

Product Environmental Aspects Declaration



EP and IJ printer (PCR-ID:AD-04)

No. AD-14-E476

Date of publication
Nov./14/2014

RICOH
imagine. change.

SAVIN MP C6502SP

1. **Printing process** : Electrophotographic (EP) Printing
2. **Color** : Monochrome and Full-color
3. **Print Speed** : 65 ppm B&W and FC (LTR)
4. **Maximum Paper Size** : 13" x 19.2"
5. **Included Units in Assessment** : 220-Sheet Single Pass Duplex Feeder, Automatic Duplexing Unit



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

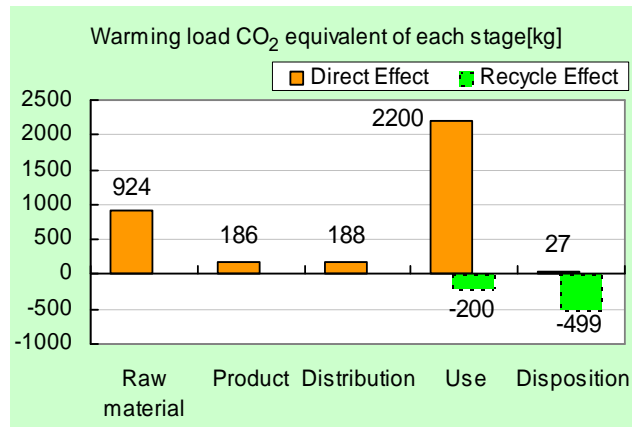
The warming load of the Use stage is based on the supposition that the product prints 2,534,400 images for five years.

| Consumption and discharge in a life cycle | All the stage sum totals |
|---|--------------------------|
| Global Warming (CO ₂ equivalent) | 3.53t (2.83t) |
| Acidification (SO ₂ equivalent) | 5.84kg (4.94kg) |
| Energy resources (crude oil equivalent) | 70.5GJ (56.9GJ) |

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



The photo shows the product with optional units (※) attached. The environmental loads of these units are not included in the results.



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, toner, carrier 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: Hiroo Sakazaki *

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.

Product Environmental Information Data Sheet (PEIDS)



| | |
|--------------------------|---------------------|
| Document control no. | F-02B-03 |
| Product vendor | RICOH COMPANY, LTD. |
| EcoLeaf registration no. | AD-14-E476 |

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

| | | | | | | | |
|----------|-------------------|---------------------|--------------|------------------|----|-------------------|-----|
| PCR name | EP and IJ printer | | Product type | SAVIN MP C6502SP | | | |
| PCR ID | AD-04 | Product weight (kg) | 241 | Package (kg) | 21 | Weight total (kg) | 262 |

| In/Out items | Life Cycle Stage | Unit | Production | | Distribution | Use | Disposition | Recycle effect | | |
|---------------------------------------|---|-------------------------|---|----------|--------------|----------|-------------|----------------|-----------|-----------|
| | | | Raw material | Product | | | | | | |
| Energy Consumption | MJ | | 1.54E+04 | 3.42E+03 | 2.60E+03 | 4.90E+04 | 3.87E+01 | -1.35E+04 | | |
| | Mcal | | 3.68E+03 | 8.16E+02 | 6.22E+02 | 1.17E+04 | 9.24E+00 | -3.23E+03 | | |
| Inventory analyses | Resource Consumption from the environment | Exhaustible resources | Energy | | | | | | | |
| | | | Coal | kg | 1.84E+02 | 2.33E+01 | 1.97E+00 | 1.63E+02 | 1.52E-01 | -1.62E+02 |
| | | | Crude oil (for fuel) | kg | 1.17E+02 | 2.57E+01 | 5.33E+01 | 4.49E+02 | 5.65E-01 | -5.96E+01 |
| | | | LNG | kg | 2.40E+01 | 1.35E+01 | 1.74E+00 | 1.50E+02 | 8.27E-02 | -7.02E+00 |
| | | | Uranium content of an ore | kg | 1.76E-03 | 1.53E-03 | 1.29E-04 | 8.80E-03 | 1.03E-05 | 1.48E-04 |
| | | Material | Crude oil (for material) | kg | 5.22E+01 | 0 | 0 | 1.78E+02 | 0 | -1.21E+02 |
| | | | Iron content of an ore | kg | 1.58E+02 | 0 | 0 | 3.80E+01 | 0 | -1.81E+02 |
| | | | Cu content of an ore | kg | 2.65E+00 | 0 | 0 | 2.45E-01 | 0 | -3.87E+00 |
| | | | Al content of an ore | kg | 7.46E+00 | 0 | 0 | 7.33E-01 | 0 | -7.66E+00 |
| | | | Ni content of an ore | kg | 1.16E+00 | 0 | 0 | 7.79E-03 | 0 | -3.67E-03 |
| | Cr content of an ore | | kg | 1.63E+00 | 0 | 0 | 2.36E-02 | 0 | -6.71E-02 | |
| | Mn content of an ore | | kg | 1.02E+00 | 0 | 0 | 2.03E-01 | 0 | -1.57E-01 | |
| | Pb content of an ore | | kg | 2.72E-01 | 0 | 0 | 2.00E-02 | 0 | -3.14E-01 | |
| | Sn content of an ore | | kg | 0 | 0 | 0 | 0 | 0 | 0 | |
| | Zn content of an ore | | kg | 2.47E+00 | 0 | 0 | 1.98E-01 | 0 | -3.09E+00 | |
| | Renewable resources | Au content of an ore | kg | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Ag content of an ore | kg | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Silica Sand | kg | 9.68E+00 | 0 | 0 | 5.17E-01 | 0 | -4.38E+00 | |
| | | Halite | kg | 4.39E+01 | 0 | 0 | 5.00E+00 | 2.86E-03 | -1.38E+00 | |
| | | Limestone | kg | 3.31E+01 | 0 | 0 | 8.44E+00 | 2.48E-01 | -3.12E+01 | |
| Natural soda ash | | kg | 3.28E-01 | 0 | 0 | 0.00E+00 | 0 | -2.43E-01 | | |
| Wood | | kg | 4.58E+01 | 0 | 0 | 1.35E+02 | 0 | 0.00E+00 | | |
| Water | | kg | 4.79E+04 | 1.82E+04 | 1.44E+03 | 1.86E+05 | 1.30E+02 | -1.45E+04 | | |
| Emission/Discharge to the environment | | to Atmosphere | CO ₂ | kg | 9.05E+02 | 1.83E+02 | 1.81E+02 | 2.10E+03 | 2.67E+01 | -6.78E+02 |
| | | | SO _x | kg | 7.65E-01 | 1.36E-01 | 1.21E-01 | 1.19E+00 | 1.46E-02 | -4.83E-01 |
| | NO _x | | kg | 1.06E+00 | 1.19E-01 | 9.48E-01 | 2.99E+00 | 4.33E-02 | -5.99E-01 | |
| | N ₂ O | | kg | 7.20E-02 | 9.49E-03 | 2.60E-02 | 3.57E-01 | 4.90E-05 | -7.47E-02 | |
| | CH ₄ | | kg | 4.56E-03 | 4.09E-03 | 3.45E-04 | 2.35E-02 | 2.75E-05 | 5.41E-04 | |
| | CO | | kg | 1.81E-01 | 2.85E-02 | 2.77E-01 | 4.36E-01 | 1.09E-02 | 5.62E-03 | |
| | NMVOOC | | kg | 8.93E-03 | 8.02E-03 | 6.75E-04 | 4.60E-02 | 5.38E-05 | 1.06E-03 | |
| | C _x H _y | | kg | 3.53E-02 | 1.84E-03 | 2.61E-02 | 1.11E-01 | 3.83E-04 | -3.07E-02 | |
| | to Water system | Dust | kg | 1.40E-01 | 7.17E-03 | 8.69E-02 | 2.51E-01 | 2.77E-03 | -1.18E-01 | |
| | | BOD | kg | - | - | - | - | - | - | |
| | | COD | kg | - | - | - | - | - | - | |
| | | N total | kg | - | - | - | - | - | - | |
| | to Soil system | P total | kg | - | - | - | - | - | - | |
| | | SS | kg | - | - | - | - | - | - | |
| | | Unspecified Solid Waste | kg | 7.17E+00 | 0 | 0 | 4.26E+01 | 2.03E+01 | -2.08E+00 | |
| Low level radio-active waste | Slag | kg | 5.86E+01 | 0 | 0 | 1.21E+01 | 0 | -5.81E+01 | | |
| | Sludge | kg | 1.60E+01 | 0 | 0 | 1.57E+00 | 0 | -1.64E+01 | | |
| Impact assessment | by Resource Consumption | Exhaustible resources | Energy resources (crude oil equivalent) | kg | 2.79E+02 | 6.94E+01 | 5.77E+01 | 8.07E+02 | 8.46E-01 | -1.71E+02 |
| | | | Mineral resources (Iron ore equivalent) | kg | 5.01E+03 | 0 | 0 | 2.22E+02 | 0 | -1.43E+03 |
| | by Emission/Discharge to the environment | to Atmosphere | Global Warming (CO ₂ equivalent) | kg | 9.24E+02 | 1.86E+02 | 1.88E+02 | 2.20E+03 | 2.67E+01 | -6.99E+02 |
| | | | Acidification (SO ₂ equivalent) | kg | 1.51E+00 | 2.19E-01 | 7.84E-01 | 3.28E+00 | 4.49E-02 | -9.03E-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. CO₂ 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.

Product data sheet

(Input data and parameters for LCA)



| | |
|--------------------------|---------------------|
| Document control no. | F-03-03 |
| Product vendor | RICOH COMPANY, LTD. |
| EcoLEaf registration no. | AD-14-E476 |

| | | | | | | | |
|-----------------------|--------------------------------------|---------------------|------------------|--------------|----|-------------------|-----|
| PCR name | EP and IJ printer (PCR-ID : AD-04) | Product type | SAVIN MP C6502SP | | | | |
| LCA/LCIA in units of: | 1 product | Product weight (kg) | 241 | Package (kg) | 21 | Weight total (kg) | 262 |

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

| Product | 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) |
| | SUS | 7.35E+00 | PCB | 5.26E+00 | Press molding: Iron (kg) | 1.55E+02 | Parts assembly (kg) | 2.35E+02 |
| | Aluminum | 7.05E+00 | Steel | 1.48E+02 | Press molding: Nonferrous metal (kg) | 1.49E+01 | | |
| | Glass | 2.95E+00 | Wood | 1.15E-03 | Injection molding (kg) | 5.82E+01 | | |
| | Rubber | 4.60E-01 | | | Glass molding (kg) | 3.41E+00 | | |
| | Other metals | 7.80E+00 | | | | | | |
| | Paper | 2.13E+01 | | | | | | |
| | Thermoplastic | 5.90E+01 | | | | | | |
| | Thermosetting | 2.70E+00 | | | | | | |
| | Subtotal | 1.09E+02 | Subtotal | 1.53E+02 | | | | |
| | Total | | | 2.62E+02 | Subtotal | 2.31E+02 | Subtotal | 2.35E+02 |

Note

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

SO_x and NO_x should be indicated in SO₂, NO₂ equivalent.

| Consumption | Classification | Energy | Energy | Energy | Material | Energy | Material | | |
|--------------------|----------------|------------------------|------------------|-------------------|------------------|---|-----------------------|--|--|
| | Distribution | Electricity (kWh) | Furnace LNG (kg) | Furnace coal (kg) | Clean water (kg) | Furnace urban gas (13A) (m ³) | Industrial water (kg) | | |
| | Quantity | 9.00E+01 | 7.05E-01 | 6.04E-01 | 1.96E+02 | 1.83E+00 | 8.24E+02 | | |
| | Note | | | | | | | | |
| Emission/Discharge | Classification | Water system | | | | | | | |
| | Distribution | Sewage processing (kg) | | | | | | | |
| | Quantity | 1.02E+03 | | | | | | | |
| | Note | | | | | | | | |

Note

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

| Distribution | Means of transportation | Diesel truck: 10 ton (kg·km) | Diesel truck: 10 ton (kg·km) | Diesel truck: 10 ton (kg·km) | Diesel truck: 10 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 | 2.62E+02 | 3.80E+02 | 5.24E+01 | 1.90E+05 | 2.62E+02 | 9.02E+03 | 1.00E+02 | 2.36E+06 |
| | Note | | | | | | | | |
| | Means of transportation | Freight by rail (kg·km) | Freight by rail (kg·km) | Freight by rail (kg·km) | Freight by rail (kg·km) | Diesel truck: 20 ton (kg·km) | Diesel truck: 20 ton (kg·km) | Diesel truck: 20 ton (kg·km) | Diesel truck: 20 ton (kg·km) |
| | Conditions | Mass(kg) | Distance (km) | Loading Ratio(%w) | Load(kg·km) | Mass(kg) | Distance (km) | Loading Ratio(%w) | Load(kg·km) |
| Quantity | 2.62E+02 | 4.99E+03 | 1.00E+02 | 1.31E+06 | 2.62E+02 | 6.00E+02 | 3.39E+01 | 4.64E+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) | Styrene-butadiene rubber (SBR) (kg) | Copper plate (kg) | Zinc (kg) | Corrugated cardboard (kg) | ABS (kg) | Polycarbonate (kg) |
| | Quantity | 4.44E-02 | 6.93E-01 | 1.31E+00 | 8.13E-01 | 1.57E-03 | 6.32E+01 | 3.75E+00 | 4.57E-01 |
| | Note | | | | | | | | |
| | Classification | Consumption | Consumption | Consumption | Consumption | Consumption | Consumption | Consumption | Consumption |
| | Distribution | Polycarbonate-ABS (70/30) (kg) | PET (kg) | POM (polyacetal) (kg) | Polystyrene (kg) | Epoxy resin (EP) (kg) | Expandable hard polyurethane (Hard) (kg) | Expandable soft polyurethane (for automobile) (kg) | Electroplated steel Plate (kg) |
| | Quantity | 1.76E+00 | 1.62E+02 | 1.97E-01 | 6.22E+01 | 1.93E+00 | 6.65E-03 | 1.99E-01 | 3.25E-01 |
| | Note | | | | | | | | |
| | Classification | Consumption | Consumption | Consumption | Consumption | Consumption | Consumption | Energy | Energy |
| | Distribution | Cold-Rolled steel plate (kg) | Press molding: Iron (kg) | Press molding: Nonferrous metal (kg) | Injection molding (kg) | Glass molding (kg) | Parts assembly (kg) | Electricity (kWh) | Furnace LNG (kg) |
| Quantity | 3.64E+01 | 3.02E+01 | 1.51E+00 | 7.05E+01 | 1.31E+00 | 1.04E+02 | 6.84E+02 | 3.25E+01 | |
| Note | | | | | | | | | |

| | | | | | | | | | |
|--|----------------|------------------------------|---|-------------------------|-------------------------|------------------------------|------------------------------|-------------------------|-------------------------|
| | Classification | Condition | Energy | Material | Water system | Consumption | Consumption | Condition | Condition |
| | Distribution | Diesel truck: 10 ton (kg·km) | Furnace urban gas (13A) (m ³) | Industrial water (kg) | Sewage processing (kg) | Electricity (kWh) | Gasoline (kg) | Freight by ship (kg·km) | Freight by rail (kg·km) |
| | Quantity | 4.24E+04 | 3.40E+01 | 2.39E+02 | 2.39E+02 | 1.22E+03 | 1.54E+01 | 2.03E+06 | 1.12E+06 |
| | Note | | | | | | | | |
| | Classification | Condition | Condition | Condition | Condition | Condition | Condition | Condition | Condition |
| | Distribution | Diesel truck: 20 ton (kg·km) | Diesel truck: 10 ton (kg·km) | Freight by ship (kg·km) | Freight by rail (kg·km) | Diesel truck: 20 ton (kg·km) | Diesel truck: 10 ton (kg·km) | Freight by ship (kg·km) | Freight by rail (kg·km) |
| | Quantity | 2.17E+05 | 1.23E+03 | 5.86E+04 | 3.24E+04 | 6.29E+03 | 6.35E+04 | 9.35E+05 | 5.17E+05 |
| | Note | | | | | | | | |
| | Classification | Condition | | | | | | | |
| | Distribution | Diesel truck: 20 ton (kg·km) | | | | | | | |
| | Quantity | 1.00E+05 | | | | | | | |
| | Note | | | | | | | | |

Note

4.2 Disposition/Recycle information on consumables and replacement parts

| | | | | | | | | | |
|-------------|----------------|---------------------------------|---------------------------------|--|------------------------------|--|--|--|------------------------------------|
| Consumables | Classification | Process | Process | Process | Process | Process | Process | Process | Process |
| | Distribution | Diesel truck: 4 ton (kg·km) | Landfill: Industrial waste (kg) | Incineration to landfill (as ash) (kg) | 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) | Recycle: to cold-rolled steel (kg) |
| | Quantity | 6.10E+03 | 3.02E+01 | 6.31E+01 | 1.26E+02 | 1.26E+02 | 9.73E+01 | 9.59E+01 | 2.90E+01 |
| | Note | | | | | | | | |
| | Classification | Process | Process | Process | Deduction | Deduction | Deduction | Deduction | Process |
| | Distribution | Recycle: to Aluminum plate (kg) | Recycle: to copper plate (kg) | Recycle: to Thermoplastic pellet (kg) | Cold-Rolled steel plate (kg) | Aluminum plate (kg) | Copper plate (kg) | Polystyrene (kg) | Diesel truck: 10 ton (kg·km) |
| | Quantity | 6.65E-01 | 7.82E-01 | 6.56E+01 | 2.90E+01 | 6.65E-01 | 7.82E-01 | 6.56E+01 | 1.01E+05 |
| | Note | | | | | | | | |

Note

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

| | | | | | | | | | |
|----------|----------------|--|------------------------|-------------------------------------|--|-------------------------------|---------------------------------------|--|--|
| Scenario | Classification | Process | Process | Process | Process | Process | Deduction | Process | Process |
| | Distribution | Landfill: Industrial waste (kg) | Shredding (kg) | Incineration: Industrial waste (kg) | Incineration to landfill (as ash) (kg) | Diesel truck: 10 ton (kg·km) | High density polyethylene (kg) | Sorting: Iron (by magnetic force) (kg) | Sorting: Nonferrous metal (by eddy current with wind force) (kg) |
| | Quantity | 1.74E+01 | 2.40E+02 | 1.41E-01 | 1.88E+01 | 2.07E+05 | 4.32E-01 | 2.36E+02 | 9.13E+01 |
| | Note | | | | | | | | |
| | Classification | Process | Process | Process | Process | Process | Process | Deduction | Deduction |
| | Distribution | 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) | Glass (kg) | Cold-Rolled steel plate (kg) |
| | Quantity | 7.76E+01 | 2.95E+00 | 1.45E+02 | 6.58E+00 | 1.20E+01 | 5.58E+01 | 2.89E+00 | 1.45E+02 |
| | Note | | | | | | | | |
| | Classification | Deduction | Deduction | Deduction | | | | | |
| | Distribution | Aluminum plate (kg) | Copper plate (kg) | Polystyrene (kg) | | | | | |
| | Quantity | 6.58E+00 | 1.20E+01 | 5.53E+01 | | | | | |
| | 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.