# Product Environmental Aspects Declaration

No. AD-16-E806
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**EP and IJ printer (PCR-ID:AD-04)**

RICOH
imagine. change.
LANIER
savin

## SP C340DN

【 Part # 407883 】

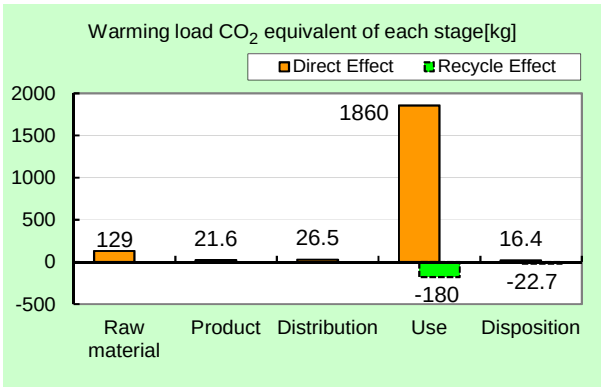
**1.Printing Process :** Electrophotographic (EP) Printing
**2.Color :** Monochrome and Full-color
**3.Print Speed :** 26 prints/minute ( Letter size )
**4.Maximum Paper Size :** 8.5" x 14"
**5.Included Units in Assessment :** Automatic Duplexing Unit

The warming load of the Use stage is based on the supposition that the product prints 405,600 images for five years. However, the environmental impact originated from paper itself is not included as prescribed in the PCR.

Environment Contact:
RICOH Company, Ltd.
Corporate Communication Center
email : envinfo@ricoh.co.jp

| Consumption and discharge in a life cycle | All the stage sum totals |
|---|---|
| Global Warming ($CO_2$ equivalent) | 2.05t (1.85t) |
| Acidification ($SO_2$ equivalent) | 3.66kg (3.35kg) |
| Energy resources (crude oil equivalent) | 34.4GJ (30.4GJ) |

※Figures in ( ) indicated environmental impact including recycle effect *note3


Notes:

1. Original LCA data is available on PEIDS: Product Environmental Information Declaration Sheet, and Product Data Sheet.
2. Unified rules and requirements for EcoLeaf LCA, for intended product category, are available as a PCR: Product Category Rule. Visit EcoLeaf website under JEMAI homepage at http://www.ecoleaf-jemai.jp/eng/ for details.
3. Recycle Effect illustrates an indirect influence to other products/services.
4. Basic Units used for calculations are based on Japan domestic data at this time, due to a lack of base data to establish localized Basic Unit for overseas locations adequately.
5. This declaration was produced using Product Category Rule intended for a product model sold in the Japanese market and using the qualitative and quantitative data collected in Japan.

## [Supplemental environmental information]

・Certified regulations: International Energy Star Program, EU RoHS.
・This product and its main components such as photoreceptor and toner are produced in our factories certified to ISO14001 management system standard.

PCR review was conducted by: PCR Deliberation Committee, January 01, 2008, Name of representative: Youji Uchiyama, University of Tsukuba Graduate School
Independent verification of the declaration and data, according to ISO14025 ☐internal ■external
Third party verifier: Shozo Nakamuta *

Programme operator: Japan Environmental Management Association for Industry, ecoleaf@jemai.or.jp

* In the case of an business entity certified as an Ecoleaf-data-collection system, the names of certification auditors are written.

The EcoLeaf is an environmental labeling program that belongs to the ISO-Type Ⅲ category.

Form 2-B(F-02Bs-02)

# Product Environmental Information Data Sheet (PEIDS)

| | |
|---|---|
| Document control no. | F-02Bs-02 |
| Product vendor | RICOH COMPANY, LTD. |
| EcoLeaf registration no. | AD-16-E806 |

| | |
|---|---|
| Unit Function DB version | v2.1 |
| Characterization Factor DB version | v2.1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PCR name | EP and IJ printer | | Product type | SP C340DN 【 Part # 407883 】 | | | |
| PCR-ID | AD-04 | Product weight (kg) | 29.0 | Package (kg) | 4.8 | Weight total (kg) | 33.8 |

| In/Out items \ Life Cycle Stage | | | | | Unit | Production | | Distribution | Use | Disposition | Recycle Effect |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Raw material | Product | | | | |
| Energy Consumption | | | | | MJ | 2.47E+03 | 3.91E+02 | 3.57E+02 | 3.12E+04 | 1.99E+01 | -4.03E+03 |
| | | | | | Mcal | 5.89E+02 | 9.34E+01 | 8.53E+01 | 7.45E+03 | 4.76E+00 | -9.63E+02 |
| Inventory analyses | Impact by Resource Consumption | Exhaustible resources | Energy resources | Coal | kg | 1.77E+01 | 2.56E+00 | 8.35E-04 | 1.72E+02 | 1.15E-01 | -4.35E+01 |
| | | | | Crude oil (for fuel) | kg | 2.26E+01 | 3.12E+00 | 7.80E+00 | 3.26E+02 | 2.21E-01 | -1.92E+01 |
| | | | | LNG | kg | 3.99E+00 | 1.56E+00 | 1.20E-01 | 6.62E+01 | 5.96E-02 | -2.67E+00 |
| | | | | Uranium content of an ore | kg | 3.47E-04 | 1.73E-04 | 5.65E-08 | 4.70E-03 | 7.79E-06 | 3.05E-05 |
| | | | Mineral resources | Crude oil (for material) | kg | 1.20E+01 | 0 | 0 | 1.00E+02 | 0 | -3.69E+01 |
| | | | | Iron content of an ore | kg | 1.33E+01 | 0 | 0 | 9.89E+01 | 0 | -4.59E+01 |
| | | | | Cu content of an ore | kg | 3.84E-01 | 0 | 0 | 1.08E-01 | 0 | -2.33E-01 |
| | | | | Al content of an ore | kg | 4.42E-01 | 0 | 0 | 7.40E+00 | 0 | -3.01E+00 |
| | | | | Ni content of an ore | kg | 7.05E-02 | 0 | 0 | 2.07E-01 | 0 | -9.34E-04 |
| | | | | Cr content of an ore | kg | 1.00E-01 | 0 | 0 | 3.15E-01 | 0 | -1.70E-02 |
| | | | | Mn content of an ore | kg | 8.21E-02 | 0 | 0 | 5.58E-01 | 0 | -3.99E-02 |
| | | | | Pb content of an ore | kg | 2.23E-01 | 0 | 0 | 8.65E+00 | 0 | -1.89E-02 |
| | | | | Sn content of an ore | kg | 3.68E-04 | 0 | 0 | 4.46E-04 | 0 | 0 |
| | | | | Zn content of an ore | kg | 3.22E-01 | 0 | 0 | 1.29E-01 | 0 | -1.86E-01 |
| | | | | Au content of an ore | kg | 1.28E-05 | 0 | 0 | 4.62E-05 | 0 | 0 |
| | | | | Ag content of an ore | kg | 4.15E-03 | 0 | 0 | 2.07E-02 | 0 | 0 |
| | | | | Silica Sand | kg | 7.21E-01 | 0 | 0 | 1.76E+00 | 0 | -5.09E-01 |
| | | | | Halite | kg | 8.69E+00 | 1.27E-03 | 0 | 5.05E+01 | 9.10E-03 | -3.40E-01 |
| | | | | Limestone | kg | 3.05E+00 | 0 | 0 | 2.50E+01 | 1.53E-01 | -7.79E+00 |
| | | | | Natural soda ash | kg | 5.08E-02 | 0 | 0 | 1.26E-02 | 0 | -1.68E-02 |
| | | Renewable resources | | Wood | kg | 8.24E+00 | 0 | 0 | 2.28E+02 | 0 | 0 |
| | | | | Water | kg | 8.50E+03 | 2.16E+03 | 6.30E-01 | 1.04E+05 | 9.70E+01 | -5.64E+03 |
| | Impact by Emission/Discharge to the environment | to Atmosphere | | $CO_2$ | kg | 1.26E+02 | 2.13E+01 | 2.54E+01 | 1.81E+03 | 1.64E+01 | -1.96E+02 |
| | | | | $SO_x$ | kg | 8.33E-02 | 1.52E-02 | 1.55E-02 | 1.19E+00 | 8.67E-03 | -1.64E-01 |
| | | | | $NO_x$ | kg | 1.61E-01 | 1.48E-02 | 1.21E-01 | 3.05E+00 | 1.92E-02 | -2.09E-01 |
| | | | | $N_2O$ | kg | 1.18E-02 | 1.16E-03 | 4.24E-03 | 1.79E-01 | 2.80E-05 | -2.33E-02 |
| | | | | $CH_4$ | kg | 9.19E-04 | 4.62E-04 | 1.51E-07 | 1.24E-02 | 2.09E-05 | 1.37E-04 |
| | | | | CO | kg | 1.85E-02 | 3.07E-03 | 3.18E-02 | 5.32E-01 | 3.70E-03 | -6.69E-03 |
| | | | | NMVOC | kg | 1.80E-03 | 9.06E-04 | 2.96E-07 | 2.43E-02 | 4.09E-05 | 2.66E-04 |
| | | | | $C_xH_y$ | kg | 5.71E-03 | 1.99E-04 | 3.64E-03 | 8.58E-02 | 8.25E-05 | -9.54E-03 |
| | | | | Dust | kg | 1.86E-02 | 6.55E-04 | 1.16E-02 | 2.72E-01 | 1.11E-03 | -3.68E-02 |
| | | to Water system | to Water domain | BOD | kg | - | - | - | - | - | - |
| | | | | COD | kg | - | - | - | - | - | - |
| | | | | N total | kg | - | - | - | - | - | - |
| | | | | P total | kg | - | - | - | - | - | - |
| | | | | SS | kg | - | - | - | - | - | - |
| | | to Soil system | | Unspecified Solid Waste | kg | 1.13E+00 | 7.29E-03 | 0 | 1.13E+02 | 1.21E+01 | -8.19E-01 |
| | | | | Slag | kg | 5.18E+00 | 0 | 0 | 3.35E+01 | 0 | -1.41E+01 |
| | | | | Sludge | kg | 9.48E-01 | 0 | 0 | 1.59E+01 | 0 | -6.45E+00 |
| | | | | Low level radio-active waste | kg | 2.43E-04 | 1.21E-04 | 3.95E-08 | 3.28E-03 | 5.45E-06 | 2.14E-05 |
| Impact assessment | by Resource Consumption | Exhaustible resources | | Energy resources (crude oil equivalent) | kg | 4.16E+01 | 8.05E+00 | 7.95E+00 | 5.55E+02 | 4.31E-01 | -5.01E+01 |
| | | | | Mineral resources (Iron ore equivalent) | kg | 1.06E+03 | 0 | 0 | 8.83E+03 | 0 | -1.46E+02 |
| | by Emission / Discharge to environment | to Atmosphere | | Global Warming ($CO_2$ equivalent) | kg | 1.29E+02 | 2.16E+01 | 2.65E+01 | 1.86E+03 | 1.64E+01 | -2.02E+02 |
| | | | | Acidification ($SO_2$ equivalent) | kg | 1.96E-01 | 2.55E-02 | 1.00E-01 | 3.32E+00 | 2.21E-02 | -3.11E-01 |

[Notes for readers: EcoLeaf common rules]

I. Stage related

A. "Production" stage is intended for two sub-stages listed below.

(1) "Raw material" production: consists of mining, transportation and raw material production.

(2) "Product" production: consists of the parts processing, assembly and installation.

B. "Distribution" stage is intended for transportation of produced product. Transportation of consumables and maintenance goods (e.g. replacement parts) for use of the product are included into "Use" stage.

C. "Use" stage is intended for use of the product (active mode, standby mode, etc.) and production, transportation to disposal/recycle of consumables/maintenance goods (e.g. replacement parts).

D. "Disposition/Recycle" stage is intended for environmental impacts by product disposition/recycle, and deduction by recycling (e.g. impact reduction of raw material production).

E. "Recycle Effect" illustrates an indirect environmental influences to other products/services by use of reclaimed materials/parts, and/or by supply of used products to other businesses for material reclaim/parts reuse.

Case 1: Use of reclaimed materials/parts: Sum of increase of environmental impact by collection activities of used materials/parts, and decrease by volume reduction of used materials/parts.

Case 2: Supply of used products to other businesses for material reclaim/parts reuse: Sum of increase of environmental impact by materials/parts reclaiming process, and decrease by volume reduction of new materials/parts production.

II. Inventory analyses

A. Data of mineral ore on "Exhaustible resources" are presented in weight of pure ingredients (e.g. iron, aluminum) in the ore.

B. Data on energy resources are presented based on origin in calorific value. e.g. Data on uranium ore presents weight of uranium concentrate, which is available for use as an atomic fuel.

C. Data of discharge to water system are in actual figure (not calculated using unit function in inventory analyses).

III Impact analyses

Result of the "Impact analyses" is found in converting results of inventory analyses into total amount of a reference material (e.g. $CO_2$ in case of "Global Warming").

A. Impact "by resource consumption" represents magnitude of impacts to resource depletion.

B. Impact "by emission/discharge to environment" represents magnitude of impacts to Atmosphere, Water and Soil system.

IV Data entry format

A. Exponential notation, after the decimal point to two, should be used.

B. Indicate "0" instead exponential notation, if the result of calculation or estimation is considered as "zero" or negligible in comparison to related results.

C. Indicate " — " if calculation nor estimation can not be done, in order to differentiate to indicate "zero".

(BGD for material production are for production from mineral ore. Those data do not include reclaiming processes like recovery from scrap.)

[Notes for readers: Target product specific]

This declaration was produced using Product Category Rule intended for a product model sold in the Japanese market and using the qualitative and quantitative data collected in Japan.

Form 3(F-03s-02)

# Product data sheet

(Input data and parameters for LCA)

| | |
|---|---|
| Document control no. | F-03s-02 |
| Product vendor | RICOH COMPANY, LTD. |
| EcoLEaf registration no. | AD-16-E806 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| PCR name | EP and IJ printer ( PCR-ID : AD-04 ) | Product type | SP C340DN 【 Part # 407883 】 | | | | | |
| LCA/LCIA in units of: | 1 product | Product weight (kg) | 29.0 | Package (kg) | 4.8 | Weight total (kg) | 33.8 | |

## 1. Product information (per unit): parts etc. by material and by process/assembly method

| | Breakdown of primary materials | | | | Math breakdown of parts, which need to apply Processing / Assembly Base Units (Parts B, C) | | | |
|---|---|---|---|---|---|---|---|---|
| | Material name | Weight (kg) | Material name | Weight (kg) | Process name | Weight (kg) | Process name | Weight (kg) |
| Product | Stainless steel | 4.44E-01 | Electronic circuit board | 5.67E-01 | Press molding: Iron (kg) | 1.32E+01 | Parts assembly (kg) | 2.86E+01 |
| | Glass | 4.38E-01 | Ordinary steel | 1.27E+01 | Press molding: Nonferrous metal (kg) | 1.58E+00 | | |
| | Aluminum | 4.18E-01 | Wood | 7.95E-02 | Injection molding (kg) | 1.32E+01 | | |
| | Paper | 3.82E+00 | | | Glass molding (kg) | 6.11E-01 | | |
| | Thermoplastic resin | 1.34E+01 | | | | | | |
| | Rubber | 1.73E-01 | | | | | | |
| | Other metals | 1.17E+00 | | | | | | |
| | Thermosetting resin | 5.41E-01 | | | | | | |
| | Subtotal | 2.04E+01 | Subtotal | 1.34E+01 | | | | |
| | Total | | | 3.38E+01 | Subtotal | 2.86E+01 | Subtotal | 2.86E+01 |

Note

## 2. Production site information (per unit): Consumption and discharge/emission for production/processing/assembly within the site.

SOx and NOx should be indicated in $SO_2$, $NO_2$ equivalent.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Consumption | Classification | Energy | Energy | Energy | Material | Energy | Material | | |
| | Distribution | Electricity (kWh) | Steam (kg) | Furnace LNG (kg) | Clean water (kg) | Furnace urban gas (13A) ($m^3$) | Industrial water (kg) | | |
| | Quantity | 7.91E+00 | 2.53E+00 | 1.56E-01 | 4.64E+01 | 1.49E-01 | 1.73E+02 | | |
| | Note | | | | | | | | |
| Emission / Discharge | Classification | Water system | | | | | | | |
| | Distribution | Sewage processing (kg) | | | | | | | |
| | Quantity | 2.19E+02 | | | | | | | |
| | Note | | | | | | | | |

Note

## 3. Distribution stage information (per unit): means, distance, loading ratio, consumptions and emissions/discharges.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Distribution | Means of transportation | Diesel truck: 20 ton (kg･km) | Diesel truck: 20 ton (kg･km) | Diesel truck: 20 ton (kg･km) | Diesel truck: 20 ton (kg･km) | Freight by ship (kg･km) | Freight by ship (kg･km) | Freight by ship (kg･km) | Freight by ship (kg･km) |
| | Conditions | Mass(kg) | Distance （km） | Loading Ratio(%w) | Load(kg･km) | Mass(kg) | Distance （km） | Loading Ratio(%w) | Load(kg･km) |
| | Quantity | 3.38E+01 | 1.28E+03 | 5.39E+01 | 8.01E+04 | 3.38E+01 | 1.16E+04 | 1.00E+02 | 3.92E+05 |
| | Note | | | | | | | | |

Note

## 4. Use stage (per unit): use condition (mode, term) including active mode, standby mode and maintenance.

### 4.1 Product and accessories subject to this analysis

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Product | Classification | Consumption | Consumption | Consumption | Consumption | Consumption | Consumption | Consumption | Consumption |
| | Distribution | Stainless steel plate (kg) | Aluminum plate (kg) | Glass (kg) | Styrene-butadiene rubber (SBR) (kg) | Copper plate (kg) | Zinc (kg) | Gold (kg) | Silver (kg) |
| | Quantity | 1.30E+00 | 6.99E+00 | 1.24E-01 | 5.23E+00 | 3.18E-01 | 3.57E-02 | 4.62E-05 | 2.07E-02 |
| | Note | | | | | | | | |
| | Classification | Consumption | Consumption | Consumption | Consumption | Consumption | Consumption | Condition | Consumption |
| | Distribution | Tin (kg) | Electrolytic lead (kg) | Corrugated cardboard (kg) | ABS (kg) | MMA resin (kg) | PA66 (Polyamide 66) (kg) | Diesel truck: 20 ton (kg･km) | PBT (kg) |
| | Quantity | 2.93E-04 | 6.06E+00 | 1.07E+02 | 8.54E+00 | 2.49E-02 | 8.29E-02 | 2.92E+05 | 2.39E-01 |
| | Note | | | | | | | | |
| | Classification | Consumption | Consumption | Consumption | Consumption | Consumption | Condition | Consumption | Consumption |
| | Distribution | Polycarbonate (kg) | Polycarbonate-ABS (70/30) (kg) | Low density polyethylene (kg) | PET (kg) | POM (polyacetal) (kg) | Freight by ship (kg･km) | Polypropylene (kg) | Polystyrene (kg) |
| | Quantity | 3.79E+00 | 3.94E+01 | 1.32E-01 | 4.63E+01 | 4.13E+00 | 1.65E+06 | 4.58E-02 | 1.59E+01 |
| | Note | | | | | | | | |
| | Classification | Consumption | Consumption | Consumption | Condition | Consumption | Consumption | Consumption | Consumption |
| | Distribution | Epoxy resin (EP) (kg) | Expandable hard polyurethane (Hard) (kg) | Expandable soft polyurethane (for automobile) (kg) | Diesel truck: 20 ton (kg･km) | Assembled circuit board (kg) | Electroplated steel Plate (kg) | Cold-Rolled steel plate (kg) | Press molding: Iron (kg) |
| | Quantity | 1.17E-01 | 1.05E-01 | 2.64E+00 | 4.15E+05 | 8.74E-02 | 2.72E+01 | 6.78E+01 | 9.63E+01 |
| | Note | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Product | Classification | Consumption | Condition | Consumption | Consumption | Consumption | Energy | Energy | Energy |
| | Distribution | Press molding: Nonferrous metal (kg) | Freight by ship (kg･km) | Injection molding (kg) | Glass molding (kg) | Parts assembly (kg) | Electricity (kWh) | Furnace LNG (kg) | Furnace urban gas (13A) ($m^3$) |
| | Quantity | 1.34E+01 | 2.34E+06 | 8.63E+01 | 5.36E+00 | 2.01E+02 | 1.47E+02 | 7.07E+00 | 6.75E+00 |
| | Note | | | | | | | | |
| | Classification | Consumption | Consumption | | | | | | |
| | Distribution | Electricity (kWh) | Gasoline as fuel (kg) | | | | | | |
| | Quantity | 3.80E+02 | 2.93E+00 | | | | | | |
| | Note | | | | | | | | |

Note

### 4.2 Disposition/Recycle information on consumables and replacement parts

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Consumables | Classification | Process | Process | Process | Process | Process | Process | Process | Process |
| | Distribution | Landfill: Industrial waste (kg) | Landfill: General waste (kg) | Incineration to landfill (as ash) (kg) | Diesel truck: 4 ton (kg･km) | Shredding (kg) | Sorting: Iron (by magnetic force) (kg) | Sorting: Nonferrous metal (by eddy current with wind force) (kg) | Sorting: Plastics (by relative density difference in water) (kg) |
| | Quantity | 7.78E+00 | 6.81E+01 | 1.62E+02 | 2.23E+04 | 2.05E+02 | 8.20E+01 | 4.27E+01 | 3.99E+01 |
| | Note | | | | | | | | |
| | Classification | Process | Process | Process | Process | Process | Deduction | Deduction | Deduction |
| | Distribution | Recycle: to Glass (kg) | Recycle: to cold-rolled steel (kg) | Recycle: to Aluminum plate (kg) | Recycle: to copper plate (kg) | Recycle: to Thermoplastic pellet (kg) | Glass (kg) | Cold-Rolled steel plate (kg) | Aluminum plate (kg) |
| | Quantity | 4.97E-02 | 3.93E+01 | 2.69E+00 | 1.76E-01 | 3.20E+01 | 4.87E-02 | 3.93E+01 | 2.69E+00 |
| | Note | | | | | | | | |
| | Classification | Deduction | Deduction | Process | | | | | |
| | Distribution | Copper plate (kg) | Polystyrene (kg) | Diesel truck: 10 ton (kg･km) | | | | | |
| | Quantity | 1.76E-01 | 3.20E+01 | 6.56E+04 | | | | | |
| | Note | | | | | | | | |

Note

### 5. Disposition/Recycle stage information (per product): process method and scenarios

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Scenario | Classification | Process | Process | Process | Process | Process | Process | Process | Deduction |
| | Distribution | Landfill: Industrial waste (kg) | Landfill: General waste (kg) | Incineration: Industrial waste (kg) | Incineration to landfill (as ash) (kg) | Shredding (kg) | Diesel truck: 10 ton (kg･km) | Diesel truck: 4 ton (kg･km) | High density polyethylene (kg) |
| | Quantity | 7.77E-01 | 9.48E+00 | 3.70E-02 | 1.19E+01 | 2.94E+01 | 9.41E+03 | 2.07E+03 | 2.19E-01 |
| | Note | | | | | | | | |
| | Classification | Process | Process | Process | Process | Process | Process | Process | Process |
| | Distribution | Sorting: Iron (by magnetic force) (kg) | Sorting: Nonferrous metal (by eddy current with wind force) (kg) | Sorting: Plastics (by relative density difference in water) (kg) | Recycle: to Glass (kg) | Recycle: to cold-rolled steel (kg) | Recycle: to Aluminum plate (kg) | Recycle: to copper plate (kg) | Recycle: to Thermoplastic pellet (kg) |
| | Quantity | 1.14E+01 | 6.39E+00 | 5.85E+00 | 1.55E-01 | 4.97E+00 | 1.56E-01 | 5.96E-01 | 5.08E+00 |
| | Note | | | | | | | | |
| | Classification | Deduction | Deduction | Deduction | Deduction | Deduction | | | |
| | Distribution | Glass (kg) | Cold-Rolled steel plate (kg) | Aluminum plate (kg) | Copper plate (kg) | Polystyrene (kg) | | | |
| | Quantity | 1.52E-01 | 4.97E+00 | 1.56E-01 | 5.96E-01 | 4.86E+00 | | | |
| | Note | | | | | | | | |

Note

### 6. Others

This declaration was produced using Product Category Rule intended for a product model sold in the Japanese market and using the qualitative and quantitative data collected in Japan.