

# Product Environmental Aspects Declaration



Data Projector (PSC-ID:AG-03)

No.AG-06-030



## EMP-1715

1. Projection System  
: RGB Liquid Crystal Shutter Projection System
2. Brightness : 2,700 ANSI Lumens
3. Pixel number : 786,432 dots (1,024 x 768) x 3  
Native Resolution : XGA (1,024×768)

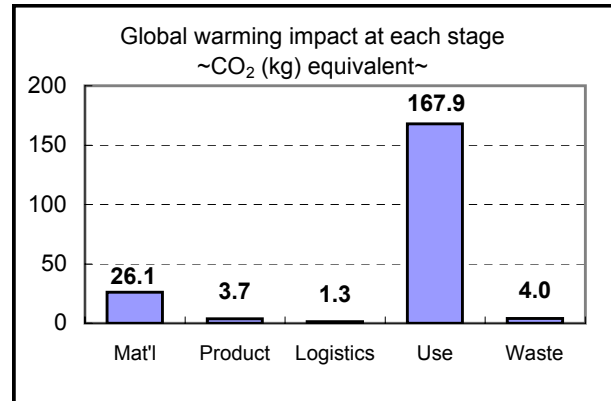
### SEIKO EPSON CORPORATION

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|                                                    | Total, all stages |
|----------------------------------------------------|-------------------|
| Global warming impact (CO <sub>2</sub> equivalent) | 203.1 kg          |
| Acidification impact (SO <sub>2</sub> equivalent)  | 0.26 kg           |
| Energy consumption                                 | 4,342 MJ          |



#### Condition during the usage

- Operating/waiting 3.5hr/day
- Days of utilization in an year 100day/yr
- Usage periods 5years

#### 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 PSC: Product Specification Criteria.  
Visit EcoLeaf website under JEMAI homepage at [http://www.jemai.or.jp/ecoleaf\\_e/](http://www.jemai.or.jp/ecoleaf_e/) for details.
3. 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.

#### [Supplemental environmental information]

- This product is assembled at an ISO14001 certified factory.
- No halogen resin is used for the housing.
- Each content of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE) to the product is compliant with the standard of J-Moss green mark.

# Product Environmental Information Data Sheet (PEIDS)



|                          |                         |
|--------------------------|-------------------------|
| Document control no.     | F-02A-02                |
| Product vendor           | Seiko Epson Corporation |
| EcoLeaf registration no. | AG-06-030               |

|                                 |     |
|---------------------------------|-----|
| Unit Function DB ver.           | 2.0 |
| Characterization Factor DB ver. | 2.0 |

|          |                |                     |      |              |          |                   |      |
|----------|----------------|---------------------|------|--------------|----------|-------------------|------|
| PSC name | Data Projector |                     |      | Product type | EMP-1715 |                   |      |
| PSC code | AG-03          | Product weight (kg) | 1.66 | Package (kg) | 2.14     | Weight total (kg) | 3.80 |

| In/Out items                             | Life Cycle Stage                          | Unit                                        | Production                              |                        | Distribution | Use      | Disposition | Total    |          |          |          |
|------------------------------------------|-------------------------------------------|---------------------------------------------|-----------------------------------------|------------------------|--------------|----------|-------------|----------|----------|----------|----------|
|                                          |                                           |                                             | Raw material                            | Product                |              |          |             |          |          |          |          |
| Energy Consumption                       |                                           |                                             | MJ                                      | 4.59E+02               | 7.73E+01     | 1.67E+01 | 3.78E+03    | 3.89E+00 | 4.34E+03 |          |          |
|                                          |                                           |                                             | Mcal                                    | 1.10E+02               | 1.85E+01     | 3.98E+00 | 9.04E+02    | 9.28E-01 | 1.04E+03 |          |          |
| Inventory analyses                       | Resource Consumption from the environment | Energy                                      | Coal                                    | kg                     | 2.39E+00     | 4.59E-01 | 9.25E-03    | 2.15E+01 | 2.71E-02 | 2.44E+01 |          |
|                                          |                                           |                                             | Crude oil (for fuel)                    | kg                     | 5.25E+00     | 5.66E-01 | 3.33E-01    | 2.43E+01 | 3.46E-02 | 3.05E+01 |          |
|                                          |                                           |                                             | LNG                                     | kg                     | 9.82E-01     | 2.30E-01 | 9.61E-03    | 1.08E+01 | 1.37E-02 | 1.20E+01 |          |
|                                          |                                           |                                             | Uranium content of an ore               | kg                     | 1.09E-04     | 3.11E-05 | 6.25E-07    | 1.46E-03 | 1.83E-06 | 1.60E-03 |          |
|                                          |                                           |                                             | Crude oil (for material)                | kg                     | 1.18E+00     | 0        | 1.36E-02    | 0        | 0        | 1.19E+00 |          |
|                                          |                                           | Exhaustible resources                       | Material                                | Iron content of an ore | kg           | 3.04E-01 | 0           | 0        | 0        | 0        | 3.04E-01 |
|                                          |                                           |                                             |                                         | Cu content of an ore   | kg           | 1.12E-01 | 0           | 0        | 0        | 0        | 1.12E-01 |
|                                          |                                           |                                             |                                         | Al content of an ore   | kg           | 9.52E-02 | 0           | 0        | 0        | 0        | 9.52E-02 |
|                                          |                                           |                                             |                                         | Ni content of an ore   | kg           | 9.62E-03 | 0           | 0        | 0        | 0        | 9.62E-03 |
|                                          |                                           |                                             |                                         | Cr content of an ore   | kg           | 1.31E-02 | 0           | 0        | 0        | 0        | 1.31E-02 |
|                                          | Mn content of an ore                      |                                             |                                         | kg                     | 1.05E-02     | 0        | 0           | 0        | 0        | 1.05E-02 |          |
|                                          | Pb content of an ore                      |                                             |                                         | kg                     | 1.01E-02     | 0        | 0           | 0        | 0        | 1.01E-02 |          |
|                                          | Sn content of an ore                      |                                             |                                         | kg                     | 0            | 0        | 0           | 0        | 0        | 0        |          |
|                                          | Zn content of an ore                      |                                             |                                         | kg                     | 1.03E-01     | 0        | 0           | 0        | 0        | 1.03E-01 |          |
|                                          | 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                     | 4.96E-01     | 0        | 0           | 0        | 0        | 4.96E-01 |          |
|                                          | Halite                                    |                                             |                                         | kg                     | 8.92E-01     | 1.65E-07 | 1.57E-05    | 0        | 1.04E-03 | 8.93E-01 |          |
|                                          | Limestone                                 |                                             |                                         | kg                     | 2.76E-01     | 0        | 1.61E-03    | 0        | 3.76E-02 | 3.15E-01 |          |
|                                          | Natural soda ash                          |                                             |                                         | kg                     | 2.69E-02     | 0        | 0           | 0        | 0        | 2.69E-02 |          |
| Renewable resources                      | Wood                                      | kg                                          | 2.67E+00                                | 0                      | 2.41E-01     | 0        | 0           | 2.91E+00 |          |          |          |
|                                          | Water                                     | kg                                          | 2.95E+03                                | 3.48E+02               | 2.18E+01     | 1.63E+04 | 2.29E+01    | 1.97E+04 |          |          |          |
| Impact assessment                        | Emission/Discharge to the environment     | to Atmosphere                               | CO <sub>2</sub>                         | kg                     | 2.55E+01     | 3.72E+00 | 1.28E+00    | 1.67E+02 | 4.01E+00 | 2.02E+02 |          |
|                                          |                                           |                                             | SOx                                     | kg                     | 2.14E-02     | 2.78E-03 | 7.65E-04    | 1.28E-01 | 2.07E-03 | 1.55E-01 |          |
|                                          |                                           |                                             | NOx                                     | kg                     | 3.50E-02     | 2.32E-03 | 6.10E-03    | 1.01E-01 | 3.87E-03 | 1.49E-01 |          |
|                                          |                                           |                                             | N <sub>2</sub> O                        | kg                     | 2.30E-03     | 7.15E-05 | 1.38E-04    | 1.83E-03 | 5.19E-06 | 4.35E-03 |          |
|                                          |                                           |                                             | CH <sub>4</sub>                         | kg                     | 2.90E-04     | 8.31E-05 | 1.68E-06    | 3.90E-03 | 4.91E-06 | 4.28E-03 |          |
|                                          |                                           |                                             | CO                                      | kg                     | 4.05E-03     | 5.57E-04 | 1.74E-03    | 2.47E-02 | 5.65E-04 | 3.17E-02 |          |
|                                          |                                           |                                             | NMVOOC                                  | kg                     | 5.66E-04     | 1.63E-04 | 3.28E-06    | 7.63E-03 | 9.61E-06 | 8.38E-03 |          |
|                                          |                                           |                                             | CxHy                                    | kg                     | 1.01E-03     | 2.87E-05 | 1.51E-04    | 3.99E-04 | 2.29E-06 | 1.59E-03 |          |
|                                          |                                           |                                             | Dust                                    | kg                     | 3.39E-03     | 1.18E-04 | 5.12E-04    | 5.46E-03 | 2.05E-04 | 9.68E-03 |          |
|                                          |                                           |                                             | to Water system                         | BOD                    | kg           | —        | —           | —        | —        | —        | —        |
|                                          | COD                                       | kg                                          |                                         | —                      | —            | —        | —           | —        | —        |          |          |
|                                          | N total                                   | kg                                          |                                         | —                      | —            | —        | —           | —        | —        |          |          |
|                                          | P total                                   | kg                                          |                                         | —                      | —            | —        | —           | —        | —        |          |          |
|                                          | SS                                        | kg                                          |                                         | —                      | —            | —        | —           | —        | —        |          |          |
|                                          | to Soil system                            | Unspecified Solid Waste                     | kg                                      | 2.28E-01               | 4.67E-07     | 2.30E-02 | 0           | 1.30E+00 | 1.55E+00 |          |          |
|                                          |                                           | Slag                                        | kg                                      | 4.97E-01               | 0            | 0        | 0           | 0        | 4.97E-01 |          |          |
|                                          |                                           | Sludge                                      | kg                                      | 1.86E-01               | 0            | 0        | 0           | 0        | 1.86E-01 |          |          |
|                                          |                                           | Low level radio-active waste                | kg                                      | 7.65E-05               | 2.17E-05     | 4.37E-07 | 1.02E-03    | 1.28E-06 | 1.12E-03 |          |          |
|                                          | by Resource Consumption                   | Exhaustible resources                       | Energy resources (crude oil equivalent) | kg                     | 8.86E+00     | 1.39E+00 | 3.56E-01    | 6.31E+01 | 8.35E-02 | 7.38E+01 |          |
|                                          |                                           |                                             | Mineral resources (Iron ore equivalent) | kg                     | 4.52E+01     | 0        | 7.50E-03    | 0        | 0        | 4.52E+01 |          |
| by Emission/Discharge to the environment | to Atmosphere                             | Global Warming (CO <sub>2</sub> equivalent) | kg                                      | 2.61E+01               | 3.74E+00     | 1.31E+00 | 1.68E+02    | 4.01E+00 | 2.03E+02 |          |          |
|                                          |                                           | Acidification (SO <sub>2</sub> equivalent)  | kg                                      | 4.59E-02               | 4.40E-03     | 5.03E-03 | 1.99E-01    | 4.78E-03 | 2.59E-01 |          |          |

## Notes:

## 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).

## 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<sub>2</sub> 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".  
 D. Row total of the data is automatically calculated, excluding a row includes "—" item. Row total of such is presented as a blank (no data).  
 Note: BGD for material production are for production from mineral ore. Those data do not include reclaiming processes like recovery from scrap.

## Explanation:

1. "Production" stage  
 According to the PSC, glass coating processing is calculated by using the basic unit of the parts assembly.

# Product data sheet

(Input data and parameters for LCA)



|                          |                         |
|--------------------------|-------------------------|
| Document control no.     | F-03-02                 |
| Product vendor           | Seiko Epson Corporation |
| EcoLEaf registration no. | AG-06-030               |

|                       |                               |                     |          |              |      |                   |      |
|-----------------------|-------------------------------|---------------------|----------|--------------|------|-------------------|------|
| PSC name              | Data Projector (PSC-ID:AG-03) | Product type        | EMP-1715 |              |      |                   |      |
| LCA/LCIA in units of: | 1                             | Product weight (kg) | 1.66     | Package (kg) | 2.14 | Weight total (kg) | 3.80 |

## 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)     |
|         | Steel                          | 1.68E-01    | Paper                   | 1.24E+00        | Press molding:Iron                                                                         | 2.28E-01        | Parts assembly  | 1.23E+00        |
|         | Stainless steel                | 6.08E-02    | Semiconductor substrate | 2.97E-01        | Press molding: Nonferrous meta                                                             | 2.62E-01        |                 |                 |
|         | Aluminum                       | 8.19E-02    | Battery                 | 2.30E-02        | Injection molding                                                                          | 1.43E+00        |                 |                 |
|         | Other metals                   | 1.80E-01    | Medium-sized motor      | 9.69E-02        | Glass molding                                                                              | 2.34E-01        |                 |                 |
|         | Thermoplastic resin            | 1.21E+00    |                         |                 | Glass coating                                                                              | 2.34E-01        |                 |                 |
|         | Thermosetting resin            | 2.11E-01    |                         |                 |                                                                                            |                 |                 |                 |
|         | Rubber                         | 7.87E-03    |                         |                 |                                                                                            |                 |                 |                 |
|         | Glass                          | 2.34E-01    |                         |                 |                                                                                            |                 |                 |                 |
|         | Subtotal                       | 2.15E+00    | Subtotal                | 1.65E+00        |                                                                                            |                 |                 |                 |
|         | <b>Total</b>                   |             | <b>Subtotal</b>         | <b>3.80E+00</b> | <b>Subtotal</b>                                                                            | <b>2.38E+00</b> | <b>Subtotal</b> | <b>1.23E+00</b> |

Notes: The mass of the material which can be classified in every material and have no Basic Units is proportionally distributed by the mass of each material group.

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

SO<sub>x</sub> and NO<sub>x</sub> should be indicated in SO<sub>2</sub>, NO<sub>2</sub> equivalent.

| Consumption        | Classification | Energy                 | Energy                  | Material         |  |  |  |  |  |
|--------------------|----------------|------------------------|-------------------------|------------------|--|--|--|--|--|
|                    | Distribution   | Electricity (kwh)      | Diesel oil as fuel (kg) | Clean water (kg) |  |  |  |  |  |
|                    | Quantity       | 5.90E+00               | 4.68E-02                | 2.84E-02         |  |  |  |  |  |
|                    | Note           |                        |                         |                  |  |  |  |  |  |
| Emission/Discharge | Classification | Water system           |                         |                  |  |  |  |  |  |
|                    | Distribution   | Sewage processing (kg) |                         |                  |  |  |  |  |  |
|                    | Quantity       | 2.84E-02               |                         |                  |  |  |  |  |  |
|                    | Note           |                        |                         |                  |  |  |  |  |  |

Notes:

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

| Distribution                    | Means of transportation | Diesel truck:10 ton                             |              | Diesel truck:4 ton     |                      | Freight by ship                        |              |  |  |
|---------------------------------|-------------------------|-------------------------------------------------|--------------|------------------------|----------------------|----------------------------------------|--------------|--|--|
|                                 | Conditions              | Loading Ratio (%w)                              | Load (kg·km) | Loading Ratio (%w)     | Load (kg·km)         | Loading Ratio (%w)                     | Load (kg·km) |  |  |
|                                 | Quantity                | 68%                                             | 2.67E+03     | 77%                    | 6.17E+02             | —                                      | 1.14E+04     |  |  |
|                                 | Note                    | Distance=475km                                  |              | Distance=125km         |                      | Distance=3000km                        |              |  |  |
| consumptions and emissions/disc | Classification          | Materials                                       |              | Process                | Process: Disposition |                                        |              |  |  |
|                                 | Distribution            | Thermoplastic resin (kg)                        | Paper (kg)   | Injection molding (kg) | Shredding (kg)       | Incineration to landfill (as ash) (kg) |              |  |  |
|                                 | Quantity                | 1.37E-02                                        | 1.13E-01     | 1.37E-02               | 1.27E-01             | 1.27E-01                               |              |  |  |
|                                 | Note                    | Transportation parts for traffic transportation |              |                        |                      |                                        |              |  |  |

Notes: The land and marine transportation load from an overseas manufacture site to Japan are added up.  
The transportation distance in Japan is calculated on the basis of 500 km that are the prescription value of PSC.

## 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 | Energy            |  |  |  |  |  |  |  |
|---------|----------------|-------------------|--|--|--|--|--|--|--|
|         | Distribution   | Electricity (kwh) |  |  |  |  |  |  |  |
|         | Quantity       | 4.02E+02          |  |  |  |  |  |  |  |
|         | Note           |                   |  |  |  |  |  |  |  |

Notes: According to the PSC, the conditions are as follows:

Use mode:

- 1)Condition during the usage.: Operating/waiting 3.5hr/day, Days of utilization in an year 100day/yr, •High Brightness mode
- 2)Condition during the OFF.:Power Cable is plugged out while not using
- 3)Usage periods: 5 years

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

| Scenario | Classification | Process        | Process                                | Process                      |  |  |  |  |  |
|----------|----------------|----------------|----------------------------------------|------------------------------|--|--|--|--|--|
|          | Distribution   | Shredding (kg) | Incineration to landfill (as ash) (kg) | Landfill: General waste (kg) |  |  |  |  |  |
|          | Quantity       | 3.80E+00       | 2.96E+00                               | 8.43E-01                     |  |  |  |  |  |
|          | Note           |                |                                        |                              |  |  |  |  |  |

Notes These figures in this table mean the environmental burden when products are disposed.