Eco Mark Product Category No.102

"Printing Ink Version 2.8"
Certification Criteria

—Applicable Scope—

A: Offset lithographic ink and news ink
- Offset lithographic ink
- News ink

B: Gravure ink
- Printing inks classified as "gravure ink," excluding gravure ink for publishing.

C: Resin typographic ink

D: Other inks
- Of those classified as "Other inks," paper printing inks dried by UV-curing, and offset lithographic gold and silver inks

Established: December 18, 2002
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Japan Environment Association
Eco Mark Office

NOTE: This document is a translation of the criteria written in Japanese. In the event of dispute, the original document should be taken as authoritative.

Eco Mark Product Category No.102

"Printing Ink Version 2.8" Certification Criteria

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1. Purpose of Establishing Certification Criteria

Japan produced 446,351 tons of printing ink in 2000, the second largest volume in the world after the U.S. Purpose of use is extensive, ranging from paper to food packaging and building materials. Particularly, in the information–oriented society that we live in, printing ink is indispensable for information media such as newspapers and magazines.

Some types of printing ink contain volatile organic compounds (VOCs) for melting resin, and these VOC components may vaporize or disperse during the printing process. Many VOCs have adverse effects on the human body such as autonomic imbalance, headache, and nausea. Some chemical substances such as toluene and xylene have been found to affect nervous system and reproduction functions when inhaled or exposed to them. In addition to photochemical reaction in air caused by photochemical oxidants, health-related issues such as hypersensitivity to chemical substances have been raised in recent years, making it an important task to reduce VOC discharge from sources such as factories. Manufacturers of printing ink have been making efforts to ensure the safety of the work environment by switching to aromatic hydrocarbon-free and toluene-free solvents, as well as efforts to reduce VOC discharge by switching to water-based ink.

Eco Mark Product Category No. 102 "Offset Printing Ink", established in 1997, covers "offset lithographic ink" and "news ink", recommending a change to aroma-free offset printing ink. As a result, over the last five years from the establishment of certification criteria, about 90% of all offset printing inks have been switched to products that do not contain aromatic hydrocarbons (estimate by Japan Printing Ink Makers' Association), thereby contributing to the reduction of air pollution. In the present product category review, printing ink with further reduced VOC content including inks that have not been covered before are recommended to further contribute to the prevention of air pollution and improvement of the work environment in the printing process. Printing inks that use vegetable oil for vehicle are also recommended since they will reduce VOC discharge and also help avoid the use of depleting petroleum resources. This Product Category also covers oil-based printing inks made of vegetable oil.

2. Applicable Scope

Applicable products shall be the following groups of printing ink according to the product category of printing ink in Kagaku-kougyo-toukei-nenpo, issued by METI.

A: Offset lithographic ink and news ink

- Offset lithographic ink

- News ink

B: Gravure ink
- Printing inks classified as “gravure ink,” excluding gravure ink for publishing.

C: Resin typographic ink

D: Other inks
- Of those classified as “Other inks,” paper printing inks dried by UV-curing, and offset lithographic gold and silver inks

3. Terminology

Content rate	The percentage (%) used to indicate content rate in these certification criteria shall be weight percentage unless specified otherwise.
Recycled material	Materials made of post-consumer materials or pre-consumer materials (waste edible oil, etc.)
Post-consumer materials	Materials and products disposed after use as products
Pre-consumer materials	Materials or defective products disposed in the manufacturing process. However, this excludes materials and products recycled in the same process (or plant)
Resin	Polymeric components used as components of printing ink
Vegetable oil	Linseed oil, tung oil, soybean oil, and dehydrated castor oil.
VOC (Volatile Organic Compound) components	These are volatile organic compounds classified as “highly volatile organic compounds” and “volatile organic compounds” in the classification of chemical substances by WHO (World Health Organization)
Aromatic components	Aromatic hydrocarbon compounds detected from ink solvent by applying the Testing method of component-JIS liquid petroleum products (JIS K2536)

4. Certification Criteria and Certification Procedure

4-1. Common Environmental Criteria and Certification Procedure

(1) Use of chemical substances shall be controlled appropriately. Specifically, the MSDS (Material Safety Data Sheet) for printing inks shall be provided according to the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof

[Certification Procedure]
The MSDS (Material Safety Data Sheet) issued by printing ink manufacturers shall be submitted.

(2) Substances restricted by the Japan Printing Ink Maker’s Association’s “Self-imposed Controls on Printing Ink (Negative List Control)” shall not be added as components.

[Certification Procedure]
Certificates stating compliance to Negative List regulations shall be submitted (Printing Ink Blend Certificate).

(3) The energy used in the manufacture of printing ink shall not be more than that of conventional products.

[Certification Procedure]
The average amount of energy used in the manufacturing of the printing ink to be examined shall be indicated compared with conventional products (attached certificate).

(4) In manufacturing the applied product, related environmental laws and regulations and pollution control agreement (hereinafter referred to as the "Environmental Laws, etc.") must be followed with respect to air pollution, water contamination, noise, offensive odor, and emission of hazardous substances in the area where the plant performing the final manufacturing process is located.
In addition, the state of compliance with the Environmental Laws, etc. for the past five years from the date of application (whether there is any violation) must be reported. If there is any violation, proper remedies and preventive measures shall have been already taken, and the related Environmental Laws, etc. must thereafter be followed appropriately.

[Certification Procedure]
With respect to the compliance with the Environmental Laws, etc. in the area where the plant performing the final manufacturing process is located, a certificate issued by the representative of the business of manufacturing the applied product or the relevant plant manager (entry or attachment of a list of names of the Environmental Laws, etc.) must be submitted.
In addition, the applicants shall report whether there is any violation in the past five years, including a violation subject to administrative punishment or administrative guidance, and if there is, the following documents in a and b must be submitted:

a. With respect to the fact of violation, guidance documents from administrative agencies (including order of correction and warning) and copies of written answers (including those reporting causes and results of correction) to such documents (clearly indicating a series of communication);
b. Following materials (copies of recording documents, etc.) concerning the management system for compliance with the Environmental Laws, etc. in 1)-5):
   1) List of the Environmental Laws, etc. related to the area where the plant is located;
   2) Implementation system (organizational chart with roles, etc.);

3) Bylaws stipulating retention of recording documents;
4) Recurrence prevention measures (future preventive measures);
5) State of implementation based on recurrence prevention measures (result of checking of the state of compliance, including the result of onsite inspection).

(5) To provide the printing manufacturer with information on the appropriate handling of printing ink, the MSDS, instruction manual, product label, and product pamphlet shall include the form of measures to prevent contact of printing ink with skin, emergency measures in the event printing ink enters the eye, precautions on handling and storage.

[Certification Procedure]
Indications of information on appropriate handling of printing ink shall be submitted.

(6) Resin containing halogen elements shall not be added to printing ink as components. This criterion does not apply to colorants, fluorine additives, and printing ink for film.

[Certification Procedure]
Whether resins containing halogen elements (excluding colorants, fluorine additives) are used shall be indicated (attached certificate).

(7) The quality of drying in the printing process of the printing ink to be examined should not be considerably inferior to conventional printing inks of the same type.

[Certification Procedure]
Test results certifying that the quality of drying in the printing process of the printing ink applying is not considerably inferior to conventional products shall be submitted.

4-2. Individual Environmental Criteria and Certification Procedure

A. Offset lithographic ink and news ink

(8) Offset lithographic and news ink shall only use solvents containing aromatic components detected by the JIS K2536 method less than 1% of the total volume.

[Certification Procedure]
Results of tests on solvent components by chromatography, etc. and analysis method, or certificates of tests results issued by solvent suppliers shall be submitted in the form of document signed by the applicant. The results of test shall also be included in Printing Ink Blend Certificate.

(9) Offset lithographic and news ink shall use vegetable oil or recycled material (waste edible oil, etc.), and shall meet the following criterion (a) or (b).

(a) Offset rotary ink shall contain petroleum solvent less than 45% of the total.

(b) Sheet-fed ink and news ink shall contain petroleum solvent less than 30% of the total, and less than 3% VOC components.

[Certification Procedure]
A certificate to be issued by an ink company shall state a kind of vegetable oil (i.e., soy bean oil, linseed oil, tung oil, etc.). If any recycled material (waste edible oil, etc.) is used, a raw material certificate issued by a supplier shall be submitted.
For an amount of petroleum solvent contained in printing ink, attach an MSDS stating the amount of solvent and a certificate issued by an ink manufacturer stating the maximum blended amount of solvent (if more than one color is used).
For a method of determining quantity of VOC components in printing ink, attach test result by gas chromatograph, etc., and a certificate stating an amount of VOC components in ink to be calculated from the amount of VOC components of the solvent alone. In addition, if more than one color is used, an amount of a maximum VOC component shall be stated.
In addition, a blend certificate of printing ink shall be submitted. The certificate shall list a person in charge of management of Eco Mark products, and show that each amount to be blended into a product is specified in a batch card/job order and controlled/checked.

(10) In the recycling of printed matter using the printing ink for the production of recycled paper, the environmental load in de-inking shall not be greater than that of conventional oil-based printing inks.

[Certification Procedure]
Certificates of test results, etc. issued by the plant manufacturing recycled paper or by industrial test centers shall be submitted.

B. Gravure ink

(11) Gravure ink shall contain aromatic organic solvents less than 1% of the total.

[Certification Procedure]
For an amount of aromatic organic solvent in printing ink, attach an MSDS stating the amount of solvent or test results and a certificate issued by an ink manufacturer stating the maximum blended amount of solvent (if more than one color is used).
In addition, submit a blend certificate of printing ink. The certificate shall list a person in charge of management of Eco Mark products, and show that each amount to be blended into a product is specified in a batch card/job order and controlled/checked.

(12) Gravure ink shall contain less than 20% VOC components, and it shall be designed so that printing can be carried out at less than 30% VOC components. However, this criterion does not apply to solvent-based gravure ink for film.

[Certification Procedure]
For a method of determining quantity of VOC components in printing ink, attach test result by gas chromatograph, etc., and a certificate stating an amount of VOC components in ink to be calculated from the amount of VOC components of the solvent alone. In addition, if more than one color is used, an amount of a maximum VOC component shall be stated.
In addition, submit a blend certificate of printing ink. The certificate shall list a person in charge of management of Eco Mark products, and show that each amount to be blended into a product is specified in a batch card/job order and controlled/checked.
The location of indications explaining that products have been designed so that printing can be carried out at less than 30% VOC components in the instruction manual, product labels, or pamphlets shall be submitted.

(13) Solvent-based gravure ink shall not contain toluene and xylene.

[Certification Procedure]
Certificates stating whether or not toluene or xylene has been added shall be submitted. (Printing Ink Blend Certificate)

C. Resin typographic ink
(14) The content of aromatic organic solvents in printing ink shall be less than 1% of the total.

[Certification Procedure]
Submit a certificate issued by an ink manufacturer stating the amount of aromatic organic solvent in printing ink. If any solvent other than water-based, aromatic, and aliphatic solvent is used, submit test results by gas chromatograph, etc.
In addition, submit a blend certificate of printing ink. The certificate shall list a person in charge of management of Eco Mark products, and show that each amount to be blended into a product is specified in a batch card/job order and controlled/checked.

(15) Resin typographic ink shall contain shall contain less than 5% VOC components. However, those for film shall contain less than 20% VOC components, and it shall be designed so that printing can be carried out at less than 30% VOC components.

[Certification Procedure]

For a method of determining quantity of VOC components in printing ink, attach test result by gas chromatograph, etc., and a certificate stating an amount of VOC components in ink to be calculated from the amount of VOC components of the solvent alone. In addition, if more than one color is used, an amount of a maximum VOC component shall be stated.
In addition, submit a blend certificate of printing ink. The certificate shall list a person in charge of management of Eco Mark products, and show that each amount to be blended into a product is specified in a batch card/job order and controlled/checked.
The location of indications explaining that products have been designed so that printing can be carried out at less than 30% VOC components in the instruction manual, product labels, or pamphlets shall be submitted.

(16) Solvent-based resin typographic ink should not contain toluene and xylene.

[Certification Procedure]
A certificate shall state whether or not toluene or xylene has been added. (Printing Ink Blend Certificate)

(17) In the recycling of printed matter using the printing ink for the production of recycled paper, environmental load in de-inking shall not be greater than that of conventional resin typographic inks. However, this criterion does not apply to resin typographic inks if the substrate is other than paper.

[Certification Procedure]
Certificates of test results, etc. issued by the plant manufacturing recycled paper or by industrial test centers shall be submitted.

D. Other Inks

(18) Paper printing inks dried by UV-curing shall contain aromatic organic solvents less than 1% of the total volume, and less than 3% VOC components.

[Certification Procedure]
For a capacity ratio of solvents, and a method of determining quantity of VOC components in printing ink, attach test result by gas chromatograph, etc., and a certificate stating an amount of VOC components in ink to be calculated from the amount of VOC components of the solvent alone. In addition, if more than one color is used, an amount of a maximum VOC component shall be stated.
In addition, submit a blend certificate of printing ink. The certificate shall list a person in charge of management of Eco Mark products, and show that each amount to be blended into a product is specified in a batch card/job order and controlled/checked.

(19) Offset lithographic gold ink and silver ink shall only use solvents containing

aromatic hydrocarbons detected by the JIS K2536 method less than 1% of the total volume, and the amount of petroleum solvent shall be less than the content shown in Table 1. Further sheet-fed ink shall meet the standard of less than 3% VOC components.

Table 1 Weight Percent of Petroleum Solvent in Printing Ink

	Sheet-fed ink	Offset rotary ink
Gold ink	25%	
Silver ink	30%	35%

[Certification Procedure]
A test result and a method of analysis of solvent composition by gas chromatograph, etc., or a test data certificate of a solvent supplier shall be submitted as a sealed document.
For an amount of petroleum solvent contained in printing ink, attach an MSDS stating the amount of solvent and a certificate issued by an ink manufacturer stating the maximum blended amount of solvent (if more than one color is used).
For a method of determining quantity of VOC components in printing ink, attach test result by gas chromatograph, etc., and a certificate stating an amount of VOC in ink to be calculated from the amount of VOC of the solvent alone. In addition, if more than one color is used, an amount of a maximum VOC shall be stated.
In addition, submit a blend certificate of printing ink. The certificate shall list a person in charge of management of Eco Mark products, and show that each amount to be blended into a product is specified in a batch card/job order and controlled/checked.

(20) In the recycling of printed matter using the applying printing ink for the production of recycled paper, environmental load in de-inking shall not be greater than that of conventional oil printing inks.
For UV-cured offset lithographic printing ink, it shall be designed with particular consideration to de-inking and its de-inking performance shall be equivalent to or greater than oil printing inks. Specifically, the ink shall be “Recycle-ready UV ink” defined by Japan Printing Ink Makers Association.

[Certification Procedure]
Certificates of test results, etc. issued by the plant manufacturing recycled paper or by industrial test centers shall be submitted.
For requirements of UV-cured paper printing ink, a certificate such as test results showing the ink is the “Recycle-ready UV ink” defined by Japan Printing Ink Makers Association.

4-3. Criteria on Quality and Certification Procedures

(21) Quality control should be implemented adequately in the manufacturing stage. For items for which a measuring method is prescribed in the JIS, that measuring method should be followed.

[Certification Procedure]
Certificates and declarations issued by the manager of the plant manufacturing the product, stating that quality control is being implemented adequately in the manufacturing stage, and that only products passing quality inspections are shipped, shall be submitted.

5. Product Classification, Indication and Others
Omitted.

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The Certification Criteria for the Product Category will be revised when necessary.

Appendix
Omitted.