

Note: Requirements here are for development of EcoLeaf™ environmental labels. Use for any other purposes without consent of EcoLeaf™ program office is strictly prohibited.

No.	Major key	Minor key	Class	Requirements
1	Preconditions	Target product	Description	Digital Camera, main functions of which is to shoot a picture with lens with digital imaging device, then store to internal and/or removable memory device. The definition above is based on “Guideline for Noting Digital Still Cameras Specifications in Catalogs”, CIPA, July 17, 2002 (#JCIAGLA03). Details are available at: http://www.cipa.jp/jcia/english/digital/pdf/JCIA_GLA03English.PDF
2			Items to cover	Camera body and items come together in its standard package (accessories, packaging and manuals) to carry out standard function of the product. Notes for an exchangeable lens camera Both cases (body only without lens, or body with lens) are acceptable. (Exchangeable lens only is out of this PSC.)
3		LCA	Target life cycle stages (Boundary setting)	All - Production - Distribution - Use - Disposition/Recycle
4	Product Data Sheet (P.D.S.) Input data for the LCI: Life Cycle Inventory analyses	Production stage information (Product itself)	Materials and/or ingredients of the product	<p>1. Parts treated as the class “A” (A parts, which environmental impact information for processing and assembly at final production site of, must be obtained.)</p> <p>A. Optical components (1) Shooting lens (2) Finder lens (3) Prism mirror</p> <p>Intended coverage for data collection: from materials acquired to parts completed.</p> <p>B. Main circuit board (1) Multilayer substrate (2) Semiconductor package (3) Other electronic parts assembled</p> <p>(Note for selection of class A parts) Category 1 and 2 listed above should be chosen in principle. However, 1 or 2 only is still acceptable, should the data collection on another be very difficult to make. Specify items chosen at Section E of PEAD using illustrative sentence in this case.</p> <p>“Parts, of which environmental impact information for processing and assembly at final production site are obtained, are: (List corresponding parts hereafter, out of 1-A- (1) to (3) and 2-A- (1) to (3) above.)</p> <p>2. Materials classification to list</p> <ul style="list-style-type: none"> - Ordinary Steel - Stainless steel - Aluminum - Copper - Titan - Magnesium alloy - Other metals - Thermoplastic resin - Heat-hardening resin

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				<ul style="list-style-type: none"> - Rubber - Glass - Paper - Wood - Assembled circuit board - Batteries - Electromagnetic steel plate <p>List name of corresponding Basic Unit for other materials.</p> <p>(Note: Coaxial cable should be dissected to obtain math breakdown data by material.)</p> <p>3. Materials input Math breakdown of materials input equals to a breakdown of final product under EcoLeaf program. Obtain over 90% of materials breakdown data of final product, and then distribute proportionally each material to make 100%.</p>
5	Product Data Sheet (P.D.S.) Input data for the LCI: Life Cycle Inventory analyses	Production stage information (Production site)	Materials and Energy for input/consumption and discharge/emission	<ol style="list-style-type: none"> 1. Input / Consumption <ul style="list-style-type: none"> - Electricity - Heavy oil - Light oil - Kerosene - Gasoline - LNG - Municipal gas - LPG - Drinking water - Industrial water - Ground water 2. Discharge/Emission Not specified. List items as identified important by reporting organization. 3. Impact items related to Site-to-Site transportation of input materials and energy Items only in following conditions are included. <ul style="list-style-type: none"> - Transportation between oversea site and domestic site - Related to the "A class" parts, defined at Sec. 4-1. 4. By-product and Sub-materials* Not included into data items collected. (*: Put into, then discharged from production process - not included into final product.) 5. Exceptional treatment, in case that actual data collection at production site is impossible. Calculate the environmental impact of production system, by doubling the Basic Unit for "Assembly" process times math of the product.
6	Product Data Sheet (P.D.S.) Input data for the LCI: Life Cycle Inventory analyses	Distribution stage information	Product transportation	<ol style="list-style-type: none"> 1. Transportation from final production site to Customer/Retail shop <ul style="list-style-type: none"> - Method, Loading Ratio: Reporting organization should set the model. - Gross transportation distance: 100 km - Consolidated shipping materials: Excluded. (Rationale: Recycled in most case, and the environmental impact "per product" should be negligible in overall LCA data. 2. Transportation between Overseas and Domestic at production stage should be included.

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7	Product Data Sheet (P.D.S.) Input data for the LCI: Life Cycle Inventory analyses	Use stage information	Conditions	<p>1. Use mode</p> <ul style="list-style-type: none"> - Duration of service 1,000 shoots per year, then five years. Playback and Deletion excluded. - Battery life Measuring method should follow to the guideline: planned to be published by CIPA in principle. Until publication of that, use ordinal method of reporting organization's, in specifying the condition at "Note" section of PEIDS. See Section 9-3 for details. <p>2. How to obtain usage of the battery</p> <p>a. Primary batteries</p> <ul style="list-style-type: none"> - Number of batteries consumed Calculate with fractions rounded-up, in using obtained life data at Sec. 7-1. - Wrapping materials should be excluded. <p>b. Secondary battery</p> <ul style="list-style-type: none"> - Calculate electric energy to charge-up the battery. Use 50% as charging efficiency. (Charging efficiency = Battery output / AC input) - Actual measuring condition should be as follows. Starting point of charge: Auto shut-off by battery voltage down End point of charge: Charge-up indication on Charger Unit. <p>Note: Deterioration is not considered for calculation. (Life of secondary battery for Digital Camera is much longer.)</p> <p>3. Material / Energy consumption related by malfunction Not considered in this PSC, since malfunction is not assumed in standard life-cycle scenario here.</p> <p>4. Handling of an individual packing materials Impact and deduction, related to the portion subjected to a recycle condition set by the "Law concerning recycle of container and wrapping," should be excluded. (Qty to be recycled = Projected qty to be disposed x a coefficient)</p> <p>5. Handling of a primary batteries consumed</p> <ul style="list-style-type: none"> - Treat as non-burnable (not consider recycling), since actual collection ratio is still very low at present, unfortunately. - Impact by disposition should be calculated by actual weight of the battery consumed.
8	Product Data Sheet (P.D.S.) Input data for the LCI: Life Cycle Inventory analyses	Disposition and Recycle stage	Conditions	<p>1. Treat papers as burnable.</p> <p>2. Treat others including body itself and secondary batteries as non-burnable. This is in same idea to Sec. 7.5 shown above.</p>
9	Product Environmental Information Declaration Sheet (P.E.I.D.S.)	Inventory analyses	Life Cycle Inventory calculation rules	<p>1. Method to obtain impact of battery production</p> <p>Follow to the formula shown below, in using 1) a EcoLeaf Basic Unit for Alkaline Manganese primary battery production "U" (kg), 2) Nominal voltage of subject type of battery "V" (volt), and 3) Nominal service capacity of the battery "A" (mAh). Refer endnote for the grounds of this method.</p> $U \times V \times A \times 47 / 3,900,000$ <p>2. Treatment in case Sec. 5-5 (simplified calculation method) is adopted.</p> <ul style="list-style-type: none"> - Add following sentence to "Notes" section of PEIDS sheet. "Environmental impact by production system is obtained by calculation. in doubling math of the product times the EcoLeaf

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				<p>Basic Unit for “Assembly”, since actual data collection at production site was impossible this time.”</p> <p>3. Treatment in case “Battery life” is measured in ordinal method of reporting organization’s, as explained at Sec. 7-1. List following items to “Notes” section of PEIDS sheet.</p> <ul style="list-style-type: none"> - Ratio of the flash usage - Condition of the LCD backlight usage - Shooting interval - Number of pixels set for shooting
10	Product Environmental Information Declaration Sheet (P.E.I.D.S.)	Impact analyses	Additional impact category	Ozone depletion and Eutrophication are excluded.
11	Breakdown data sheet (Product DS related)	Data processing	Allocation rule	No unified rule is set. Set as needed by reporting organization.
12	Breakdown data sheet (Product DS related)	Data collection	Coverage	Reasonable substitution by design specification, business plan, and/or data including Basic Unit can be used for data, if actual data to measure has not been available since the target product is newly launched.
13	Breakdown data sheet (Product DS related)		Cut-off rules	Specify if a cut-off rule is adopted (for environmental impact by assembly, etc.), with its ground
14	Breakdown data sheet (PEIDS related)	Database	Application rule of EcoLeaf Unified Basic Units	<p>Item > Basic Unit to apply</p> <ul style="list-style-type: none"> - Electronic flash, Flexible PCB, CCD, LCD, Recording media > Assembled circuit board - Optical glass > Glass - Harness > Copper plate - Small sized motor > Electromagnetic steel plate - Batteries (Primary and Secondary) > Calculate using Basic Unit of Alkaline Manganese battery, and the formula defined at Sec. 9-1. - Mg alloy > Sum of Basic Unit of stainless steel plate production and press molding: Iron. - Other electronic parts to be assembled > Assembled circuit board
15	Breakdown data sheet (PEIDS related)	Database	Addition of Basic Unit	Titan
16	Breakdown data sheet (PEIDS related)	Database	Addition of Characterization factor	None
17	PEAD	Section C	Product specification	<ul style="list-style-type: none"> - Actual pixels (following to the “Guideline for Noting Digital Still Cameras Specifications in Catalogs” by CIPA) - Standard lens comes with the product - Focal length (following to the CIPA guideline, including converted value to 135.) - F no. - With or without flash system - Type of media (Compact Flash, Smart Media, Memory Stick, etc.) - Size - Mass (excluding battery and media) - Type of the battery included (specify type: Primary/Secondary) - Other items included - Auto Focus, Waterproof, exchangeable lens system: optional notation

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18	PEAD	Section E	Items to list	<p>Mandatory Global Warming, Acidification, Energy consumption</p> <p>Optional Mineral resource consumption</p> <p>Add following notes to the bottom</p> <ul style="list-style-type: none"> - "Data listed here includes environmental impacts by all batteries to be consumed for product life, but by recording media additionally purchased by customer" - "Type of the battery used is assumed as a same type to what came with the product."
19	PEAD	Supplemental environmental information		<p>List additional environmental related information, which can be verified as needed. Specifically, items listed below can be presented.</p> <ul style="list-style-type: none"> - Environmental labeling obtained: Type I or III - ISO 14001 certification - Certifications, Accreditations and/or Recognitions by official organizations such as Nation or Industrial association. <p>Finally, elimination status on use of hazardous chemicals. Specify target 1) Life Cycle Stage, 2) Parts and 3) Chemical(s).</p> <p>(Above listed follows to Sec. 19 on appendix 3 "Requirements of the PSC" of the EcoLeaf guideline.)</p>

[Endnote re: Details of battery life calculation and stages to include]

Various types of lithium type (mainly) batteries are used for Digital Camera products. However inventory on production process for such various type of batteries can not be calculated directly, since Basic Unit data available by EcoLeaf Basic Unit DB for battery products are limited to Alkaline-Manganese type (primary), Manganese type (primary), and Lead-acid storage type (secondary) only for now. Therefore, this PSC sets a method to calculate by the formula shown below, in assumption that the inventory on battery production process has correlation to the amount of electrical power stored (Voltage x Service capacity)

1. According to reports by various Camera companies related, the CR123A, typical lithium type battery for Camera product (nominal voltage: 3 volt, nominal service capacity: 1,300 mAh), and two of LR6 (AA type Alkaline-Manganese battery) in series connection, provides same life for Camera products. In light of this fact, the impact by CR123A can be calculated by using EcoLeaf Basic Unit data "U" (/kg) for Alkaline-Manganese battery as follows.

Environmental Impact by production of CR123A = The impact of two LR6 (nominal weight: 23.5 g per unit) = "U" x 23.5/1,000 x 2 ... "L"

By this logic, following formula has been set for calculation of environmental impact by various types of battery.

The impact of a target battery = "L" x (nominal voltage "V" / 3) x (nominal service capacity "A" / 1,300)
 = "U" x "V" x "A" x 47/3,900,000

Reference: Voltage, Service capacity of principal batteries
 CR2: 3 V, 750 mAh / CR123A: 3 V, 1,300 mAh / 2CR5: 6 V, 1,300 mAh / CR-V3p: 3 V, 3,000 mAh

2. Stages to count battery related impacts should be as follows.
 - Impact by production of batteries included to the product package: Production stage
 - Impact by production of batteries used at "Use" stage: Use stage
 - Impact by disposal of batteries used at "Use" stage: Use stage
 - Impact by disposal of batteries with used body: Disposition and Recycling stage