SuMPO EPD JAPAN VERIFIED

SuMPO EPD Japan

Third party verified

Environmental Product Declaration

In conformance with

ISO14025 | ISO14040 | ISO14044

RISO KAGAKU CORPORATION

# ORPHIS GN9831



| Registration number | Verificartion date | Publication date | Expiration date | EPD type |
|---|---|---|---|---|
| SuMPO-EPD-2606-176-1 | 2026/6/5 | 2026/6/30 * First publication date | 2031/6/4 | Single Product EPD |

**Additional standards in conformance**

None

EPD can be updated or withdrawn during the validity period. To confirm the validity of this EPD, check the following website:
https://ecoleaf-label.jp/epd/search

# ●General Information

## ＞Programme

| | |
|---|---|
| Programme name | SuMPO EPD Japan |
| Programme operator | Sustainable Management Promotion Organization (SuMPO) |
| Address | KANDA SQUARE GATE 4F, 14-8, Uchikanda 1-chome, Chiyoda-ku, Tokyo, 101-0047, Japan |
| Website | https://ecoleaf-label.jp |

## ＞GPI and PCR

| | |
|---|---|
| GPI | SuMPO EPD Japan General Program Instructions v.2.1.1 |
| PCR name | Imaging input and/or output equipment |
| PCR registration number | SuMPO-PCR-02001-9-0-0 |
| PCR publication date | 2025/10/17 |
| PCR review panel chair | Ken Yamagishi（LCA expert center Co., Ltd.） |
| PCR valid until | 2030/10/16 |
| PCR issuer | Sustainable Management Promotion Organization (SuMPO) |

## ＞Verification

| | | | |
|---|---|---|---|
| Verification Type | Third-party verification in conformance with ISO14025 | | |
| | ☐ Internal | ■ External | |
| | ■ Third-party verification by individual verifier | ☐ Third-party verification by verification body | ☐ Third-party verification by system certification |
| Verifier | E-Compass Co., Ltd. Shinichi Inoue | | |

## ＞Standards

| | | | |
|---|---|---|---|
| Standards in conformance with; | ■ ISO14040:2006 | ■ ISO14044:2006 | ☐ ISO14067:2018 |
| | ■ ISO14025:2006 | ☐ ISO21930:2007 | ☐ ISO21930:2017 |
| | ☐ EN15804+A2 | ☐ EN50693:2019 | ☐ ISO/IEC63366:2025 |

EPD owner is responsible for the information contained in the EPD and for environmental claims related to the information. For any inquiries or requests regarding the content of the EPD, please contact the EPD owner.

EPDs are comparable only if they comply with this document, use the same sub-PCR where applicable, include all relevant information and are based on equivalent scenarios. Comparability of EPDs is limited to those applying a functional unit.

The LCIA results are relative expressions and do not predict impacts on category endpoints, the exceedance of thresholds, safety margins or risks.

When using weighted averages for calculation, the life cycle impact assessment results, life cycle inventory analysis-related information, waste-related information, and environmental information on output flows do not correspond to information about a specific product.

# ●EPD Owner's Information

| | |
|---|---|
| Name of company and dept. | RISO KAGAKU CORPORATION |
| Address | Riso Research and Design Center, 2-8-1 Gakuen-minami, Tsukuba-shi, Ibaraki 305-0818, Japan |
| Contact | +81-29-850-5314 |
| LCA practitioner | Kazuki Nomura（Product Environment Section） |
| Company description | Business Operations: Development, manufacturing, and sales of high-speed inkjet printer "ORPHIS," digital duplicator "RISOGRAPH," along with related hardware, equipment, and consumables. |

## Product Information

| | | | | |
|---|---|---|---|---|
| Product name | | ORPHIS GN9831 | | |
| Product /model number | | GN9831 | | |
| Product sepcification | Mass | 192kg | Conversion factor | None |
| | Function | High-Performance Inkjet Printer | | |
| | Applications | Print office documents like meeting materials at high speed and low cost. | | |
| | TS* | - | | |
| RSL (Reference Service Life) | Service life | 5 years | | |
| | In-use conditions | TEC measurement conditions comply with the International ENERGY STAR Program's operational rules (specifically, Table 2-3: Measurement Method for Imaging Equipment under the Operational Rules of the International ENERGY STAR Program for Imaging Equipment, effective June 1, 2020). | | |
| | reference | Based on the estimated period of use for printers and multi-function devices (High performance Inkjet) as defined in the PCR for Imaging Equipment. | | |
| Manufacturing site(s) | | Tsukuba Works | | |
| Product description | | Product Type: High-Performance Inkjet Printer<br>Maximum paper size :340 mm × 550 mm (Straight Feed / Simplex)<br>Printing Method: High-Performance Inkjet | | |
| Website | | https://www.riso.co.jp/index.html | | |

* TS: technical specifications,

## Product Content

| Product components | Propotion (%) | Mass (unit) | |
|---|---|---|---|
| SUS | 1.6 | 2.54 | kg |
| Aluminium | 5.3 | 8.32 | kg |
| Rubber | 0.2 | 0.31 | kg |
| Others | 0.1 | 0.14 | kg |
| Other Metals | 1.1 | 1.72 | kg |
| Plastic | 20.4 | 32.27 | kg |
| Paper, Wood | 0.2 | 0.39 | kg |
| Circuit Board | 6.2 | 9.79 | kg |
| Copper | 7.1 | 11.15 | kg |
| Steel | 57.8 | 91.38 | kg |
| Packaging materials | Propotion (%) | Mass (unit) | |
| Rubber | 0.0 | 0.00 | kg |
| Plastic | 6.8 | 2.30 | kg |
| Paper, Wood | 50.7 | 17.25 | kg |
| Cardboard | 42.5 | 14.45 | kg |
| Steel | 0.0 | 0.00 | kg |
| | | | kg |

## Biogenic Carbon Content

| Item | Content (kg-C) | Content (kg-$CO_2$ eq) |
|---|---|---|
| Biogenic carbon content per product | – | – |
| Biogenic carbon content in packaging | – | – |

# ●LCA-related Information

## ＞EPD Type Information

| | | | | | |
|---|---|---|---|---|---|
| EPD type | Product type | ■ Single product EPD | ☐ Multiple products EPD | ☐ Industry-wide EPD | |
| | Site type | ■ Single site | ☐ Multiple sites | | |
| | Value | ■ Specific | ☐ Average | ☐ Representative | ☐ Worst case |
| Geographical coverage | | Japan | | | |
| Description of representativeness for multiple-products/sites EPD | | – | | | |
| Description of variation for multiple-products/sites EPD | | – | | | |
| Description of products covered in the multiple products EPD | | – | | | |

## ＞LCA Information

| | | | |
|---|---|---|---|
| Declared unit | | 1unit | |
| Mass per declared unit (Conversion factor to mass) | | 192kg | |
| Reference flow (number of products required to fulfil the function) | | – | |
| System boundary | | ☐ Cradle-to Gate | ☐ Cradle-to-Gate with options ■ Cradle-to-Grave |
| LCA software | | MiLCA Ver.3.1 | |
| LCI database | | AIST-IDEAv3.1 | |
| Characterization model | | LIME2、IPCC 2013 GWP 100a | |
| Use of other background data | | – | |
| Secondary data quality | | Calculations were conducted using data that meet the secondary data quality requirements specified in the GPI. | |
| Primary data collection sites | | Tsukuba Works | |
| Primary data collection period | | April 1, 2024 – March 31, 2025 | |
| Biogenic carbon | | ■ 0/0 approach | ☐ -1/+1 approach |
| Information about electricity | Use | ■ Average consumption mix | ☐ Others |
| | Type | | |
| | Purchase date | | |
| | Issuing body | | |

## ＞Life Cycle Stages

| Raw materials acquisition stage | Production stage | Distribution stage | Use stage | End of life stage |
|---|---|---|---|---|
| ■ | ■ | ■ | ■ | ■ |

■ : declared stage　　– : stage not declared

## ＞Allocation

In this calculation, process subdivision and allocation were examined following the procedures outlined in the GPI. In the manufacturing processes for the main unit and ink, other inkjet printer products are generated as co-products. Since avoiding allocation through process subdivision was difficult, and the economic value of the product in this application is equivalent to that of the other inkjet printers from the same process, physical allocation was applied.

## ＞Cut-off rules

Transport-related impacts for components, raw materials, packaging, and accessories.

## ＞System Boundary

【Target Life Cycle Stages】
The assessment covers all mandatory life cycle stages: Raw Material Acquisition, Manufacturing, Distribution, Use and Maintenance, and End-of-Life (Final Treatment).

【Temporal System Boundary】
The temporal boundary for the system is set at 100 years, beginning from the year of primary data collection.

## ＞Scenario

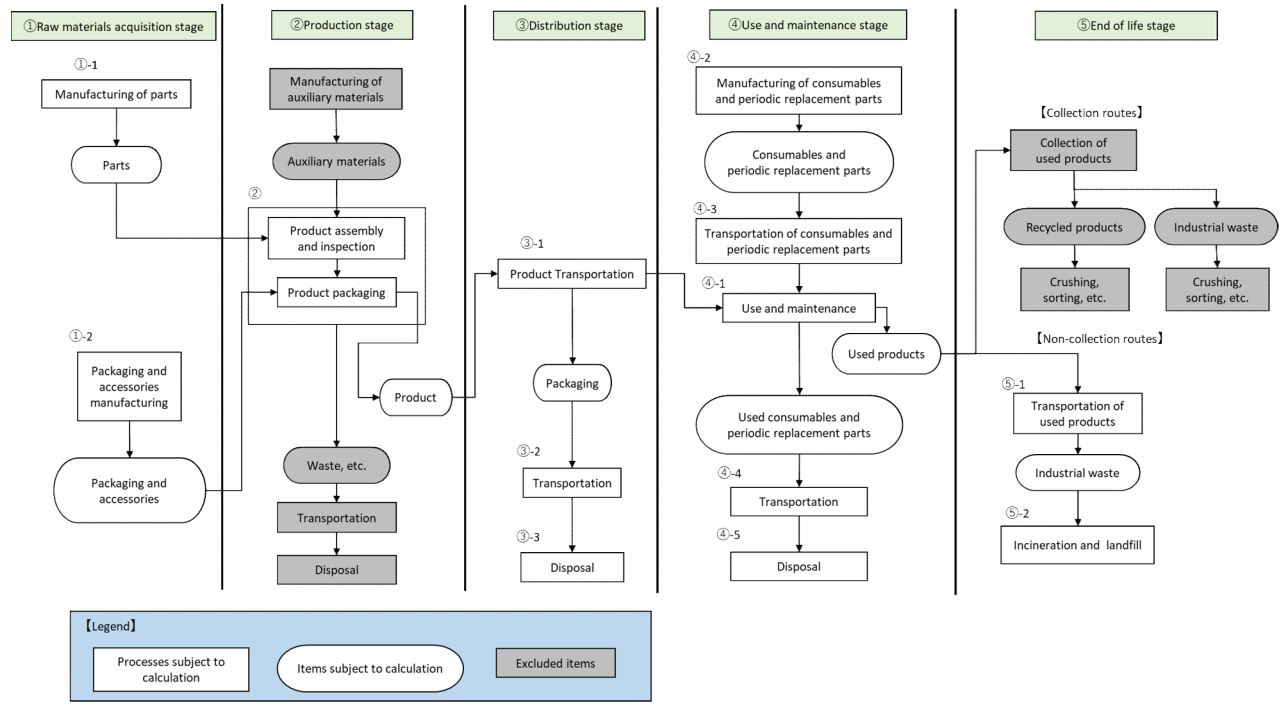
【Distribution Stage, Use and Maintenance Stage】
Transportation Mode & Loading Rate: PCR scenarios applied.
Transportation Distance: Both PCR and internal company scenarios applied.
【End-of-Life Stage】
Transportation Mode, Loading Rate, & Distance: PCR scenarios applied.

## ＞Electricity Modelling

【Calculation Data Sources】
All stages:Grid Electricity, Japan Average (FY2018)

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## ＞Life Cycle Sytem Diagram



# ●LCA Result

## ＞LCIA Indicators

| | | Total | Raw materials acquisition stage | Production stage | Distribution stage | Use stage | End of life stage |
|---|---|---|---|---|---|---|---|
| GWP | kg-$CO_2$eq | 1.83E+03 | 1.08E+03 | 6.26E+01 | 2.60E+01 | 5.68E+02 | 9.77E+01 |
| Ozone layer depletion | kg-CFC-11eq | 3.44E-04 | 2.11E-04 | 8.82E-06 | 9.99E-07 | 1.23E-04 | 1.16E-06 |
| Acidification | kg-$SO_2$eq | 2.06E+00 | 1.15E+00 | 4.67E-02 | 1.01E-01 | 6.84E-01 | 7.68E-02 |
| Urban air pollution | kg-$SO_2$eq | 1.46E+00 | 8.55E-01 | 3.18E-02 | 5.03E-02 | 4.81E-01 | 4.34E-02 |
| Photochemical oxidants | kg-$C_2H_4$eq | 5.00E-02 | 3.71E-02 | 7.57E-04 | 1.70E-04 | 1.18E-02 | 1.56E-04 |
| Hazardous chem. - carcinogenic | kg-$C_6H_6$eq | 1.82E+00 | 1.54E+00 | 9.53E-04 | 1.88E-02 | 2.37E-01 | 1.88E-02 |
| Hazardous chem. - chronic | kg-$C_6H_6$eq | 4.11E-02 | 3.25E-02 | 2.00E-04 | 5.85E-05 | 8.31E-03 | 4.72E-05 |
| Aquatic ecotoxicity | kg-$C_6H_6$eq | 8.68E+00 | 6.79E+00 | 7.11E-02 | 8.06E-03 | 1.81E+00 | 1.02E-02 |
| Terrestrial ecotoxicity | kg-$C_6H_6$eq | 1.82E+02 | 1.08E+02 | 1.73E+00 | 1.90E-01 | 7.11E+01 | 2.20E-01 |
| Eutrophication | kg-$PO_4^{3-}$eq | 1.17E+00 | 9.55E-02 | 2.22E-06 | 3.33E-06 | 1.08E+00 | 3.65E-06 |
| Land use - maintenance | $m^2$/year | 1.75E+02 | 1.16E+02 | 1.82E-01 | 9.81E-01 | 5.79E+01 | 2.54E-01 |
| Land use - modification | $m^2$ | 1.44E+00 | 4.12E-01 | 5.02E-03 | 1.97E-02 | 9.97E-01 | 5.23E-03 |
| Resource consumption | kg-Sbeq | 1.18E-01 | 1.11E-01 | 3.66E-04 | 8.44E-05 | 5.81E-03 | 7.06E-05 |

## ＞LCI

| | | Raw materials acquisition stage | Production stage | Distribution stage | Use stage | End of life stage |
|---|---|---|---|---|---|---|
| Use of non-renewable resources | kg | 2.05E+02 | 4.85E-01 | 2.26E+00 | 2.13E+01 | 2.27E+00 |
| Use of non-renewable energy | kg | 4.39E+02 | 2.24E+01 | 5.82E+00 | 2.33E+02 | 4.73E+00 |
| Use of non-renewable energy | MJ | 1.75E+04 | 9.57E+02 | 2.53E+02 | 9.64E+03 | 2.03E+02 |
| Use of renewable resources | kg | 2.36E+02 | 3.90E-02 | 1.89E-02 | 1.19E+02 | 2.04E-02 |
| Use of renewable energy | MJ | 2.54E+03 | 2.33E+02 | 2.56E+01 | 1.62E+03 | 2.96E+01 |
| Consumption of freshwater resources | $m^3$ | 9.66E+01 | 5.63E-03 | 5.27E-03 | 3.50E+01 | 6.21E-03 |

## ＞Waste Indicators

| | | Raw materials acquisition stage | Production stage | Distribution stage | Use stage | End of life stage |
|---|---|---|---|---|---|---|
| hazardous waste disposed | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| non-hazardous waste disposed | kg | 4.43E+01 | 4.44E-03 | 1.28E-01 | 1.08E+01 | 1.26E+02 |
| Municipal waste, landfill | kg | 1.49E-04 | 1.69E-12 | 1.76E-12 | 1.17E-06 | 2.32E-12 |
| Industrial waste, landfill | kg | 4.43E+01 | 4.44E-03 | 1.28E-01 | 1.08E+01 | 1.26E+02 |

*It indicates the amount of waste generated throughout the lifecycle.

## ＞Output Flow Indicators

| | | | Raw materials acquisition stage | Production stage | Distribution stage | Use stage | End of life stage |
|---|---|---|---|---|---|---|---|
| Components for reuse | | kg | – | – | – | – | – |
| Materials for recycling | | kg | – | – | – | – | – |
| Material for energy recovery | | kg | – | – | – | – | – |
| Exported energy from waste (energy recovery efficiency≧60%) | | MJ | – | – | – | – | – |
| Incineration of waste (energy recovery efficiency＜60%) | Waste disposed | kg | – | – | – | – | – |
| | Recovered energy | MJ | – | – | – | – | – |
| Waste disposed in landfill and energy recoved from landfill gas | Waste disposed | kg | – | – | – | – | – |
| | Recovered energy | MJ | – | – | – | – | – |

### ＞Description of LCA Results

Since generic values (emission factors) are used, the specific characteristics of the materials used in this product may not be fully reflected. Therefore, please use these results as an approximation.

・Product destination: Japan
・Calculation method for use and maintenance stage: Based on PCR scenarios
・Assumed product lifespan: 5 years
・Total lifetime print volume: 4,857,600 sheets
・Applied International ENERGY STAR Program version: Version 3.2
・Environmental impact of printing paper during the use and maintenance stage is not included.
・Product selected for the impact calculation scenario: High-Performance Inkjet

## ●Additional Environmental Information

### ＞Additional Environmental Information not related to LCA

### ＞Information on Hazardous Substances

| Hazardous materials name | CAS No. | Standards or regulations |
|---|---|---|
| | | |
| | | |
| | | |

## ●Definitions of Terms

## ●References

・ISO14025:2006 Environmental labels and declarations — Type III environmental declarations — Principles and procedures
・ISO14040:2006 Environmental management - Life Cycle Assessment - Principles and framework
・ISO14044:2006 Environmental management - Life Cycle Assessment - Requirements and guidelines

## ●Version History