Emission factors quantified based on primary data collected by businesses or partners in the supply chain may be used as primary data. However, primary data collected by businesses or partners in the supply chain must fulfill the primary data quality criteria in the previous section.

1.8.4. Criteria for secondary data quality

Data quality criteria for collection of secondary data is as follows.

[Criteria on scope of time]

- If businesses collect data independently, then it shall be from any one year within the previous five years. Or, it shall be within a scope that is reasonably equivalent.
- Data that is more than five years old shall be reviewed to confirm validity.

[Criteria on scope of technology]

- It shall be very similar to the production technology of the product. Or, it shall be the production technology of the product.

[Criteria on reproducibility]

- Sources of data shall be published. Publishing refers to normal publication, and also includes publication in books or journals, members-only publication, and publication in software, etc.

Data collection items which exceed 20% of impact category quantification results to be published must fulfill all quality criteria. However, if it is concretely described in applicable PCR, then please follow those rules instead.

1.8.5. Secondary data collection methods

If it is concretely described in the PCR, then follow those rules instead.

Quantification of greenhouse gases other than CO₂ from sources such as livestock, compost, and soil (*for example, N₂O emissions from fertilizers*) shall be performed following the principles and methods specified in internationally approved literature, including the Greenhouse Gas Inventory Report for Japan (National Institute for Environmental Studies) and the IPCC Guidelines for National Greenhouse Gas Inventories (IPCC).

Other environmental impacts should be analyzed the same way, following the principles and methods specified in internationally approved literature, if available.

1.8.5.1 Activity data, and factors to determine activity data

The following data sources may be used:

- Transport distance between sites, provided by SuMPO
- Thermal unit values of fuel, provided by SuMPO
- Values for scenarios described in applicable PCR
- Greenhouse Gas Inventory Report for Japan (National Institute for Environmental Studies)
- IPCC Guidelines for National Greenhouse Gas Inventories (IPCC)
- JLCA database
- Other data from published papers and materials

1.8.5.2 Emission factors

Businesses can use “designated database data”, “registered data” approved by the review panel, and “declarations approved by verification” as emission factors. Businesses shall select emission factor data that is appropriate for the activity data of the candidate product, with consideration for emission factor system categories. Businesses shall select a database for the basis of quantification, and shall supplement with registered data, etc. only if there are no applicable emission factors.

If a declaration approved by verification is used as secondary data, and the CFP declaration of a product approved by verification is used as an emission factor, then only climate change information can be published. If an EcoLeaf declaration is used as an emission factor, then only the items with the same elementary flow and impact category can be used for quantification.

1.9. Transport

Quantification methods for environmental impact of fuel consumption during transport are specified in Appendix B.

1.10. General Rules of Allocation

If multiple products are generated from a process, then input/output flow must be allocated between multiple products, so allocation must be performed according to the following step-by-step procedure:

- a) Step 1: Allocation should be avoided using the following methods, if possible.
 - 1) Dividing the unit processes for allocation into two or more sub-processes, and collecting input/output flow data related to the sub-processes
 - 2) Expanding the product system to include additional functions related to co-products
- b) Step 2: If allocation can't be avoided, then the system input/output flow should be divided, and allocation should be performed using a method that reflects the intrinsic physical relationships between different products and functions. Therefore, allocation should be performed based on the relationships of changes in input/output flow correlated to volume-related changes in the products and functions provided by the system.

Note: For example, allocation may be performed proportionally between co-products according to the mass of products, thermal values, quantity, and work area, etc.

c) Step 3: If physical relationships aren't sufficient to be used as the basis for allocation, then input/output flow should be allocated using a method that reflects the relationships between products and functions, and other factors.

Note: For example, allocation of environmental data for input/output flow may be performed proportionally between co-products according to the economic value of products. In some cases, if lightweight and high-added value products such as precious metals are mixed in, then it may be reasonable to allocate proportionally according to the monetary value.

In some cases, output flow may be partially co-products, and partially wastes. In such cases, the input/output flow must only be allocated to co-products. Whether goods are a co-product, or not, shall be decided following comprehensive judgement of social aspects.

Note: For example, by-products which have a significantly lower economic value compared to the main product should be considered wastes and not co-products, and are not subject to allocation.

Allocation procedures must be applied uniformly for similar input/output flows in the product system.

Note: For example, when allocation is performed for usable products output by the system (for example, intermediate products and end-of-life products), then allocation procedures must be the same procedures used for products input into the system.

1.10.1. Criteria for allocation in reuse and recycling

The general rules of allocation are also applicable to reuse and recycling. If allocation can't be avoided, then allocation should be performed using the following criteria.

- Open-loop recycling

Waste materials that will be recycled shall be included in the product system, from the process that transports it to the site where it will be processed for recycling, until the completion of processing for recycling (See Figure 1.) Materials output by the product system that have been processed for recycling are not subject to allocation (the allocation factor is treated as zero). However, if this method is not appropriate for allocation, then an appropriate allocation method should be chosen in consideration of the methods described in Step 2 and Step 3 in the general rules of allocation.

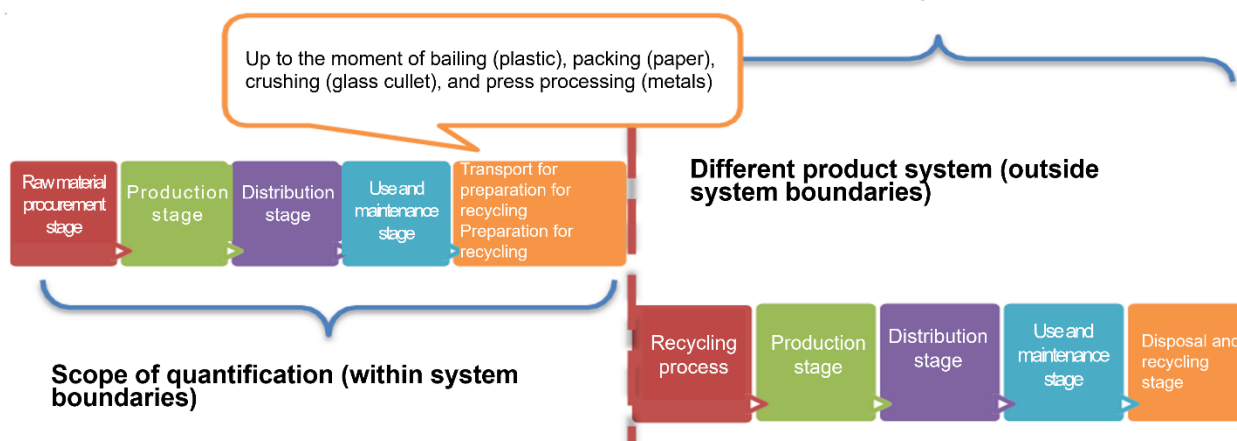


Figure 1. Example of system boundary settings in open-loop recycling

Waste materials that will be reused shall be included in the product system, up to the moment of disposal (See Figure 2.) Materials that will be reused are not subject to allocation (the allocation factor is treated as zero).

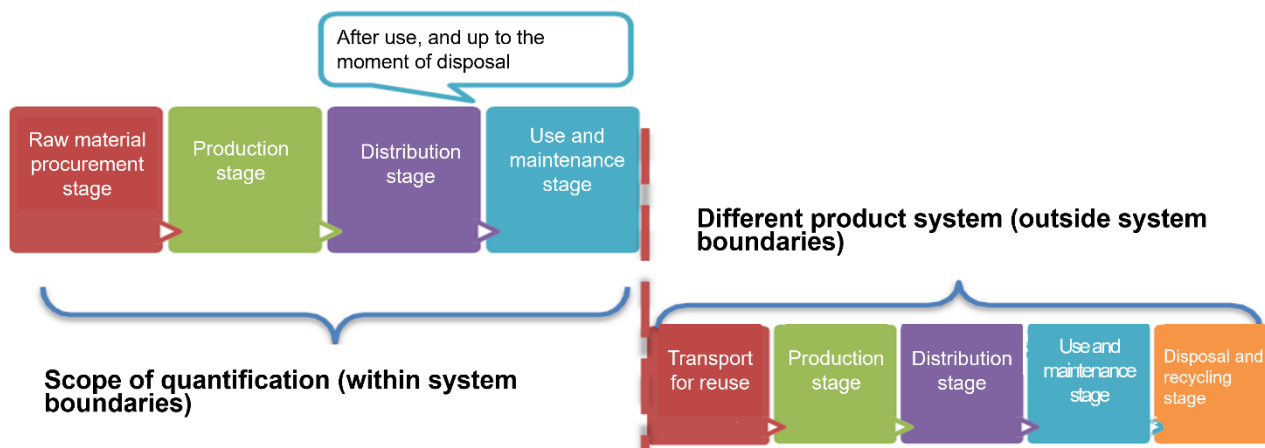


Figure 2. Example of system boundary settings in open-loop reuse

- Closed-loop recycling

Materials that will be reused or recycled are not subject to allocation.

1.11. Subtraction of Alternative Systems

If the product system is expanded to include additional functions related to co-products in order to avoid allocation, then subtractions of a product system (substitute system) that includes co-products with equivalent functions can be displayed as additional information. However, in such cases, caution must be taken when evaluating the equivalency and appropriateness between the substitute system and co-product functions. In addition, caution must be taken to ensure consistency of the product system. Therefore, subtraction is only allowed if the scope and conditions specified in PCR are fulfilled. The same applies to cases when indirect impacts of reuse and open-loop recycling is subtracted.

1.12. Biomass

As a rule, CO₂ generated by combustion and biodegradation of biomass managed with sustainable methods, and biomass of reused materials like waste wood, is not recorded in impact category indicators for climate change, except as otherwise specified in PCR. The reason for this is because biomass traps atmospheric CO₂ during production (growth), so the amount of CO₂ released during combustion and biodegradation is equivalent to that value.

Note: For example, wood is a circulative resource, but excessive use can be expected to lead to problems like the rate of growth falling behind the rate of logging. Therefore, wood must be sourced from forests with appropriate planting and management, or reused waste wood.

However, CO₂ emissions from input activity related to production and transport of biomass, and methane or other greenhouse gasses generated by biodegradation shall be included in the product system.

1.13. Carbon Offsets

Offsets from carbon offsets, etc. shall not be included in quantification of impact category indicators for climate change.

1.14. Delayed CO₂ Emissions and Carbon Stock in Products

The product life of durable goods can reach decades or more. In such cases, the output from product use, disposal, or recycling is delayed to a time later than production. However, quantification must be performed without consideration of delayed impacts or carbon stock in products.

1.15. Recording Environmental Impact in Each Life Cycle Stage

For products and packaging, etc. delivered to the recipient, input shall be recorded at the raw material procurement stage, and output at the disposal and recycling stage.

Yield loss of raw materials at the production stage (Input for scrap materials etc. in the production stage is to be recorded in the raw material procurement stage and output recorded in each generation stage.)

Secondary materials, etc. other than those above that are input after the production stage and disposed of at the applicable stage, shall have their input and output recorded at that stage.

- Secondary materials, etc. that are input and disposed of at the production stage and not delivered to the recipient shall have their input and output recorded at the production stage.
- Secondary materials (transport materials) that are only used for the purpose of transport, and are not delivered to the recipient, shall be recorded in both input and output of the distribution stage.
- Consumables, replacement parts, etc. that are added as a result of use shall have their input and output recorded at the use stage.

PCR classify processes included in the product system into life cycle stages. However, classification of specific processes into life cycle stages may not be appropriate in some cases due to the actual circumstances of the business's production process. In such cases, the process may be classified and recorded in life cycle stages that are not included in the PCR. If it is recorded differently than the PCR, then it should be described in the "Additional information on quantification results" section of the declaration.

1.16. Collection of Evidence for Quantification

Evidence shall be prepared which clearly shows the correlation of each evidence document to each item for data collection, to ensure that the quantification process is understandable.

1.17. Series Products

In the case of product groups which have common characteristics for product specifications and impact category indicator correlations, systematic publication of declarations based on those characteristics means not only simplification of the quantification/declaration process, but it is also

expected to expand opportunities for readers of declarations to obtain a broad range of information. Therefore, product groups which have common characteristics for product specifications and impact category indicator correlations shall be called “series products”, and declarations for series products can be registered and published as a unit.

Quantification for series products shall be performed following Appendix D (rules).

1.18. Average Values

“Average values” refers to representative values based on weighted average values of all applicable products with the same product data granularity, without specifying values (impact category indicators) of individual products.

Product data granularity may be set by businesses within the scope that identical functional units can be set.

For examples of product data granularity, see “JR-06 PCR Certification Rules”.

2. General Rules of Declaration

2.1. Declaration Overview

A declaration refers to information published on the website of this Program, based on PCR and quantification results.

Businesses can choose from two types of declarations: EcoLeaf, a Type III environmental declaration which covers multiple impact categories, and CFP declarations, which only cover climate change.

Declarations should be made in Japanese, but translations in other languages can also be published.

When a business issues a communication with this declaration, it should be accompanied by use of the CFP logo or EcoLeaf logo.

For details about using marks, see “JR-10 Rules for Registration and Publication of Declarations, and Usage of Marks”.

2.1.1. Basic requirements for the businesses that wish to make a declaration

Declarations can be made by businesses in a position to control brands for the products, and other entities entrusted by these businesses. In addition, declarations can be made by business groups such as industrial associations, not only individual companies.

Businesses or entities that wish to make declarations shall observe the following rules:

- Make efforts towards continuous reduction of environmental impacts. However, setting concrete target values is not mandatory.
- Follow applicable regulations for product labeling (Act against Unjustifiable Premiums and Misleading Representations, Measurement Act, etc.). Approval by verification in this Program does not demonstrate conformity to regulations.
- Use the common marks and display methods specified by Program operation rules in business communications.

2.1.2. Basic Declaration Rules

The target audience of declarations are interested parties such as consumers and businesses who use published information.

Declarations should be easy to understand by the recipients of information (the “readers”), while avoiding phrases that can be easily misinterpreted, and appropriate caution must be taken to avoid comparison with products of other companies. For detailed information, see “Guidelines on Environmental Labeling (Ministry of the Environment, Revised March 2013)”.

From a viewpoint of transparency in declarations, as much information as possible that is easy-to-understand should be published. However, it is important for businesses to maintain secrecy of confidential information, so confidential information does not need to be published.

Note: For example, it is acceptable to display quantification results for each stage as the summation of the raw material procurement stage and the production stage, and to sub-divide stages and display information for each process.

If quantification was performed based on “Series Products (rules)”, then it must be stated. In addition, as a rule, quantification results should be displayed in two-digit values, with the third digit rounded off.

2.2. Contents of EcoLeaf Declaration

2.2.1. Definition of EcoLeaf Declaration

“EcoLeaf declaration(s)” refers to information disclosed about multiple impact categories based on PCR and quantification results, published on the Program website.

2.2.2. Composition of EcoLeaf declaration

As a rule, EcoLeaf declarations are composed of two sheets, and the content of each sheet shall be the following:

<Sheet 1>

Items with asterisks (*) will be defined after approval by verification.

- (1) Registered business name
- (2) Registered product name
- (3) Product photo
- (4) Quantification unit
- (5) Stages subject to quantification
- (6) Product model, main specifications, and technical details (explanation of the product if registered as a series product or average values)
- (7) Contact information for product inquiries
- (8) Registration number*
- (9) PCR number
- (10) PCR Name
- (11) Publication date*
- (12) Verification approval date*
- (13) Verification method
- (14) Verification number
- (15) Verification validity period*
- (16) PCR certification dates (Certification date, revision date, renewal date, etc.)
- (17) PCR review panel chair
- (18) Third-party verifier

<Sheet 2>

- (1) Life cycle impact assessment results
- (2) Life cycle inventory analysis information
- (3) Composition of materials and substances
- (4) Waste information
- (5) Additional information on quantification results
- (6) Other environmental information
- (7) Considerations for emission factors

2.2.3. Detailed contents of the EcoLeaf declaration

The content of Sheet 2 shall be the following:

(1) Life cycle impact assessment (LCIA)

Disclosure of impact category indicators for any three impact categories, or more. However, if disclosure categories are specified in the PCR, then follow PCR content instead.

The following perspectives should be considered when selecting impact categories for disclosure:

- Impact categories with social importance
- Impact categories with a large impact for the product
- Uncertainty of results of the impact category

(2) Life Cycle Inventory Analysis (LCI) information

Disclosure of results of at least two LCI data sets (elementary flow), or more. However, if disclosure categories are specified in the PCR, then follow PCR content instead.

The following perspectives should be considered when selecting data for disclosure:

- Items with a large environmental impact for the product
- Items with a large impact for impact categories that will be disclosed
- Items which require continuous reduction of impact by the businesses and the supply chain

(3) Composition of materials and substances

Describe the physical quantity and ratio of total product weight to weight of component materials and substances which compose the product. If description methods are specified in PCR, then follow PCR content instead.

The following perspectives should be considered when investigating component materials and substances for disclosure:

- Prioritize description of materials and substances which compose a large portion of product weight.
- Describe materials and substances with a large impact for disclosed impact categories, regardless of weight.
- Summarize and record items with small environmental impacts as “Other”.
- If the weights of component materials and substances are described, then the total should add up to 100% if percentages are used, or the total should add up to the product weight if weights are used.

(4) Waste information

Amount and type of waste generated (hazardous and non-hazardous waste) and other relevant data should be described. Hazardous waste shall be defined according to regulations.

(5) Additional information on quantification results

“Additional information on quantification results” refers to supplementary information related to quantification results, which is used for communication between businesses and readers. It includes

mandatory labeling in order to avoid misinterpretation by readers, recommended labeling in order to promote communication, and other information that is possible to display.

Additional information on quantification results shall be information which fulfills the following conditions:

- Information related to quantification results
- Information specified by this document, or applicable PCR

[Mandatory additional information]

- All additional information which complies with requirements in Appendix C (rules), such as displaying comparisons for reduction rates
- If quantification was performed for series products, then an explanation shall be included
- If quantification of average values was performed for the average values of a business group such as industrial associations, then an explanation shall be included, which also states that values do not represent an individual product (*Example: These values are the average values of member companies of the XX Industrial Association, and do not represent values of an individual product*)
- Number values related to assumed product life for durable consumer goods shall be included (*Example: The life expectancy of LED bulbs is 10 years*)
- If subtractions of a substitute system are used, then the substitute system and its impact category indicators shall be included
- If a previously approved PCR is still applicable to a product, and there is a risk that readers could misinterpret which PCR is applied, then information regarding differences (*For example, processes subject to quantification*) between other PCR shall be included
- Other information specified in PCR

[Recommended additional information]

- Graphs showing the ratios of impact category indicators by life cycle stage, by process, by flow, etc.
- If the stage recorded for environmental impact is different than the stage specified in PCR, then an explanation shall be included

[Optional additional information]

- Impact category indicators of subtractions of a substitute system, (including indirect impacts of reuse and recycling) if the product system does not include a substitute system
- Information related to delayed emissions of CO₂ from the product and carbon storage in products, if the product uses wood
- Target values and level of achievement for the business's reduction of impact category indicators
- Simplified life cycle flow charts
- Labeling related to use (*Example: "If you use the product this way, impact category indicators will be reduced compared to the label"*)
- Labeling related to container recycling (*Example: Encourage recycling of containers after use. "If 100% of this container is recycled, then CO₂ emissions will be reduced compared to the label, and other impact category indicators will be reduced by XX"*)

- Additional functions, if the product system is expanded
- Display of number values in other units that are easier to understand

(6) Other environmental information (additional environmental information)

Environment-related items other than information obtained from life cycle inventory analysis (LCI) and life cycle impact assessment (LCIA) shall be included as necessary. Information and instructions for product safety that are unrelated to product environmental impact shall not be included in the same section. The following should be considered when preparing additional information:

- a) Information on environmental issues
 - 1) Impacts and potential impacts on biodiversity
 - 2) Toxicity to human health and/or the environment (Information on hazardous substances)
 - 3) Geographical aspects related to all life cycle stages (for example, discussion of the relationship of potential environmental impacts and the location of the product system)
- b) Data on product characteristics, if environmentally significant
- c) Status of compliance with environmental management systems, and how to find more information on the environmental management systems
- d) Other environmental certification programs for the product, how to find more information on the certification programs
- e) Other environmental activities of the business, such as participation in recycling or recovery programs. However, these programs should only be included if consumers and users can access information easily, and if contact information can be shared.
- f) Information obtained from LCA, but not provided in a standard LCI or LCIA format
- g) Instructions and limitations on efficient use
- h) Hazard and risk assessment for human health and the environment
- i) Information on the absence, or volume present, of materials in products that are known to be environmentally significant in a certain region
- j) Preferred waste management options for end-of-life products
- k) Possibility of events which cause environmental impacts

(7) Considerations for emission factors

Emission factors shall be described, including version information.

2.2.4. EcoLeaf Marks

EcoLeaf marks can be used on products by businesses that have made EcoLeaf declarations. As a rule, EcoLeaf marks are affixed to the product directly, or on the product packaging. Businesses can also choose from other display options like websites, pamphlets, environmental reports, price tags, storefronts, and QR codes. However, businesses may not choose ways that could be misinterpreted by interested parties. Usage must comply with the Declaration and Registration Publication Rules.

2.3. Content of CFP Declarations

2.3.1. Definition of CFP declarations

“CFP declaration(s)” refer to information disclosed about climate change based on PCR and quantification results, published on the Program website.

2.3.2. Structure of CFP declarations

As a rule, CFP declarations are composed of two sheets, and the content of each sheet shall be the following:

<Sheet 1>

Sheet 1 of EcoLeaf and CFP declarations have the same structure, so see Section 2.2.2 “Structure of EcoLeaf declarations”.

<Sheet 2>

- (1) CFP quantification results
- (2) Additional information on quantification results
- (3) Other environmental information
- (4) Interpretation of CFP quantification results
- (5) Considerations for emission factors

2.3.3. Detailed contents of the CFP declaration

The content of Sheet 2 shall be the following:

(1) CFP quantification results

“CFP quantification results” refers to quantification results for the impact category of climate change (100-year indices of the IPCC Fifth Assessment Report). “Number value(s)” refers to values displayed above CFP marks, based on CFP quantification results. Businesses can choose whether or not to display number values above the mark.

Businesses can choose the units for number values according to their own goals of using CFP for communication. As shown in the following examples, values are not limited to quantification units.

Note: Examples of number value units

- *Per 1,000 hours of 100-watt light*
- *Per each product*
- *Per set of 5 products*
- *Per 100 g*
- *Per m³ of wood*
- *Reduction rate (Example: Reduction rate of emissions compared to base year, etc.)*
- *Without value (only CFP mark is displayed)*

As a rule, quantification results should be displayed in two-digit values, with the third digit rounded off. The same applies to marks displaying comparisons of reduction rates.

Note: For example, if CFP quantification results are “123 g”, they should be displayed as “120 g”. When displaying comparisons, the third digit should be rounded off before finding the difference between products for comparison, then the third digit of the difference should also be

rounded off.

CFP quantification results, based on CFP quantification conditions, can only be displayed above CFP marks if they are representative within the expected scope.

Note: For example, when considering the disposal method of end-of-life products, number values can be displayed if the product was evaluated based on a scenario that included the actual disposal of the applicable end-of-life product, but if CFP quantification was performed assuming a scenario with 100% recycling, then number values can't be displayed above the CFP mark because it is not representative.

(2) Additional information on quantification results

“Additional information on quantification results” refers to supplementary information related to CFP quantification results, which is used for communication between businesses and readers. It includes mandatory labeling in order to avoid misinterpretation by readers, recommended labeling in order to promote communication, and other information that is possible to display.

Additional information on quantification results shall be information which fulfills the following conditions:

- Information related to CFP quantification results
- Information specified by this document, or applicable PCR

Note: This does not prevent the display of information that is not included in the Program pledge, such as information on carbon offset credits, adjacent to the CFP mark.

For examples of mandatory, recommended, and optional additional information, see Section 2.2.3. (5).

However, if a number value is not displayed above the CFP mark, then it is not necessary to include additional information that is specified as mandatory for CFP adjacent to the mark. For details, see “JR-10 Rules for Registration and Publication of Declarations, and Usage of Marks”.

(3) Other environmental information

Environment-related items other than information obtained CFP quantification results shall be included as necessary. Information and instructions for product safety that are unrelated to product environmental impact shall not be included in the same section.

For more information, see Section 2.2.3. (6).

(4) Interpretation of CFP quantification results

Businesses shall interpret CFP quantification results. The interpretation shall include descriptions related to limitations and uncertainty of CFP quantification results.

(5) Considerations for emission factors

Emission factors shall be described, including version information.

2.3.4. CFP marks

CFP marks can be used by businesses that have performed CFP quantification and prepared a

declaration draft, which was approved by verification.

As a rule, CFP marks are affixed to the product directly, or on the product packaging. Businesses can also choose from other display options like websites, pamphlets, environmental reports, price tags, storefronts, and QR codes. However, businesses may not choose ways that could be misinterpreted by interested parties.

Note: For example, if the CFP quantification and declaration was prepared for printed materials, and the content of those materials will be provided in an alternative form such as digital media, then the CFP mark shall be removed, or an explanation shall be included stating that the CFP values are for printed materials.

CFP marks can also be displayed on intermediate goods. However, in order to avoid misinterpretation by readers, the part subject to CFP quantification (*for example, "Only containers were evaluated"*) shall be included in the additional information section. If businesses wish to display marks of intermediate goods on final goods such as product containers, then steps must be taken to investigate and choose a labeling method that avoids misinterpretation by readers.

Usage must comply with the Declaration and Registration Publication Rules.

2.4. Comparisons between Products

In this Program, comparisons between products based on quantification results shall display two or more different quantification results presented as a "ratio" or "side-by-side" comparison. "Ratio" also includes "reduction rate." From a general perspective of limitations in LCA methods (see note), comparison of values between different products must fulfill a set of conditions. In this Program, the following conditions shall apply for comparisons between products:

- 1) Comparison is between products from within the same business.
- 2) Comparisons of quantification results from within the same business shall be displayed following Appendix C (rules).

2.4.1. Comparisons with products of other businesses

Comparisons with products of other businesses is not permitted at this time.

Note: Limitations of LCA methods include data quality of available emission factor data, and uniformity of quantification rules.

2.4.2. Avoiding comparisons of values in the market

SuMPO shall take measures to avoid misinterpretation of comparison of impact category indicators disclosed in the market.

2.4.3. Comparisons between products with quantifications results from other programs

Quantification results of this Program can't be compared to quantification results obtained following the requirements of other programs.

Appendix A: Applicable Impact Categories and Characterization Models (rules)

	Impact Categories	Impact Assessment Model	Unit
1	IPCC 2013 GWP 100a	100-year Indices (Fifth Assessment Report) (IPCC 2013)	kg-CO _{2eq}
2	Ozone layer depletion	ODP (WMO 1998)	kg-CFC-11 _{eq}
3	Acidification	DAP (LIME, 2006)	kg-SO _{2eq}
4	Urban air pollution	UAF (LIME, 2006)	kg-SO _{2eq}
5	Photochemical oxidants	OCEF (LIME, 2006)	kg-C ₂ H _{4eq}
6	Hazardous chemicals (carcinogenic)	HTPcancer (LIME, 2006)	kg-C ₆ H _{6eq}
7	Hazardous chemicals (chronic)	HTPchronic disease (LIME, 2006)	kg-C ₆ H _{6eq}
8	Aquatic ecotoxicity	AETP (LIME, 2006)	kg-C ₆ H _{6eq}
9	Terrestrial ecotoxicity	TETP (LIME, 2006)	kg-C ₆ H _{6eq}
10	Eutrophication	EPMC (LIME, 2006)	kg-PO ₄ ³⁻ _{eq}
11	Land use (maintenance)	LOF (LIME, 2006)	m ² a
12	Land use (modification)	LTF (LIME, 2006)	m ²
13	Resource consumption	1/R (LIME, 2006)	kg-Sb _{eq}

Appendix B: Quantification Methods for Environmental Impact of Fuel Consumption During Transport (rules)

[Rules for domestic transport]

- Transport processes between sites that have an impact on the full life cycle that is too large to ignore shall be included in the scope for quantification.
- Quantification shall be performed using the fuel consumption method, fuel economy method, or ton-kilometer method described below. If quantification using these methods is difficult, then quantification may be performed using a different method, but the method and its validity must be included in PCR or verification.
- Information from navigation software can be primary data for measurement of transport distance in addition to actual measurements.
- If there are multiple transport routes, then the weighted average of data from all routes calculated based on transport weight can be primary data. If there are many transport routes, then primary data shall be collected using methods with low bias from 50% or more of all transport volumes. The average values of routes with data collection can be substituted as primary data for routes without data collection.
- If frozen, refrigerated or chilled transport is used, then the impact of maintaining temperature shall be considered.
- Transport scenarios shall be as described in applicable PCR. When using the ton-kilometer method, primary data can be substituted for one or two parameters among transport distance, loading rate, and vehicle class.

[Rules for international transport]

- Rules for international transport are the same as for domestic transport. However, if there are national or private rules for transport in applicable countries, then data collection may follow those rules.

B.1 Fuel consumption method

- 1) Collect data on “fuel consumption (L)” for each method of transport.
- 2) Perform quantification of environmental impact based on elementary flow obtained from the results of multiplying “fuel consumption (L)” by “emission factors of supply and use” for each type of fuel.

B.2 Fuel economy method

- 1) Collect data on “fuel economy (km/L)” and “transport distance (km)” for each method of transport, and calculate fuel consumption (L) using the following equation:

$$\text{Fuel consumption (L)} = \text{transport distance (km)} / \text{fuel economy (km/L)}$$

- 2) Perform quantification of environmental impact based on elementary flow obtained from the results of multiplying “fuel consumption (L)” by “emission factors of supply and use” for each type of fuel.

B.3 Ton-kilometer method

- 1) Collect data on loading rate (%) and transport impact (transport ton-kilometer) (t-km) for each method of transport.
- 3) Perform quantification of environmental impact based on elementary flow obtained from the results of multiplying “transport impact (transport ton-kilometer) (tkm)” by “emission factors of fuel consumption per transport ton-kilometer” of each loading rate for each method of transport.

Appendix C: Displaying Comparisons of Impact Category Indicators from within the Same Business (rules)

In this Program, comparisons shall display two or more different quantification results for one declaration, presented as a “ratio” or “side-by-side” comparison. “Ratio” also includes “reduction rate”.

Comparisons of quantification results from within the same business shall be displayed following the rules of this Appendix. Comparisons can be displayed in declarations, or as a number value etc. above CFP marks.

If comparisons are made, then the product in question and the comparison product must have equivalent validity periods.

<Considerations for displaying comparisons of quantification results>

(1) Basic conditions for products for “displaying comparisons”

In this Program, the following conditions must be fulfilled when “displaying comparisons”. In addition, comparisons should be displayed as functional units, and comparisons can be displayed in reference flows.

- (1) Quantification using the same PCR
- (2) Comparison between products from within the same business
- (3) Completely identical functional units (if reductions are displayed, then comparison can be performed against equal or lesser functional units)
- (4) Identical or equivalent functions (if reductions are displayed, then comparison can be performed against equal or lesser functions)
- (5) Equivalent data collection methods
- (6) Comparison between values that are verified
- (7) Inclusion of comparison conditions and function settings as additional information
- (8) Inclusion of explanation of difference from the comparison product as additional information (reduction as well as increase)

(2) Requirements for displaying comparisons

(1) Considerations for identical or equivalent functions

- Identical or equivalent functions shall be explained, including demonstration of validity
 - Equivalence may be demonstrated using Japanese Industrial Standards, etc.

(2) Setting functional units

- Multiple functional units can be set for one product. Therefore, businesses shall be responsible for setting appropriate functional units which can’t be misinterpreted by interested parties

Note: For example, if a new type of USB memory with 5GB storage is compared to an older type of USB memory with 1GB storage, then the storage is five times larger, but whether “per 1GB of storage” is appropriate for display or not must be investigated in consideration of the users who were satisfied with 1GB storage (See table below.)

Table: Examples of CFP display for USB memory (values are imaginary)

		<i>New product</i>	<i>Older product</i>
<i>1</i>	<i>Product specifications (memory capacity)</i>	<i>5GB</i>	<i>1GB</i>

2	<i>CFP value per each product</i>	<i>10kg-CO₂/each</i>	<i>5kg-CO₂/each</i>
3	<i>CFP value per storage capacity</i>	<i>2kg-CO₂/GB</i>	<i>5kg-CO₂/GB</i>

(3) Primary data and secondary data

- The product in question and the comparison product shall use the same emission factor database for quantification. (Therefore, if previous verification results used a different emission factor database, then re-verification is required.)

(4) Comparisons with older data

- Comparisons with older products may be performed as long as data is available for verification
 - Even if data for the comparison product is 10 years old, if it can be verified, then it can be used for displaying comparisons.

(5) Display criteria for reduction rates

- It is said that if reduction rates do not reach or exceed a certain level, then it should not be approved for displaying. However, if data collection methods are equivalent, then even small reduction rates may be displayed

(6) Partial reduction

- Partial reduction claims and reduction limited to certain life cycle stages may be displayed in additional information when displaying comparisons (reduction rate, etc.) for the full life cycle. However, steps must be taken to provide additional information that avoids misinterpretation by readers

(7) Setting comparison targets

- Comparisons can't be made based on unrealistic scenarios
- Comparisons can't be made based on designed values which are worse than actual values
- Comparisons must include a clear explanation of difference from comparison product (reduction and increase)
- If comparison is made against a product that will be sold at the same time, then the comparison product should be whichever is objectively considered to be the standard product

(8) Setting impact categories for comparison

- If the Japan EPD Program by SuMPO is used for disclosure, then trade-offs are allowed in some cases (*Example: lower climate change impact, but higher eutrophication impact*) If comparison results are disclosed, then all impact categories must be disclosed.

Note: Examples of possible comparisons in display

- *Changes over time in quantification results (performance tracking)*
- *Comparison of quantification results for different raw materials used*
- *Comparison of quantification results for different manufacturing methods*
- *Comparison of quantification results for different distribution and sales methods*
- *Comparison of quantification results for different use and maintenance methods*
- *Comparison of quantification results for different disposal and recycling methods*

Appendix D: Series Products (rules)

D1. Type A series products: the same quantification values are used for one series product

In the case of product groups which have common characteristics for product specifications and impact category indicator correlations, quantification results may not be impacted very much by different product specifications in product groups which have common characteristics. Therefore, if it can be demonstrated that impact category indicators of impact categories for declarations are within a range of $\pm 5\%$ compared to the standard product, then the quantification results of the standard product can be used as quantification results for multiple products which are defined as series products.

“Series product” refers to one group of similar products.

If series product definition methods are specified in PCR, then follow those definition methods instead.

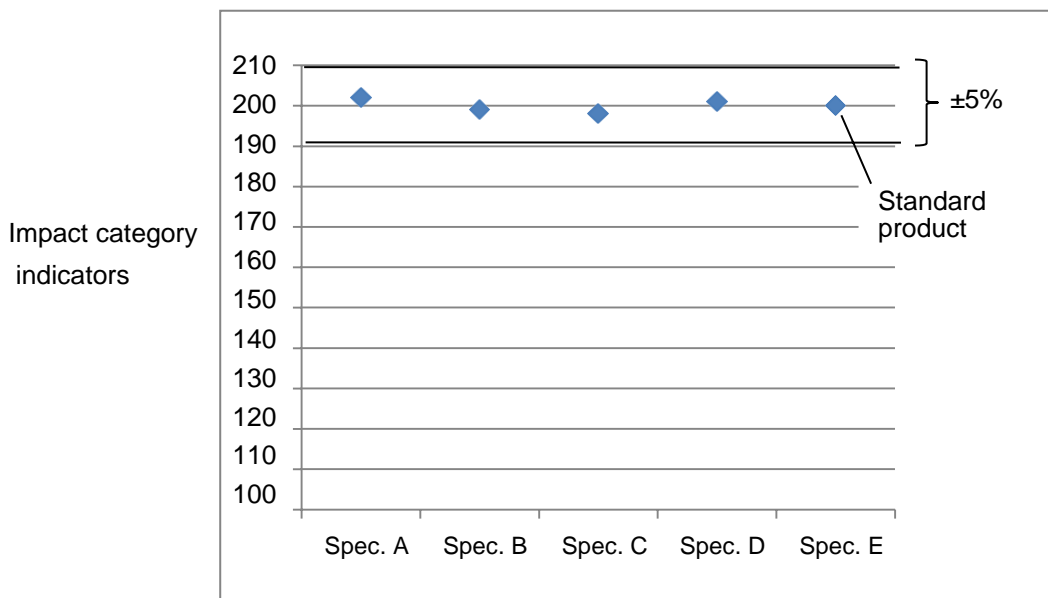


Figure 3. Examples of Type A series products

Classification of Type A series products

A-1: Different products, but no difference in either activity data or emission factors

- Markers in different colors (red, blue, yellow, green, and black)

A-2: Different activity data, emission factors, and/or quantification logic

D2. Type B series products: impact category indicators are estimated using a formula for one series products

If a specific formula can be established for the environmental impact of series products, then impact category indicators of other products can be estimated using the same formula.

Declarations for series products are allowed to publish impact category indicators for each life cycle stage of only the standard product, if the following conditions are fulfilled:

- (1) Main functions and main manufacturing conditions are the same, except for parameters used in the formula.
- (2) Formula definitions and quantification method using the formula are defined in PCR.
- (3) Reasoning of the formula is qualitatively described in PCR.
- (4) PCR includes an explanation that the deviation of values from results from formula quantification, and results from summated quantification, is within a range of $\pm 5\%$ for the same product. However, if there is a possibility that values of quantification results won't be within this range if data collection methods are changed (*for example, changes in allocation methods*), then these limits do not apply.

Note: Examples of Type B series products

- *Examples of product weight as a parameter: product weight difference of sugar, size difference of storage containers, size difference of clothing*
- *Examples of product thickness as a parameter: gauge differences of pre-sensitized plates for lithographic printing*

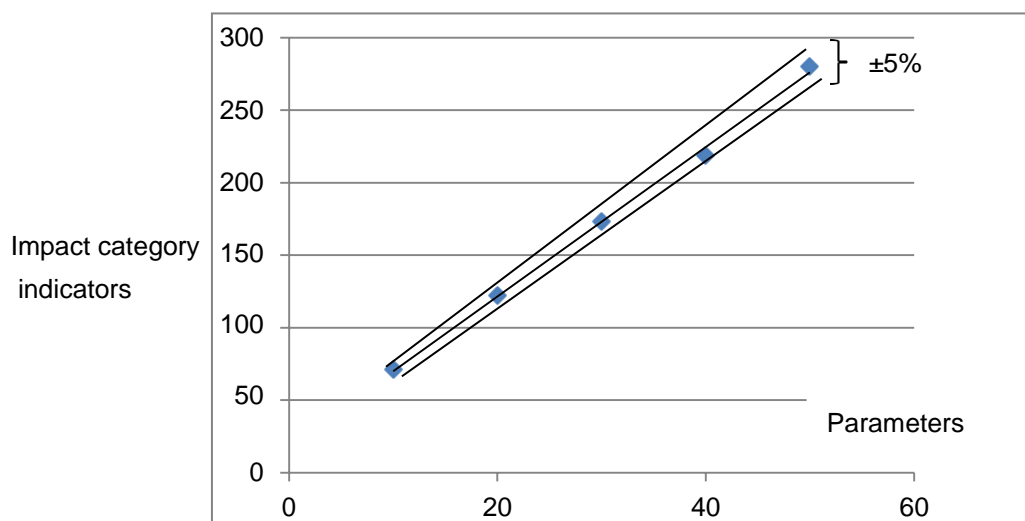


Figure 4. Examples of Type B series products

Classification of Type B series products

B-1: The formula and parameters are defined in advance by PCR

B-2: The formula and parameters are defined by using the candidate product

Appendix E: Verification Application Checklist

1. Verification Application sheet

No.	Details	Important points
1-1	If there are other materials for verification that should be submitted in addition to the documents listed here, write them in the "Attached Documents" space.	The office will check comments and confirm if additional documents are attached. If the documents are not written here, they will not be distributed as materials.
1-2	If compliance with ISO 21930 is also requested, include a statement in the "Other" space.	ISO 21930 claims are not confirmed during normal verification.

2. Flow Chart sheet

No.	Details	Important points
2-1	Charts that properly describes the life cycle flow of the product are included.	It covers the life cycle stages subject to quantification, as specified in PCR.
2-2	Descriptions in the flow chart correspond to the descriptions in the input sheet for each stage.	Process numbers are added in order to clearly indicate which item on the input sheet they apply to.

3. Product Composition Chart sheet

No.	Details	Important points
3-1	It includes all the parts, accessories, and composition.	Product catalogs and other materials may be submitted as attached documents. All raw materials, parts, and other items that should be included for quantification can be confirmed.
3-2	"Composition of materials and substances" includes physical quantities of the finished product.	
3-3	"Composition of materials and substances" includes materials of parts and other items.	

4. Input sheet (for each stage)

No.	Details	Important points
4-1	It is consistent with the flow chart.	
4-2	All required data items are collected as specified in PCR.	
4-3	Reference numbers for information which serves as the basis for values in collected primary data (basis of data) are described appropriately.	Selecting the wrong reference number or providing a non-existent number is a common mistake.
4-4	The material balance has been confirmed for each process.	
4-5	The emission factor codes are correctly written for each emission factor. The number of available data does not exceed the maximum allowance.	"Emission factor codes" refers to IDEA emission factor codes, elementary flow codes, and registered emission factor codes. Confirm if the automatically generated categories and names are displayed correctly when emission factor codes are entered.

4-6	If PCR emission factors are used, the emission factors are specified in PCR for the product.	When entering information, emission factors of other PCR can be selected, but only emission factors specified in the PCR are allowed to be used.
4-7	There are no transcription errors from databases, etc.	Make sure that there are no conversion errors in digits or units (tons to kg, etc.).
4-8	There are no data that are under or overestimated. This can be confirmed by checking total life cycle contribution rates and life cycle stage contribution rates.	It is generally understood that in many cases, major raw materials and major production processes have a high rate of contribution to climate change, while secondary materials like cardboard have a low rate of contribution. In cases with abnormal values, confirm by focusing on common mistakes including data collection errors, quantification errors, and emission factor transcription errors.
4-9	In cases when values of EcoLeaf or CFP declarations of certified products are used as primary data, the values were obtained from using the applicable product directly. If they are being used as secondary data, it can be judged as equivalent to the product.	If a CFP declaration is used as primary data, then it can only be used to publish CFP.
4-10	Whether there were cutoff items. If there were, they were made following "Requirements for Quantification and Declaration" and PCR.	If it is difficult to explain according to cut-off criteria, then cut-offs can be avoided by using the emission factors of similar products.
4-11	Items that are expected to have a large impact on the full life cycle are not cut off.	In particular, direct emissions released into the atmosphere or hydrosphere, and controlled hazardous substances must be included even if the physical amount is small.
4-12	The primary data collection period complies with the content specified in PCR.	If data for the past year is unavailable, then the reason why, and the validity of substitute data, must be verified. In addition, if data from a few months is converted and substituted as data for one year, it must be confirmed that the data is not an underestimate. (For example, in a case when air conditioning is used, average values of summer data can be used, but it would also be necessary to include older data which demonstrates that summer has the highest rate of electricity consumption throughout the year.)
4-13	The emission factors are appropriately selected and described.	Follow primary and secondary data quality criteria to confirm descriptions of products handled overseas, fitting of emission factors of similar products, database selection, and transcription of values.
4-14	Yield rates and losses are appropriately considered.	Losses in raw material input volume and transport volume at each stage, and the material balance before and after processes.
4-15	In cases when secondary data is often applied for transport processes, values are quantified appropriately when	Check the transport distance, transport weight, and vehicle class.

	primary data is collected.	
4-16	The way that validity of the selection of allocation methods is verified. Allocation methods comply with "Requirements for Quantification and Declaration" and PCR, and they are reasonable.	Validity must be judged in consideration of the specific application (Example: For electric lighting, the operation area allocation method is generally reasonable. However, because the allocation of man-hours is also reasonable in some cases, if it is difficult to collect data that identifies power usage for just lighting, then allocation by volume or quantity is also acceptable as long as the contribution rate to the full life cycle is also considered.) How to perform allocation of electricity and other utilities in cases when other products are manufactured in the same plant is a common point of discussion about allocation in review panels. Therefore, the validity of this point must be confirmed with discretion. An allocation method that is approximate and reasonable for the actual situation should be selected without overestimating because it seems more acceptable than underestimating.
4-17	If data is collected by summation, check if the scope of application (including air conditioning, lighting, and indirect departments) is appropriate.	Confirm if actual load factor is measured under optimal (nominal) operating conditions. (If it includes warm-up and cool-down. If not, there is a reasonable basis which avoids underestimation.)
4-18	The selection and content of scenarios is compliant with PCR, and it is based on adequate evidence.	Applicants are not allowed to set original scenarios that are different from PCR. If PCR scenarios do not reflect the actual situation, then consider revising PCR. However, if primary data is available for distance, weight, or loading rate in transport scenarios, then that primary data may be used.
4-19	Efforts are made to improve readability, such as avoiding repetitive descriptions of the same evidence, and using uniform reference numbers.	

5. Basis of Data sheet

No.	Details	Important points
5-1	Values are appropriately transcribed from the evidence which quantification is based on.	
5-2	The name of the evidence (internal information system, data source, data creator, date of creation, etc.) is clear.	Confirm that all evidence which quantification is based on will be stored for the full duration that registration is published.
5-3	There is a clear explanation included for each data item. It is written concisely for readability, based on the digits displayed.	Values with many numbers after the decimal point are difficult to read, such as if they are 10 digits long, so consider readability when displaying numbers.
5-4	If the scope of data items specified in PCR is not detailed, the specific data items are described in an identifiable way.	
5-5	There is clear correlation between evidence documents and items for data collection, to ensure that the quantification process is understandable. The description of the formula is reasonable for the basis of data.	<p>Write the basis for formulas as shown below.</p> <p>■ Examples of describing the basis of ___ input volume in the XXX process</p> <p>(Example 1)</p> <ul style="list-style-type: none"> · Total consumption of ___ obtained as primary data, 521 kg (___ Consumption Report, April 2017 to March 2018) · Total production volume obtained as primary data, 315 kg (Production Performance Management Log, April 2017 to March 2018) · Consumption of ___ ÷ total production volume = $521/315 = 1.65$ (ratio to product 1) <p>(Example 2)</p> <p>Final product weight (according to production manual) ÷ final product yield rate (yield calculation table: created by Ichiro Hanada, Plant Manager) = amount of raw materials used</p> <p>$5.2\text{kg}/0.86 = 6.0 \text{ kg}$</p> <p>(Example 3)</p> <p>Product size (order log) × times processed (product plan) × ___ input volume for each size/type {(materials purchase record (per year)) ÷ size of all products (performance survey sheet)}</p>

		120 mm × 3 times × 0.0025 kg/mm per time = 0.9 kg
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6. Declaration sheet

6-1. Declaration sheet: General

No.	Details	Important points
6-1-1	The document is generally unlikely to be misinterpreted by readers.	Re-read the application from a first-time reader's perspective, and confirm if there are no complicated phrases, sentences with unclear subjects, or sentences that can be interpreted differently by different readers.
6-1-2	The document is generally easy for readers to understand.	It doesn't use any technical terms that readers won't understand. In addition, efforts are made to improve readability of product information, such as using bullet point lists.
6-1-3	It doesn't include any product promotion slogans that are generally unrelated to the Program (unrelated to quantification results or the environment).	Because the full declaration form is subject to verification in this Program, statements that are unrelated to product information or quantification results can't be verified. Information that is allowed to be included as additional information for the purpose of promoting communication is limited to information derived from the quantification results, and information that can be confirmed during verification.

6-2. Declaration sheet: Sheet 1 (EcoLeaf and CFP)

6-2-1	The "Registered business name" is the business in a position to control brands of products that are candidates for verification, or another entity entrusted by the business.	Names of quantification consultant companies, or names of businesses that are not directly related to the product are not included. The "Registered business name" will be displayed in the list on the Program website.
6-2-2	The "Registered product name" appropriately describes the actual nature of the product subject to verification. Product names that are too generic are inappropriate, even for limited-edition products, so provide a name that identifies the product specifically.	For products with names that don't identify the product specifically, such as model numbers, include an explanation about the product so readers can understand what it is. <ul style="list-style-type: none"> • Include a generally understood product genre in front of the product name Example: School lunch tableware ABC-XYZ • If there are multiple applications for labels with different conditions for one product, include the quantification conditions in parenthesis after the product name. Example: School lunch tableware ABC-XYZ (used 100 times) This registered product name will be displayed in the list on the Program website.

6-2-3	The "Product photo" is a photo of the product subject to verification.	If the product design, etc. is not completed before applying for verification, include a statement, and provide a photo before publication.
6-2-4	The "Quantification units" comply with PCR, and match the actual quantification method.	If the product has conditions such as "1 product is a set of 2 items", then the quantification units may be difficult to understand, so be cautious about consistency in expressions.
6-2-5	All the "Stages subject to quantification" comply with PCR, and match the actual quantification method. It is possible to identify final goods and intermediate goods, and to understand the product life cycle.	As a rule, the names of life cycle stages specified in PCR should be used. All stages must be included for final goods. All stages "up to shipment as intermediate goods" must be included for intermediate goods.
6-2-6	The "Product model, main specifications, and technical details" are related to the applicable product. The product model is the specific model of the product subject to verification. The main specifications and technical details describe weight, size, and other information so it can immediately understood. The description of series products includes an explanation that multiple products are covered by the declaration, and include the product specifications.	In cases when "product model" doesn't exist, such as agricultural products, it can be excluded. (Common example) If the description says "30% recycled", it is unclear whether it means "product made using 30% recycled materials" or "quantified under the assumption that 30% of products will be recycled at the disposal/recycling stage". Write easy-to-understand descriptions.
6-2-7	The addresses, phone numbers, and URLs in "Contact information" are the most appropriate contact information for declaration inquiries.	Generally, it should be identical to the registered business contact information.
6-2-8	The certified PCR number referred to in "Applicable PCR number" is the most updated version at the time of applying for verification. The name is appropriate. The "PCR certification dates" are the dates for the most updated versions, and "PCR Review Panel Chair" is the current chairperson.	If the certified PCR is revised after the verification application was submitted, it is not always required to use the updated version, but the updated version can be used if necessary.
6-2-9	There is nothing extra added to, or missing from, the standards listed in "Third-party verifier."	If compliance with standards that are not part of the Program is required, such as ISO 21930, include a statement. It should be submitted together with the verification application.
6-2-10	The product name (model) or range of parameter values is included in the "Product model, main specifications, and technical details" for products with declarations that are registered and published as a series product.	

6-3. Declaration sheet: EcoLeaf (Sheet 2)

No.	Details	Important points
6-3-1	(All of Sheet 2) Values are transcribed correctly from the quantification results sheet, and values are entered as two-digit values with the third digit rounded off.	
6-3-2	(1) "Life cycle impact assessment results" discloses results for three or more categories, including categories specified in PCR, with graphs that show percentages by stage. The values are transcribed correctly from the "LCIA (results)" sheet. The quantification results are written using units that are easy-to-understand by readers (g, kg, t), instead of using exponential notation.	The impact categories are appropriate choices to disclose environmental information for the product. Graphs can be in any format as long as they help readers understand.
6-3-3	(1) The breakdown for "Life cycle impact assessment results" is correctly transcribed from the "LCIA (results)" sheet, and values are written using exponential notation. Dashes (-) are used to indicate stages that are not subject to quantification in PCR.	The breakdown for impact categories selected in 6-3-2 must be displayed. If the total value doesn't match the summated value of all stages, include a statement in the margins, such as "Due to fractional processing, there may be a small difference between the total value and breakdown total value." Make a distinction between quantification results of zero (0), and stages not subject to quantification (-).
6-3-4	(2) "Life cycle inventory analysis information" discloses results for two or more data sets, including data specified in PCR. If elementary flow is displayed as a summation, the elementary flow is appropriately selected and summated with respect to the item name.	If special items are set, a description should be included in "Additional information on quantification results".
6-3-5	(3) "Composition of materials and substances" describes amounts without using exponential notation, and if percentages are used, they add up to 100%. If weights are used, they match the product weight.	Confirm that numbers are consistent with the "Product Composition Chart" sheet and quantification data.
6-3-6	(4) If "Waste information" is described, values are entered for both hazardous and non-hazardous waste in the life cycle.	Include information for all hazardous waste generated in the full life cycle, not just substances contained in the product. If applicable, there is a breakdown of hazardous wastes specified by laws and regulations.

6-3-7	(5) "Additional information on quantification results" includes all required items specified in PCR and "Quantification and Declaration Rules."	All items mentioned in PCR as "...shall be described..." or "...must be described..." are mandatory for inclusion. Items mentioned as "...may..." or "...can..." are not mandatory for inclusion.
6-3-8	(5) "Additional information on quantification results" doesn't include any information not based on quantification.	Only information based on quantification values should be described in "Additional information on quantification results". In addition, do not include any product promotion slogans that are unrelated to the environment.
6-3-9	(5) If quantitative effects of recycling are described in "Additional information on quantification results", data values were collected appropriately as evidence to demonstrate those effects, and it includes an explanation based on that evidence.	Additional information is also subject to verification.
6-3-10	If the declaration is registered and published as a series product, the following information is described in (5) "Additional information on quantification results." A-2: Standard product name (model) B-1: Standard product name (model), impact category indicators or range of parameter values for each product B-2: Standard product name (model), impact category indicators or range of parameter values for each product, and calculation formula	
6-3-11	(6) "Other environmental information" doesn't include statements related to quantification content that are not specified in PCR and "Quantification and Declaration Rules."	Information that is not based on quantification results, but is related to the environmental impact of the product, should be described in "Other environmental information". In addition, do not include any product promotion slogans that are unrelated to the environment.
6-3-12	(6)-2. If "Information on hazardous substances" is described, include information for all hazardous substances generated in the full life cycle, not just substances contained in the product.	If applicable, there is a breakdown of hazardous substances specified by laws and regulations described in "Information on hazardous substances."
6-3-13	(7) The name and version number of the database referred to in "Considerations for emission factors" are correct. If registered data is used, the description includes an explanation.	Writing the right database name with the wrong version number is a common mistake.

6-3-14	(4) If “Waste information” and “Information on hazardous substances” in (6)-2 are not described, these sections may be deleted.	
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6-4. Declaration sheet: CFP (Sheet 2)

No.	Details	Important points
6-4-1	(All of Sheet 2) Values are transcribed correctly from the quantification results sheet, and values are entered as two-digit values with the third digit rounded off, instead of using exponential notation.	
6-4-2	(1) The quantification units of CFP quantification results match Sheet 1.	—
6-4-3	(1) The CFP quantification results are written using units that are easy-to-understand by readers (g, kg, t).	For example, 120 kg is not written as 120000000 mg, or 120 mg is not written as 0.00012 kg.
6-4-4	(1) The breakdown by life cycle stage in “CFP quantification results” includes the subtotal for each stage from the “LCIA (results)” sheet using two-digit values. Dashes (-) are used to indicate stages that are not subject to quantification in PCR.	Make a distinction between quantification results of zero (0), and stages not subject to quantification (-).
6-4-5	(1) values in “CFP quantification results” are correctly transcribe from the “IPCC 2013 GWP 100a” section of the “LCIA (results)” sheet, and values are entered as two-digit values with the third digit rounded off.	Readers will rely on data included in the declaration. If the total value doesn’t match the summated value of all stages, include a statement in the margins, such as “Due to fractional processing, there may be a small difference between CFP quantification results and breakdown total value.”
6-4-6	(1) The value (number value) of CFP quantification results displayed above the CFP mark is correctly transcribed from 6-4-4 “CFP quantification results” (including conversion to a two-digit value), and the number value units are converted appropriately.	The value displayed above the CFP mark is converted from the value in 6-4-4 “CFP quantification results”, instead of the breakdown total value, which summates the results after dividing individual values.
6-4-7	(2) “Additional information on quantification results” includes all required items specified in PCR and “Quantification and Declaration Rules.”	All items mentioned in PCR as “...shall be described...” or “...must be described...” are mandatory for inclusion. Items mentioned as “...may...” or “...can...” are not mandatory for inclusion.
6-4-8	(2) “Additional information on quantification results” doesn’t include any information not based on quantification.	Only information based on quantification values should be described in “Additional information on quantification results”. In addition, do not include any product promotion slogans that are unrelated to the environment.
6-4-9	(2) If quantitative effects of recycling are described in “Additional information on quantification results”, data values were collected appropriately as evidence to demonstrate those effects, and it includes an explanation based on that evidence.	Additional information is also subject to verification.

6-4-10	(2) It is recommended to include graphs, etc. showing the life cycle composition ratio in “Additional information on quantification results”. If graphs are included, ensure that they are easy to read. For example, if the values in one stage are extremely low compared to other life cycle stages, it may not be obvious by looking at the graph, so use arrows, etc. to draw attention.	Life cycles can be shown using illustrations other than pie charts, depending on the goal of communication.
6-4-11	If the declaration is registered and published as a series product, the following information is described in (3) “Additional information on quantification results.” A-2: Standard product name (model) B-1: Standard product name (model), CFP quantification results or range of parameter values for each product B-2: Standard product name (model), CFP quantification results or range of parameter values for each product, and calculation formula	
6-4-12	(3) “Other environmental information” doesn’t include statements related to quantification content that are not specified in PCR and “Quantification and Declaration Rules.”	Information that is not based on quantification results, but is related to the environmental impact of the product, should be described in “Other environmental information”. In addition, do not include any product promotion slogans that are unrelated to the environment.
6-4-13	(4) The “Interpretation of CFP quantification results” is based only on data used for quantification, and quantification results. In addition, uncertainty and limitations are described.	
6-4-14	(5) The name and version number of the database referred to in “Considerations for emission factors” are correct. If PCR emission factors are used, the description includes an explanation.	Writing the right database name with the wrong version number is a common mistake.

End of document.