



# Eco Mark News

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The “Eco Mark” is the business that Japan Environment Association is managing independently under the guide of Ministry of the Environment. All active budgets of Eco Mark are covered by the Eco Mark use fee from the certified companies. In this “Eco Mark News”, the information related to Eco Mark Program such as newly selected Eco Mark product category and proposals for certification criteria is provided on the basis of the “General Procedures for the Eco Mark Program”.

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This brochure is using Eco Mark certified paper.

## Meeting and Decision of the 11th Eco Mark Committee for Establishing Category and Criteria

The 11th Eco Mark Committee for Establishing Category and Criteria (Chairman: Prof. Takashi Gunjima, Doshisha University) was held on May 31, 2001 at the Japan Environment Association and the following decisions were made after the discussion.

<Decision>

- A primary phase review of the new product category proposals (27 cases) presented at the Eco Mark Committee for Establishing Category and Criteria during the period from this January through March was conducted.
- A second phase review of the new product category proposal, “China and Porcelain Tableware Made from Recycled Materials,” was conducted.
- The Committee has decided to announce open drafts of Certification Criteria of the Eco Mark Product Categories, “Returnable Containers / Packaging Materials” and “Printers.”
- The proposal of partial revisions of the criteria for product categories No.33 “Paint Containing No Aromatic Hydrocarbon Compounds ” and No.40 “Wallpaper, Fusuma Paper and Shoji Paper Made from Recycled Pulp” that were presented by the Eco Mark Committee for Product Certification was approved and the process decided.
- It was decided to establish a working group to review the Eco Mark product categories for textile products and products made of recycled glass.

### **Review of the New Product Category Proposals**

- A primary phase review of the new product category proposals (27 cases) presented at the 11th Committee was conducted and the proposals for “Fluorescent Lamp Apparatus” were determined to be combined into the category, “Lighting Apparatus,” and be discussed further.
- A second phase review of the new product category proposal, “China and Porcelain Tableware Made from Recycled Materials” presented at the 9th Committee was conducted. However, it was decided that the proposal would not be accepted as a new product category because it will not lead to further reduction of environmental loads from the perspective of waste glass recycling.

### **Announcement of the Drafts for Certification Criteria of the Eco Mark Product Category, “Returnable Containers / Packaging Materials” and “Printers”**

Announcement of the open drafts for the certificate criteria of the Eco Mark Product Category (Revision) for “Returnable Containers / Packaging Materials” and “Printers” were finalized and approved as described in Annex 1 and 2. The existing product category No.9 “Returnable Containers” and No.53 “Low-Waste Printers for Business Machines” will be discontinued when the categories “Returnable Containers / Packaging Materials” and “Printers” are established, respectively. With this announcement, opinions on these decisions will be accepted until Friday August 14, 2001. For further information about submitting opinions, please refer to “Acceptance of Opinions on the Draft Criteria and the Discontinuance of Existing Product Categories” on the next page.

**“Acceptance of Opinions on the Draft Criteria and the Discontinuance of Existing Product Categories”**

(1) Acceptance by mail and FAX

- Address, Name, Sex, Occupation, Contact Address, Telephone number, FAX number
- Name of the proposal Eco Mark Product Prototype criterion to give opinion
- Opinions on the above proposal criterion

A summary of the above matters should be sent in writing (on A4 size paper) to Eco Mark Office, Japan Environment Association at the address below by Tuesday, August 14, 2001 by mail (postmark effective) or FAX.

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(2) Acceptance by e-mail

- Address, Name, Sex, Occupation, Contact Address, Telephone number, FAX number, e-mail address
- Name of the proposal Eco Mark Product Prototype criterion to give opinion
- Opinions on the above proposal criterion

A summary of the above matters should be sent to the address below by 17:00, Tuesday, August 14, 2001 by e-mail. When you attach a file to e-mail, please use MS-WORD, Ichitaro, or Excel format.

e-mail [ [ecomark@japan.email.ne.jp](mailto:ecomark@japan.email.ne.jp) ]

**Partial Revision of the Certificate Criteria of the Eco Mark Product No.33 “Paint Containing No Aromatic Hydrocarbon Compounds” and No.40 “Wallpaper, Fusuma Paper and Shoji Paper Made from Recycled Pulp”**

- Partial revision of the Eco Mark Product Category No.33 “Paint Containing No Aromatic Hydrocarbon Compounds”

<Reason for Revision>

In the Eco Mark Product Category No.33 “Paint Containing No Aromatic Hydrocarbon Compounds”, there is the view that JIS A 6021 “Liquid-applied compounds for waterproof membrane coating of buildings” and permeable waterproof coating, which are listed in Provision (1) of the Criteria, do not fall into the paint category. As a result of the discussion, the Certificate Criteria will be revised as shown below.

<Provision to be Revised>

Part underlined as below.

[Before Revision]

( Name of Product Category ) Eco Mark Product Category No.33 “Paint Containing No Aromatic Hydrocarbon Compounds”

[After Revision]

( Name of Product Category ) Eco Mark Product Category No.33 “Paint, Coating and Waterproof Coating Containing No Aromatic Hydrocarbon Compounds”

<Date of Revision>

July 1, 2001

- Partial revision of the Eco Mark Product Category No.40 “Wallpaper, Fusuma Paper and Shoji Paper Made from Recycled Pulp”

<Reason for Revision>

The law (Law No.100) to partially revise the Building Standard Law was promulgated on June 12, 1998 and came into force on June 1, 2000. With this revision, the authorization work for fireproof materials (Grade 1 Fireproof Authorization) conducted by the Wallcoverings Association of Japan was terminated by May 31, 2000.

The standard for fireproofing performance is specified by law for each place of installation and presumed to be followed without specifically establishing a separate standard. Furthermore, the places where fireproof wallpaper is required account for only about 20% of the total and fireproof characteristics are not necessarily required for every product. Therefore, the criteria will be partially revised as follows:

<Provision to be Revised>

[Before Revision]

1. Standards for Authorization

(5) The fireproof capability of wallpaper shall be authorized by the Grade 1 Fireproof Authorization test prescribed by the Wallcoverings Association of Japan based on the Building Construction Standards Act.

[After Revision]

1. Standards for Authorization

Delete Provision (5).

<Date of Revision>

July 1, 2001

## **Information**

### **Preparation of Appended Certificate (Form) of the Eco Mark Product Categories (No.100- )**

The appended certificate to be submitted at the application for Eco Mark Product authorization was revised to make it clearer and easier to understand. Now the application for product authorization should be made with the new format. When you require a new form, you can download it from our homepage or ask for it from the Eco Mark Secretariat.

### **Application for Advertisement in the “Eco Mark Product Catalog 2002”**

Following the 2000 and 2001 editions, Chikuma Shuhan Publishing will publish the “Eco Mark Product Catalog 2002” again this year under the supervision of the Japan Environment Association. Last year, the Catalogs were freely distributed to industries as well as national and local governments and distribution organizations (about 20,000 copies to 12,400 organizations), and has been utilized extensively as a reference for Green Purchasing practices. The details of the Catalog contents will be available from Chikuma Shuhan Publishing at the address shown below. If you

wish to advertise your Eco Mark certified products in the Catalog, please make an application to the publisher by July 10.

Application and information for advertising in the Catalog:

Messrs. Sugiura and Saito

In charge of the “Eco Mark Product Catalog”

Chikuma Shuhan Publishing, Inc.

30-1 Miyamoto-cho, Itabashi-ku, Tokyo 174-0054

TEL: +81-3-3965-1411      FAX: +81-3-39694511



Eco Mark Product Category (Proposal)  
(Proposed) “Returnable Containers and  
Packaging Materials”

Japan Environment Association  
Eco Mark Office

## 1. Environmental Background

We are now faced with global warming, increasing waste, and many other environmental problems. To cope with these problems, it is necessary to review our economical and social systems and lifestyles, as described in the General Environment Plan prepared by Ministry of Environment (then called Environment Agency) of Japan in December 1994. The plan suggests an economical social system that least affects the environment and produces minimal waste. This goal may be achieved by the so-called 3R efforts, that is, reduce, reuse, and recycle. To make these efforts more effective, the lifestyle of consumers must also be changed.

To reuse products means to use products again and again. Returnable bottles are a good example of reuse. But it is not a new idea. It has long been incorporated in Japan's social system and lifestyle. Returnable glass containers such as beer bottles, 1.8-liter bottles, and soft-drink bottles were so familiar that they were part of our daily life. In the 1990s, however, an economy of mass-production and mass-consumption started flourishing, and these glass bottles were used less and less because they became less efficient containers as our lifestyles changed, too.

It is estimated that 3.1 million tons of returnable glass bottles are currently used annually. The percentage of returnable glass bottles with respect to total glass bottles was about 66% in weight in 1999 according to the Glass Bottle Recycling Promotion Council of Japan. While the recycling percentage is high with glass bottles alone, it is not so with all containers combined. For example, while 1.92 million kiloliters of soft drinks were sold in paper containers, steel cans, aluminum cans, glass bottles, and plastic bottles in 1999, according to the Carbonated Soft Drink Inspection Institute of Japan as quoted in a publication from Nikkan Keizai Tsushin Co., Ltd., only 3.1% was sold in returnable glass bottles. The most common returnable glass bottles are beer bottles. While a total of 7.2 million kiloliters of beer was sold in a year by the four major beer brewers of Japan (see note 1 below), only 27% (1.97 million kiloliters) was sold in returnable glass bottles, or 42% (see note 2 below) was sold in returnable containers including returnable beer barrels, with the rest either in aluminum or steel cans.

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Note 1: The four major beer brewers in Japan are Asahi Beer, Kirin Beer, Sapporo Beer, and Suntory. The data for the year 1999 is based on the Environment Report of 2000. A separate inquiry was made to Suntory for more information, as the Suntory data in the Report lacked beer-only data.

Note 2: As a beer barrel is either of 10 or 20 liters, the data assumed the average capacity of a beer barrel was 15 liters.

As described in Section 1 of the Interpretation, much feedback was received that not only returnable containers but also returnable packaging materials be promoted.

According to the Statistics on Japan's Packaging Industry Yield of 2000 from the Packaging Engineers Association of Japan, the domestic yield of packaging materials and containers for 2000 was 6366.5 billion yen (6406 billion yen for 1999), or 21.926 million tons (21.606 million tons for 1999). The material percentages were 44.8% paper or cardboard, 21.3% plastics, 20.8% metal, 3.7% wood, and 3.1% glass. It is assumed that the current amount of packaging materials as collected in a returnable-product system is negligible to be reflected on this data. One of the world's environmental labeling systems, Germany's Blue Angels, may be said to be a returnable-product system, as it classifies transportation-related products by returnability.

In a recycling society as envisioned in the General Environment Plan, product recycling would be most encouraged. To what extent the reuse of containers and packaging materials in a returnable-product system would contribute to environmental preservation will be clear only after a life cycle assessment (LCA) technique is established. But one thing is clear: the contribution of a returnable-product system to environmental preservation depends on the distance products have to be distributed and collected as well as the percentage of recycled products. Thus, it can be said that increased reuse of container products in a suitably established returnable-product system would contribute to environmental preservation.

This document for reviewing the current product classification is centered on the contribution of returnable products to environmental protection throughout their life cycle, and suggests requirements for returnable containers and packaging materials that can contribute to environmental protection. This document is in accordance with the definitions and the requirement establishing procedures as stipulated in the ISO Environment Labeling Standards (ISO 14020, ISO 14021, and ISO 14024).

## 2. Applicable Products

These requirements apply to returnable products as defined in Section 3, Terminology, which are classified by structure into two types of packages: hard and soft. The hard package is further classified into seven categories, and the soft package into two categories by material. If more than one major material as defined in Section 3 is used, a product must satisfy the requirement for each major material as stipulated in Section 4, Certification Criteria.

### Hard packages

- A. Glass bottles
- B. Plastic containers and packaging materials
- C. Paper containers and packaging materials
- D. Wood or bamboo containers and packaging materials
- E. Metal containers and packaging materials
- F. FRP containers and packaging materials (including composite materials as reinforced with carbon or metal fiber)

## G. Pottery and earthenware containers

### Soft packages

#### H. Soft packaging materials and their attachments made of regenerating resources

#### I. Soft packaging materials and their attachments made of non-regenerating resources

### 3. Terminology

- Packaging material: A material used to protect an object in terms of its quality and physical condition during transportation, storage, transaction, or use. A packaging material includes a pallet or other support for grouping objects and an attachment such as ropes and filling.
- Regenerating resource: Products of forests, plants, agriculture, fisheries, and other living resources, where the resources can reproduce and thus be sustainably exploited (see Earth's Limits by Eco-material Study Group, Nikka-Giren Shuppan, February 2000).  
Examples of regenerating resources are straw, paper, natural rubber, and leather products.
- Non-regenerating resource: Products of those resources that cannot reproduce. Examples of non-regenerating resources are plastic, glass wool, and aluminum foil products.
- Soft package: A paper, cloth, plastic film, aluminum foil, or other package that is made of soft material (see Practical Dictionary of Packaging Terms, Sogo Hosho Shuppan-sha, 1982).
- Hard package: A package made of hard material. Examples of hard packages are glass bottles, wood boxes, metal cans, and plastic boxes.
- Reusable: One of intended and designed characteristics of a product or package allowing it to be used repeatedly in an intended manner throughout its life cycle, under the condition that a system exists that collects and reuses used products or packages (see JIS Q 14021:2000 and ISO 14021:1999).
- Returnable product: A reusable product that is transferred back and forth without changing its original shape along an established system between a business that sells the product or its content and another business or a consumer that buys the product or its content.
  - Returnable-product provider: A business that provides the content of a container, or a packaging material itself, and establishes and operates a system for collecting such containers and packaging materials.
- Recycle: Recycling of material (not energy).
- Can be recycled: A product or package or its material is defined as "can be recycled" if it can be collected from waste and processed for reuse as a product or raw material according to an available process or plan, and satisfies the following requirements:
  - a) A reasonable proportion of buyers, potential buyers and potential users must be able to easily use a system that selects, collects, and transfers materials

from a source location of waste to a recycling facility.

b) A recycling facility that stores and processes collected materials for reuse must be available.

c) Products in question are actually collected and recycled.

(See JIS Q 14021:2000 and ISO 14021:1999.)

-Product's major material: A material of a major component of a product to be reused. For example, in a composite product consisting of a plastic container and a metal frame, the plastic container and the metal frame are the product's major materials. A cap of a glass bottle, a label, or any other part of a product that cannot be reused, or a metal fastener on a container, a film over a container, or any other attachment to a product is not a major material. Also, a material whose contribution in weight or volume to the whole product is less than 20% is not a major material.

-Additives: Substances intentionally added to a product in a manufacturing process so as to provide the product with a new property. Impurities that may come into a product inadvertently in a manufacturing process are not additives.

-Marking: Information printed directly on a product or its package.

-Information disclosure: Information printed or displayed on a magazine, catalog, home page, or any other advertisement related to a product, where it cannot be directly printed on the product.

#### 4. Criteria for Eco Mark Certification

##### 4-1 Common environmental requirements

(1) An average product shall be repeatedly used at least five times.

(2) A product shall be designed so as to be used repeatedly.

(3) A product collecting (recycling) system shall be established, and this fact shall be made known by marking or information disclosure.

(4) Discharging of any harmful substance or water-degrading substance from a manufacturing installation shall comply with relevant local environmental laws and regulations.

(5) Of coloring substances used on labels or as coating or in product material, printing ink shall comply with the negative list issued by the Ink Industries Association of Japan, and the coloring substances other than printing ink shall comply with the recommendations by the Japan Hygiene Council for Polyolefin and Other Substances requiring no more than 0.01% lead, 0.01% cadmium, 0.005% arsenic, 0.005% mercury, and 0.05% free amine.

Containers designed to contain food shall also pass the coloring-substance leak test as defined by the Japan Hygiene Council for Polyolefin and Other Substances. A manufacturing installation shall not discharge any water-degrading substance as a result of product cleaning. Attachments to a container intended for food shall not use such harmful substances as controlled by the Food Hygiene Law of Japan.

(6) Containers and packaging materials shall be designed light-weight, compact, and stackable (can be stacked on top of another). They shall be able to be folded into

smaller sizes for easier returning for reuse.

- (7) The amount of the material, such as throw-away attachments, of containers and packaging materials which is discarded during distribution or after use shall be smaller than or equal to that of comparable one-way containers and packaging materials (this requirement does not apply to the coating (e.g., full-shrink) to protect glass surfaces, or to the protective covering of pottery).
- (8) The amount of the material, such as helping material, which is added during distribution or before use shall be little or none.
- (9) When a product is discarded, any substance that is defined as destructive to the ozone layer according to Attachments A, B, C and E to the Montreal Memorandum 1999 (see separate table 1) shall not be released or shall be collected.
- (10) Any part of a product which is not recycled shall be duly disposed of when the product is discarded.

#### 4-2 Applicable environmental requirements

##### A. Glass bottles

- (11) When discarded, a glass bottle shall be crushed into cullet to serve as glass material.

##### B. Plastic containers and packaging materials

- (12) Plastic products shall not contain harmful substances. Specifically, they shall comply with Paragraphs 4-1 (3) and (4) of 4, Certification Criteria (see Attached Sheet 1).

No foaming agent shall be used or, if used, foaming agent shall not use or release any substance that is defined as destructive to the ozone layer according to Attachments A, B, C and E to the Montreal Memorandum 1999 (See table 1).

- (13) When they are discarded, they shall be able to be easily classified to make collection-by-material possible. When discarded, a product containing halogen-base polymer materials shall be recycled or disposed of by an applicant, using a method other than burning which does not release dioxin.

##### C. Paper containers and packaging materials

No applicable approval requirements

##### D. Wood or bamboo containers and packaging materials

- (14) No antiseptic or other harmful substance shall be used when they are manufactured, or such harmful substance shall not leak out.

##### E. Metal containers and packaging materials

- (15) When discarded, they shall produce little waste or be able to be recycled, or be able to be easily and safely disposed of.
- (16) Collected metal containers and packaging materials for recycling shall be able to be easily identified with respect to their substance (e.g., steel or aluminum). A document shall be submitted indicating what percentage of a product can be

recycled.

F. FRP containers and packaging materials

(17) FRP products shall be designed repairable.

(18) When discarded, a product containing halogen-base polymer materials shall be recycled or disposed of by an applicant, using a method other than burning which does not release dioxin.

G. Pottery and earthenware containers

(19) Pottery and earthenware containers shall not cause heavy metal or other harmful substances to leak out. Specifically, they shall comply with relevant paragraphs of 4, Certification Criteria, of Product Category No. 109, Tiles and Blocks Made of Recycle Material (see Attached Material 5).

(20) When discarded, a pottery or earthenware container shall be able to be recycled as material.

H. Soft packaging materials and their attachments made of regenerating resources

(21) Harmful substance shall not be used or released in cleaning, cleansing, or other manufacturing processes.

(22) The percentage of harmful substance at the time of use shall comply with relevant requirements of Product Category No. 114, Paper Packaging, for paper products (see Attached Sheet 2); No. 105, Industrial Textile Products Made from Recycled PET Resin, for cotton and wool products (see Attached Sheet 3); No. 115, Used Wood, Thinned-out Wood, and Small-diameter Wood, for wood and bamboo products (see Attached Sheet 4); and the food and additives requirements (Directive 370 from Ministry of Health and Welfare, 1959) according to the Food Hygiene Law of Japan for natural rubber products.

I. Soft packaging materials and their attachments made of non-regenerating resources

(23) No foaming agent shall be used or, if used, foaming agent shall not use or release any substance that is defined as destructive to the ozone layer according to Attachments A, B, C and E to the Montreal Memorandum (see separate table 1).

(24) Harmful substances shall not leak out when a product is used or consumed. Specifically, plastic products shall comply with relevant paragraphs of 4, Certification Criteria, of Product Category No. 105, Industrial Textile Products Made from Recycled Plastic Resin (see Attached Sheet 3), and other plastic or synthetic products (e.g., glass-wool and aluminum foil products) shall comply with relevant paragraphs of 4, Certification Criteria, of Product Category No. 118, Industrial Textile Products Made from Recycled Plastic Resin (see Attached Sheet 1).

(25) When they are discarded, they shall be easily separated into basic materials. When discarded, a product containing halogen-base polymer materials shall be recycled or disposed of by an applicant, using a method other than burning which

does not release dioxin.

#### 4-3 Quality criterion

- (26) The quality of a product shall comply with the Food Hygiene Law of Japan (1995) and relevant JIS and industry standards.

### 5. Certification Procedure

An applicant shall prepare, sign and seal (with a company seal), and submit Attachments 1-3 to certify compliance with the requirements.

Note: A certificate from a third party authority means certification from an independent testing authority (public or private) that has no interests with an applicant, a product manufacturer, or a material supplier.

#### 5-1 How to certify compliance with 4-1, Common Environmental Requirements

- (1) Submit a document indicating the actual average number of recycling uses of a product (for new products, the data for comparable products may be submitted instead).
- (2) Submit a certificate by a third party or company design documents describing:
  1. Strength (except for the classification "G. Pottery or earthenware containers")
  2. Cleaning characteristics (for containers only)
  3. Label's adhesive or removable characteristics (for those products requiring attachment or removal of a label after each reuse)
- (3) Submit the following:
  1. A document describing a system or a product collecting route to make a product returnable
  2. A document or photos illustrating a container (if any) in which returnable products are put for transportation
  3. Marking or indication stating that a product is reusable
- (4) Submit a statement that a manufacturer complied with relevant local environmental laws and regulations for five years at the time of application
- (5) Submit a declaration by a product manufacturer or a material supplier, or a test report from an independent testing authority (a product manufacturer or a material supplier may simply declare in writing that the product contains no such harmful substance if it is the case)

For containers designed to contain food, also submit a document certifying that attachments to such containers comply with Food Hygiene Law of Japan.

- (6) Submit a document describing how containers and packaging materials are designed more light-weight, compact, and stackable in distribution and use than comparable ones for one-way use, and how they can be folded into smaller sizes for easier returning (such a document need not be submitted if there are no one-way containers or packaging materials to be compared with).
- (7) Submit a declaration in writing by an applicant that the amount of the material, such as labels and caps, of containers and packaging materials which is discarded during distribution or after use is smaller than or equal to that of comparable

one-way containers and packaging materials (such a declaration need not be submitted if there are no comparable one-way containers or packaging materials).

- (8) Submit a declaration in writing by an applicant that the amount of the material which is added during distribution or before use shall be zero, or smaller than that of comparable one-way containers and packaging materials (such a declaration need not be submitted if there are no comparable one-way containers or packaging materials).
- (9) Submit a document certifying that, when a product is discarded, any substance that is defined as destructive to the ozone layer according to the Montreal Memorandum 1999 is not released or is collected.
- (10) Submit a document describing how a product is disposed of.

## 5-2 How to certify compliance with 4-2, Applicable Environmental Requirements

### A. Glass bottles

- (11) Submit a declaration in writing that, when discarded, a glass bottle is crushed into cullet to serve as glass material.

### B. Plastic containers and packaging materials

- (12) Submit a certificate issued by a product manufacturer or a material supplier, or a test report from an independent testing authority (a product manufacturer or a material supplier may simply declare in writing that the product contains no such harmful substance if it is so).

If foaming agent is used, also submit a document identifying it.

- (13) Submit a document certifying that, when a product is discarded, it can be easily classified to make collection-by-material possible. For a product containing halogen-base polymer materials, also submit a document describing how it is recycled or disposed of.

### D. Wood or bamboo containers and packaging materials

- (14) If antiseptic or insecticide is used as a treatment or smoking agent, submit a document certifying that no chromium or arsenic-base chemicals or pyrethrum-containing chemicals are used or released outside of a factory (e.g., certifying that no such harmful substance remains in a shipped product, or is released into waste material, waste water, or the air).

If antiseptic or insecticide is used with a bottle, also submit an approval certificate from the Wood Material Preservation Institute of Japan.

### E. Metal containers and packaging materials

- (15) Submit a document describing how a container or packaging material is discarded. Also submit a document certifying that a container or packaging material can be recycled as material or produces less waste than a comparable one-way container or packaging material (such a document need not be submitted if there are no comparable one-way containers or packaging materials).
- (16) Submit a photo indicating a marking of product substance on a container or

packaging material. Also submit a document indicating what percentage of a container or packaging material is actually recycled.

#### F. FRP containers and packaging materials

- (17) Submit a document indicating where FRP products can be repaired, how repair can be done, and to what extent repair is possible.
- (18) For a product containing halogen-base polymer materials, submit a document describing how it is recycled or disposed of.

#### G. Pottery and earthenware containers

- (19) Submit a certificate issued by a product manufacturer or a material supplier, or a test report from an independent testing authority (a product manufacturer or a material supplier may simply declare in writing that the product contains no such harmful substances if it is the case).
- (20) Submit a declaration in writing that, when discarded, a pottery or earthenware container can be recycled as material.

#### H. Soft packaging materials and their attachments made of regenerating resources

- (21) Submit a document by a product manufacturer certifying that no harmful substance is used or released in cleaning, cleansing, or other manufacturing processes.
- (22) Submit a certificate issued by a product manufacturer or a material supplier, or a test report from an independent testing authority (a product manufacturer or a material supplier may simply declare in writing that the product contains no such harmful substances if it is the case).

#### I. Soft packaging materials and their attachments made of non-regenerating resources

- (23) Submit a declaration in writing by a product manufacturer that no foaming agent is used during manufacturing or, if foaming agent is used, submit a document identifying the substances of the foaming agent.
- (24) Submit a certificate issued by a product manufacturer or a material supplier, or a test report from an independent testing authority (a product manufacturer or a material supplier may simply declare in writing that the product contains no such harmful substances if it is the case).
- (25) Submit a document certifying that, when a product is discarded, it is easily separated into basic materials. For a product containing halogen-base polymer materials, submit a document describing how it is recycled or disposed of.

#### 5-3 How to certify compliance with 4-3 Quality criterion

- (26) For compliance with the Food Hygiene Law of Japan, submit a test report from an independent testing authority. For compliance with relevant JIS or industry standards, submit a declaration in writing by an applicant.

## 6. Other Requirements

- (1) Application for the approval of an eco-mark product shall be done by a returnable-product provider.
- (2) Product designations for classification shall be unique within an established returnable-product system, identifying each product function (according to Japan Standard Product Classification) and corresponding to a brand name. A product designation is preferably a five-digit number, and should not identify different sizes or colors of a brand.
- (3) The text under the eco-mark shall be either "Returnable Container," "Returnable Packaging Material," or "Returnable Grouping Material."

The above notwithstanding, for products that have been approved under product category No. 9, Returnable Containers, the text "Bottles for Repeated Use" or "Containers for Recycling" may be used instead.

- (4) The text may include additional environmental information to clarify its meaning. The extended text can be in the form of a box containing three lines of text, where the first line reads "Returnable Container," "Returnable Packaging Material," or "Returnable Grouping Material," the second line reads "for Repeated Use," and the last line reads "Containing No or Few Harmful Substances."

ちぎゅうにやさしい

Environment-friendly



(一行目は「リターナブル容器」または「リターナブル包装資材」、あるいは、「リターナブルユニット化資材」とする。

The first line reads either "Returnable Container," "Returnable Packaging Material," or "Returnable Grouping Material."

Returnable Container  
for Repeated Use  
Containing No or Few Harmful  
Substances

Proposed date of implementation: October 1, 2001

These certification criteria for the product category will be reviewed in five years after the date of enactment, and the certification criteria and/or the product category will be revised or abolished.

[Attached Sheet 1 ]

About No. 118, Plastic Products Made from Recycled Materials

"4. Certification Criteria (extracted)"

- (3) A product shall not use, as its additives, heavy metal or other harmful chemical substances as defined in the relevant laws or industrial standards.

Plastic product additives used shall be listed in a positive list prepared by the Polyolefin Hygiene Council, the PVC Food Hygiene Council, or other relevant Japanese industrial organizations (see note below).

The above notwithstanding, a product using flame-retarding additives shall be a fire-protection object or product as defined by Japan Fire Protection Institute, and shall not contain polybromine biphenyl (PBB), polybromine diphenyl ether (PBDE), or short-chained paraffin chloride (with 10-13 C's in a chain and 50% or more chlorine). No phthalic-acid ester plasticizers shall be used in a product that children could lick or put in their mouth.

Stabilizing or smoothing additives shall not contain lead or cadmium-base chemicals, or tributyl-tin (TBT), triphenyl-tin or other organic tin compounds defined as water-degrading substances.

Plastic coloring additives shall comply with Product Category No. 104, Domestic Textile Products Made from Recycled PET Resin, Product Category No. 105, Industrial Textile Products Made from Recycled PET Resin (see Attached Sheet 3), and requirements (3), (4), and (5) of separate table 2, wherein requirement (3) relates to the Harmful-substance-containing Domestic Items Controlling Law of Japan, requirement (4) relates to dye, and requirement (5) relates to fluorescent material. The content and leaking amount of heavy metal shall comply with the Coloring Materials Standards issued by the Polyolefin Hygiene Council (see note below).

- (4) A product shall not contain, or release during or after use, residual organic chemicals as referred to in the United Nations Environmental Plan (see separate table 2: POPs).

Note: A test report from a third-party authority is sufficient (no need of a certificate from the Polyolefin Hygiene Council).

[Attached Sheet 2]

About No. 114, Paper Packaging Materials

"4. Certification Criteria (extracted)"

- (3) A product shall contain no fluorescent materials.
- (4) Adhesive tape or paper trays shall not contain any controlled substances or materials that biodegrade excessively slowly.
- (5) A product shall not use materials which interfere with its effective collection or reuse. A product shall be so designed as to reduce the amount of waste as it is discarded.

[Attached Sheet 3]

About No. 105, Industrial Textile Products Made from Recycled PET Resin

"4. Certification Criteria (extracted)"

- (3) A product shall comply with the Harmful-substance-containing Domestic Items Controlling Law of Japan, where "there shall be no residual free formaldehyde" means that there shall be not more than 75 ppm residual free formaldehyde. No dieldrin shall be used.
- (4) A wool product shall not use benzidine dye or any dye that could produce substances as listed in separate table 3. Fabrics other than wool shall not use benzidine dye, chromium-base dye, or any dye that could produce substances as listed in separate table 3.
- (5) No excessive fluorescent materials shall be used.

[Attached Sheet 4]

About No. 115, Used Wood, Thinned-out Wood, and Small-diameter Wood

"4. Certification Criteria (extracted)"

- (3) A packaging material shall not use wood which was part of a demolished building. A product using wood which was part of a demolished building shall have its materials classified so as to satisfy the following requirements:
  - Sulfur oxide or other harmful gases shall not be released when a product is burned.
  - Chromium, cadmium, arsenic, or other harmful heavy metal shall not be used.
- (5) A product other than for outdoor use shall not contain ant-preventing, antiseptic, insecticide, or flame-retarding additives. An outdoor product may contain ant-preventing, antiseptic, or insecticide additives provided that they are approved for use by Japan Wood Preservation Institute.
  - A product shall not contain, or use wood (new or old) that contains chromium or arsenic chemicals or pyrethroid-base chemicals.
- (9) Products, especially those which are coated with halogen substances, shall be so designed as to reduce the amount of waste as it is discarded.

The following requirements apply only to those products that are for daily life and indoor use:

  - (6) A product as delivered shall have no remaining toluene or xylene.
  - (7) A product shall comply with EC Directive 88/378/EEC EN71-3.
  - (8) Not more than 0.5 mg/L of formaldehyde shall be released from a product.

[Attached Sheet 5]

About No. 109, Tiles and Blocks Made of Recycle Material

"4. Certification Criteria (extracted)"

- (5) When getting wet during use, from rain for example, a product shall not release heavy metal or other harmful substances.

A product shall comply with the harmful substance requirements in the Soil-contamination Environmental Standard issued August 23, 1991 by the Ministry of Environment (as Directive No. 46). A product that uses melted-and-renewed materials and is thermal-treated at normal or raised temperature shall comply with the requirements for the leak of cadmium, lead, chromium (VI), arsenic, mercury, or selenium.

- (6) During use, a product shall not release harmful particles due to wear.

Table 1: Substances destructive to the ozone layer according to the Montreal Memorandum

A-I	Trichlorofluoromethane	C-I	Chlorodifluoropropane	
	Dichlorofluoromethane		Chlorofluoropropane	
	Trichlorotrifluoroethane		Dibromofluoromethane	
	Dichlorotetrafluoroethane		Bromodifluoromethane	
	Chloropentafluoroethane		Bromofluoromethane	
A-II	Bromochlorodifluoromethane	C-II	Tetrabromofluoroethane	
	Bromotrifluoromethane		Tribromofluoroethane	
	Dibromotetrafluoroethane		Dibromotrifluoroethane	
B-I	Chlorotrifluoromethane		Bromotetrafluoroethane	
	Pentachlorofluoroethane		Tribromofluoroethane	
	Tetrachlorodifluoroethane		Dibromofluoroethane	
	Heptachlorofluoropropane		Bromotrifluoroethane	
	Hexachlorodifluoropropane		Dibromofluoroethane	
	Pentachlorotrifluoropropane		Bromodifluoroethane	
	Tetrachlorotetrafluoropropane		Bromofluoroethane	
	Trichloropentafluoropropane		Hexabromofluoropropane	
	Dichlorohexafluoropropane		Pentabromodifluoropropane	
Chloroheptafluoropropane	Tetrabromotrifluoropropane			
B-II	Carbon tetrachloride		C-II	Tribromotetrafluoropropane
B-III	1,1,1-trichloroethane			Dibromopentafluoropropane
C-I	Dichlorofluoromethane		Bromohexafluoropropane	
	Chlorodifluoromethane		Pentabromofluoropropane	
	Chlorofluoromethane		Tetrabromodifluoropropane	
	Tetrachlorofluoroethane		Tribromotrifluoropropane	
	Trichlorodifluoroethane		Dibromotetrafluoropropane	
	Dichlorotrifluoroethane		Bromopentafluoropropane	
	Chlorotetrafluoroethane		Tetrabromofluoropropane	
	Trichlorofluoroethane		Tribromodifluoropropane	
	Dichlorodifluoroethane		Dibromotrifluoropropane	
	Chlorotrifluoroethane		Bromotetrafluoropropane	
	Dichlorofluoroethane		Tribromofluoropropane	
	Chlorodifluoroethane		Dibromodifluoropropane	
	Chlorofluoroethane		Bromotrifluoropropane	
	Hexachlorofluoropropane		Dibromofluoropropane	
	Pentachlorodifluoropropane		Bromodifluoropropane	
	Tetrachlorotrifluoropropane		Bromofluoropropane	
	Trichlorotetrafluoropropane		E-I	Methyl bromide
	Dichloropentafluoropropane			
	Chlorohexafluoropropane			
	Pentachlorofluoropropane			
	Tetrachlorodifluoropropane			
	Trichlorotrifluoropropane			
	Dichlorotetrafluoropropane			
	Chloropentafluoropropane			
	Tetrachlorofluoropropane			
	Trichlorodifluoropropane			
	Dichlorotrifluoropropane			
	Chlorotetrafluoropropane			
	Trichlorofluoropropane			
	Dichlorodifluoropropane			
	Chlorotrifluoropropane			
	Dichlorofluoropropane			

Table 2: Residual organic chemicals as listed in the UN Environmental Plan

DDT	Aldrin
Dieldrin	Endrin
Chlordane	Heptachlor
Hexachlorobenzene	Mirex
Toxaphene	Polychlorinated biphenyl
Dioxins	Furans

Table 3: Azo dyes that could produce one of the following amines when one or more azo radicals are decomposed

<p>4-aminodiphenyl Benzidine 4-chloro-o-toluidine 2-naphthylamine o-aminoazotoluene 2-amino-4-nitrotoluene p-chloroaniline 2, 4-diaminoanisole 4, 4'-diaminodiphenylmethane 3, 3'-dichlorobenzidine 3, 3'-dimethoxybenzidine</p>	<p>3, 3'-dimethylbenzidine 3, 3'-dimethyl-4, 4'-diamino- diphenylmethane p-cresidine 4, 4'-methylene-bis (2-chloroaniline) 4, 4'-oxydianiline 4, 4'-thiodianiline o-toluidine 2, 4-toluylenediamine 2, 4, 5-trimethylaniline</p>
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Note: For the conditions of azo-radical decomposition, see the Germany Commodity Regulations.

## Interpretation

# Product Certification Criteria for “Returnable Containers and Packaging Materials” (Proposed)

Scheduled for institution on October 1, 2001

### 1. Environmental Background

The proposed product category is a result of the review of Product Category No. 9, Returnable Containers. One of the purposes of the review was to promote environmental protection by taking products' life cycle into account according to the Eco Mark Program as revised on March 1, 1996. While the scope of the old certification criteria was those containers which can be used repeatedly and the collection of which is established as a system and actually being performed, the new certification criteria also cover new types of recycle containers such as trailer containers, household-moving packages, and clothing packages, as well as packaging materials.

In the review process, discussion was made whether the working group should also review other related product categories, such as No. 10, Empty Bottle Collecting Posts, No. 31, Containers for Content-only Products, No. 36, Empty Can Collecting Devices, No. 48, Shopping Bags Made of Cloth, No. 54, Reusable Ink Cassettes and Cassette Ribbons, and No. 55, Resource Conserving Food Packages. In the end, however, the working group concluded that these related product categories be reviewed by separate working groups.

### 2. Applicable Products

In the review process, a consensus was made that the proposed certification criteria for returnable containers and packaging materials conform with international eco-mark requirements as much as possible. One of such international eco-mark systems is Germany's Blue Angel, which establishes returnable bottle requirements and returnable transporting package requirements.

The packaging materials as covered by the proposed requirements include hanger devices (as a grouping material) that are repeatedly used to carry volume clothes. Such new types of packaging materials will be examined individually by the Eco-mark Examination Committee to determine whether they are subject to the requirements.

### 3. Terminology

The definitions for these requirements are the same as those in ISO 14021 if also defined in that standard. The definitions of packaging materials are mostly in accordance with those in the Packaging Industry Statistics issued in 1999 by the Japan Packaging Engineers Association. Packaging materials as newly defined include pallets, bamboo, cane, and straw rope.

#### 4. Environmental Criteria

##### 4-1. Details of Establishing Environmental Criteria

In the process of establishing certification criteria, an environment assessment table was used, which lists environment-affecting factors for each life stage of a product. For each life stage of a product, each environment-affecting factor was studied to establish a qualitative or quantitative requirement.

Environment load items considered for the category of "Plastics Products Using Recycled Materials" are as shown in the life stage environmental load item selection table (X in the table). Out of these items were finally selected as the environment-related criteria: A-1, B-1 to B-6, B-8, C-1 and C-2, C-5 to C-8, D-1, D-7 and D-8, E-1, E-3 to E-8, and F-7 (XX in the table). The blank columns in the table show items which were out of the scope of review or which were reviewed in combination with other items. Following is the history of setting up the environment-related criteria.

Table 1: Chart for Selecting Environmental Impact Items at Each Stage of Product Life Cycle

Environmental Impact Item	Product Life Stage					
	A. Resource Extraction	B. Manufacturing	C. Distribution	D. Use/Consumption	E. Disposal	F. Recycling
1.Resource consumption	XX	XX	XX	XX	XX	X
2.Discharge of greenhouse gases	X	XX	XX		X	X
3.Discharge of the ozone layer depleting substances		XX	X		XX	X
4.Destruction of eco systems	X	XX			XX	X
5.Discharge of atmospheric pollutants	X	XX	XX	X	XX	X
6.Discharge of water pollutants		XX	XX	X	XX	X
7.Discharge/disposal of wastes		X	XX	XX	XX	XX
8.Use/discharge of hazardous materials		XX	XX	XX	XX	X
9.Other environmental impacts						

##### A. Resource Extraction Stage

###### A-1.Resource consumption

The following issues were discussed:

- (1) Containers and packaging materials must be able to be used at least twice (if designed reusable)
- (2) Products must be so designed that exploitation of resources is minimized and reuse of materials is maximized.
- (3) Metal containers tend to use up natural resources.

For issue (1) above, discussion centered around collection percentage and the number of recycle uses. The specific requirements in ISO 14021 require that reusable or replenishable products be able to be reused a certain number of times or replenished at least once.

About the number of recycle uses of glass bottles, some work group members proposed that the number of recycle uses be set to two, but a conclusion was made that establishment of a working recycling system is more important and the number of recycle uses be at least five. The requirements for similar products were established based on the glass bottle requirements. It was found that the percentage of reuse of a typical product that is usually reused five times is at least 80%, and the term "collection percentage" is more familiar than the term "reuse percentage." Thus some proposed that products whose collection percentage is 80% be qualified as returnable product. However, the Container Package Recycling Law of Japan stipulates that products whose collection percentage is about 90% are qualified as returnable products, and it is the general rule that the eco-mark requirements be no more lenient than comparable public regulations. Considering the fact that the collection percentage of "about 90%" as stipulated in the Law allows for about 10% tolerance (that is, 80% is acceptable), and five recycle uses translates to more than 80% collection percentage, it was concluded that the requirement of at least five recycle uses is no more lenient than the comparable requirement of the Law and thus acceptable.

As a result, the requirement was adopted.

For issue (2) above, it was agreed that, while recycling reduces exploitation of material resources, it consumes more fossil fuel for transportation, and forest and some other resources can be sustainably exploited. Thus, the conclusion was that the adoption of the requirement needs more time to be studied and thus be dropped.

For issue (3) above, it was agreed that comparing the effect of a product on the environment with that of another product made of different materials is currently not realistic, and materials, instead of products, be controlled. Thus the issue was not made into a requirement.

#### A-2. Discharge of greenhouse gases

The following issue was discussed:

(1) Which requires more conservation efforts, forest or petroleum resources?
--

This issue was discussed along with the issue (2) of the environment-affecting factor A-1. It was concluded that this issue should not be discussed as a separate issue under A-2.

#### A-4. Destruction of eco systems

The following issue was discussed:

(1) Forest resources must be exploited so that the ecological system is least affected, or they must be sustainably exploited and restored to the original condition.

It was concluded that, while this issue is important, it cannot be made into a requirement because of too many uncertain factors.

#### A-5. Discharge of atmospheric pollutants

The following issue was discussed:

(1) The fuel used for resource exploitation produces air polluting substances. The effect of these substances on the environment must be assessed.

The material resource for plastic containers and packaging materials is crude oil, and fuel is used to propel a tanker that carries it. But it is impractical to stipulate a requirement controlling the air polluting substances from such fuel. For other material resources, making this issue into a requirement is also impractical due to considerable uncertainties involved, though this issue is no less important.

### B. Manufacturing Stage

#### B-1. Resource consumption

The following issues were discussed:

- (1) Products must be designed for repeated use. For example, glass bottles must be so designed that they are strong enough, can be cleaned easily, and have labels easily removed.
- (2) Products must be so designed as can be manufactured using as little auxiliary materials, water, or energy as possible. The percentage of recycling part of a product must also be considered (especially for aluminum products).

Issue (1) above is obvious, and essential to all returnable products. It was decided that containers be evaluated for strength, cleaning and other recycling characteristics according to Japan Glass Bottle Institute's guideline and other industry standards. It was agreed that glass bottles must be designed reasonably considering all related factors (for example, returnable glass bottles must be strong enough but should not heavier than comparable one-way bottles).

It was also agreed that pottery and earthenware cannot be designed to be strong, and are acceptable if they can be reused at least five times.

As a result, the issue was made into a requirement.

For issue (2) above, a returnable plastic container should be manufactured using less resources than comparable plastic containers, but it remains unanswered whether plastic or aluminum containers use less resources for manufacturing. Due to this and other uncertainties, the issue was not made into a requirement.

#### B-2. Discharge of greenhouse gases

The following issues were discussed:

- |   |
|---|
| <ol style="list-style-type: none"><li>(1) Manufacturing must require less electric and other energies.</li><li>(2) Which raw material produces less global warming substances during manufacturing, forest or oil resource?</li></ol> |
|---|

Issue (1) above was discussed along with that of factor B-5 (release of global warming substances). Most of electric and other energies for manufacturing come from fossil fuels. Different products, even if made of the same materials, use different amounts of material and energy. Thus it is difficult to control the amount of energy to be used for manufacturing. Particularly comparison between plastics and other polymers is difficult in this respect. Thus it was agreed that the issue be made into a requirement requiring compliance with relevant environmental pollution agreements. Issue (2) was not made into a requirement due to difficulty in assessment.

#### B-3. Discharge of the ozone layer depleting substances

The following issue was discussed:

- |  |
|--|
| <ol style="list-style-type: none"><li>(1) Foaming agent or other ozone-layer destructive substances must not be used or released into the atmosphere during manufacturing.</li></ol> |
|--|

It was agreed that there must be a requirement, for plastic containers and packaging materials and for soft and auxiliary packaging materials, which controls the release of ozone-layer destructive substances during manufacturing. Ozone-layer destructive substances as referred to in these proposed requirements are those defined in Attachments A, B, C, and E to the Montreal Memorandum. A-II, C-II, and E-I type substances, which are not covered by Product Classification No. 119, Personal Computers, are also included as ozone-layer destructive substances in these proposed requirements.

The issue was thus made into a requirement.

#### B-4. Destruction of eco systems

The following issue was discussed:

- |   |
|---|
| <ol style="list-style-type: none"><li>(1) No substances must be released during manufacturing which adversely affect the ecological system.</li></ol> |
|---|

This issue was discussed along with those of B-8 (use or release of harmful substances). Plastic containers and packaging materials could produce smell or noise problems in addition to harmful substances. Irritating fumes could also be produced in a manufacturing process affecting employees, and thus require further studies. This issue and those of B-8 were combined into a requirement.

#### B-5. Discharge of atmospheric pollutants

The following issue was discussed:

- |  |
|--|
| (1) Products must release no or less air pollution substances than comparable ones during manufacturing. |
|--|

About the issue above, it was agreed that comparison between different materials is not easy, and especially so between plastics and other types of polymers (particularly at raw material refinement level), while comparison between a returnable product and a comparable one-way product is easy if they are made of the same materials or of the same type of polymers. Also, it can be said that a returnable product automatically clears the issue since it can be used repeatedly. While this could translate to that the issue need not be made into a requirement, it was actually concluded that the issue be made into a requirement requiring compliance with relevant environmental pollution agreements, as described earlier in paragraph B-2 (release of global warming substances).

The issue was thus made into a requirement.

#### B-6. Discharge of water pollutants

The following issues were discussed:

- |  |
|--|
| (1) Substances released in a manufacturing process to remove printed ink from paper boxes could degrade water. |
| (2) No or little water-degrading substances (e.g., pellets) must be released during manufacturing.             |

About issues (1) and (2) above, manufacturing of all products, including paper and plastic products, must be done so that water-degrading substances are not produced or are processed to become harmless. Manufacturing of soft packaging materials and their attachments made of regenerating resources, especially in the process of hemp bleaching, must not degrade water. These issues, like those of B-2 (release of global warming substances) and B-5 (release of air pollution substances), were made into a requirement requiring compliance with relevant environmental pollution agreements.

#### B-7. Discharge/disposal of wastes

The following issues were discussed:

- |   |
|---|
| (1) Substances released in a paper making process   |
| (2) Pieces of broken glass bottles  |
| (3) Manufacturing must produce no or little waste. For example, edge materials left unused during manufacturing must not simply be discarded as waste but be reused as material |

Issue (1), like those of B-6 (release of water-degrading substances), was made into a requirement requiring compliance with relevant environmental pollution agreements.

About issue (2) above, statistics show that 15% of glass bottles are broken during

manufacturing. But these broken glass bottles are reused as material and do not result in waste. The situation is the same with pottery and earthenware. Thus this issue was not made into a requirement.

About issue (3) above, it is obvious that edge materials be recycled, but this is normally done as a standard manufacturing practice. Thus it was decided that the issue need not be made into a requirement.

#### B-8. Use/discharge of hazardous materials

The following issues were discussed:

- (1) Use of adhesives
- (2) Harmful substances must not be used or released during manufacturing.

About issues (1) and (2) above, while glass bottles may contain no harmful substances, a film or other coating on them could be harmful. Thus, such coatings must be controlled. The situation is the same with potteries and earthenware. For plastic containers and packaging materials, harmful substances could be used during manufacturing or released when they are burned.

Wood and bamboo containers and packaging materials could use or be smoked with antiseptic or insecticide, or could be treated with desiccant or tar pitch.

For soft packaging materials and their attachments made of regenerating resources, harmful mold-preventing agent, leather tanning agent or dye could be used.

Thus these issues were made into a requirement.

### C. Distribution Stage

#### C-1. Resource consumption

The following issues were discussed:

- (1) A product collecting system, including a collecting route and means, must be established.
- (2) Products must be designed reusable so as to reduce resource consumption during distribution.

About issue (1) above, it was agreed that there must be a product collecting system for all types of returnable products. A product collecting system to be established must include a product collecting route, a product collecting means, and indication of information on the system. If it cannot be printed on a product, such information may appear on a relevant magazine, catalog or advertisement.

No question was raised about issue (2) above, since recycling is essential to reducing resource consumption.

Thus these issues were made into requirements.

#### C-2. Discharge of greenhouse gases and C-5. Discharge of atmospheric pollutants

The following issue was discussed:

(1) Products must be so designed as to produce no or little carbon dioxide or air pollution substances during transportation. Products must be designed lightweight and compact so that minimal energy resources are needed for their transportation.

This issue is applicable to both C-2 and C-5. Transportation of returnable containers and packaging materials also consumes energy resources, and the longer the distance of transportation, the larger the consumption. While this may not be applicable to the materials for transportation that are used either for long or short distance, a maximum distance of transportation may be 100 km (depending on usage) for returnable containers and packaging materials which are normally returned back in empty condition. "Designed compact" means a compact product in its packaged condition, and not necessarily a product itself.

Glass bottles must be able to be stacked on top of another for easier transportation.

Plastic, wood, and bamboo containers and packaging materials can be transported more effectively if they can be folded into smaller sizes.

Thus this issue was made into a requirement.

#### C-3. Discharge of the ozone layer depleting substances

The following issue was discussed:

(1) No ozone-layer destructive substances must be released during distribution.

Possible use of fluorocarbon in cleaning plastic containers and packaging materials was discussed. It was agreed that this possibility is almost zero, and the issue was not made into a requirement.

#### C-6. Discharge of water pollutants

The following issue was discussed:

(1) No water-degrading substances must be released during distribution.

This issue is very important with a container or packaging material cleaning process for any type of returnable product, especially for glass bottles.

Thus this issue was made into a requirement.

#### C-7. Discharge/disposal of wastes

The following issues were discussed:

- (1) Pieces of broken glass bottles
- (2) The amount of the material, such as throw-away attachments, of a container which is discarded during distribution must be zero or smaller than that of a comparable one-way container.

Issue (1) above was discussed along with those of B-1 (consumption of resources) and made into a requirement requiring that returnable products be designed for repeated use.

Issue (2) above is important especially with glass bottles as well as pottery and earthenware containers and packaging materials, as their caps, corks and labels are normally thrown away and thus could affect the environment.

For plastic containers and packaging materials, auxiliary materials used to make their transportation easier are more important in this respect.

Packing bands, covers, nails, adhesives and hinges on a container or packaging material must also be taken into account in this respect.

Thus this issue was made into a requirement.

#### C-8. Use/discharge of hazardous materials

The following issue was discussed:

- (1) No harmful substances must leak out from a container material during distribution.

When a container is cleaned, harmful substances could leak out. For example, ink could leak out from wet and torn out pieces of a label. As this issue is similar to that of C-6 (release of water-degrading substances), they were considered together.

Plastic containers and packaging materials were also investigated in this respect, and Food Hygiene Law of Japan was studied.

Thus this issue was made into a requirement.

#### D. Use/Consumption Stage

##### D-1. Resource consumption

The following issue was discussed:

- (1) No or a minimal amount of auxiliary materials must be consumed in the use or consumption stage.

This issue was discussed along with that of D-7 (release or need of treatment of waste).

As a result, those issues were made into a requirement.

##### D-6. Discharge of water pollutants

The following issue was discussed:

(1) No water-degrading substances must be released in the use or consumption stage.

A discussion was held about the practice of consumer cleaning glass-bottles. How much water-degrading substance is released into rivers and other water environments from bottle cleaning by the consumer depends on the consumer's cleaning practice, requiring further studies.

As a result, this issue was not made into a requirement.

#### D-7. Discharge/disposal of wastes

The following issues were discussed:

- (1) Pieces of broken glass bottles
- (2) The amount of the material, such as throw-away attachments, of a container which is discarded in the use or consumption stage must be zero or smaller than that of a comparable one-way container.

Issue (1) above is the same as issue (1) of C-7 (release or need of treatment of waste). This issue was not made into a separate requirement but is considered to stipulate that returnable products be designed for repeated use.

Issue (2) above is important because caps and labels could affect the environment if they are simply thrown away. Thus the issue was made into a requirement.

#### D-8. Use/discharge of hazardous materials

The following issues were discussed:

- (1) No harmful chemicals, including endocrine disruptors (so-called environmental hormones), must be released in the use or consumption stage.
- (2) Paints coated on a product could be harmful.

About issue (1) above, it was recognized that plastic containers and packaging materials, such as food containers, could let out harmful substances. However, which substances are harmful is yet to be established. In this respect, Product Category No. 118, Plastic Products Made from Recycled Materials, was studied.

Wood and bamboo containers and packaging materials could let out antiseptic (especially formaldehyde for plywood) and other harmful substances.

Thus this issue was made into a requirement.

About issue (2) above, a discussion was made about the harmfulness of coloring substances which are used for label printing, surface painting, or plastics coloring. While label printing ink is subject to the recommendations by Printing Ink Industries Association of Japan, paint is left uncontrolled. It was agreed that organic and non-organic coloring substances be subject to the recommendations by Japan Hygiene Council for Polyolefin and Other Substances (excluding plastic leak-out testing).

Thus this issue was made into a requirement.

## E. Disposal Stage

### E-1.Resource consumption

The following issues were discussed:

- (1) When discarded, glass bottles must be crushed into cullet to serve as glass material.
- (2) Least amount of fuel or other energy resource must be consumed, or more energy must be collected, when returnable products are discarded.

About issue (1) above, it was recognized that local governments use some returnable products to create landfills, and imported glass bottles cannot easily be recycled. Considering these, the issue was made into a requirement for glass bottles.

About issue (2) above, it was agreed that, when discarded, plastic containers and packaging materials should not be burned but be recycled (normally as material). It was noted that discarded products can be collected more effectively if they are classified at the time of discarding. In this respect, Product Category No. 118, Plastic Products Made from Recycled Materials, was studied.

For wood and bamboo containers and packaging materials, and soft packaging materials and their attachments made of regenerating resources, some working group members suggested that an energy-collection requirement be made. This suggestion was turned down because effective energy collection requires a large amount of collected products, and such a requirement would impose too much burden on a returnable product provider.

Discussion was also made about the importance of factors E-1 to E-9 for checking a recycling system for effectiveness.

Thus part of the issue was made into a requirement.

### E-2.Discharge of greenhouse gases

The following issue was discussed:

- (1) When burned, returnable products must not release more global warming substances than comparable one-way products.

It was concluded that, while material recycling is preferable to product burning, effective material recycling requires a large amount of discarded products. Also a requirement controlling the amount of released global warming substances would impose too much burden on a returnable product provider.

Thus the issue was not made into a requirement.

### E-3.Discharge of the ozone layer depleting substances

The following issue was discussed:

(1) When returnable products (such as refrigerating and freezing trailer containers ) are discarded, ozone-layer destructive substances, if any, must be collected.

When burned, foamed polystyrene and other thermal insulators could release ozone-layer destructive substances.

Thus the issue was made into a requirement.

#### E-4.Destruction of eco systems

The following issue was discussed:

(1) When burned or otherwise disposed of, returnable products must not release such substances as could affect the ecological system.

This issue is important especially with plastic containers and packaging materials, and soft packaging materials and their attachments made of regenerating resources. This issue is also important with wood and bamboo containers and packaging materials, as they could contain synthetic materials. This issue and similar ones of E-5, E-6, E-7, and E-8 were made into a requirement.

#### E-5.Discharge of atmospheric pollutants

The following issues were discussed:

(1) When burned, FRP containers could produce clinker.  
(2) When burned, returnable products must produce no harmful gases, and no more air pollution substances than comparable one-way products.

About issue (1) above, while FRP containers and packaging materials should be easily disposed of, it was agreed that a common environmental requirement ensuring correct disposal is sufficient.

Thus this issue was made into a requirement.

Issue (2) above was discussed along with that of E-2 (release of global warming substances), and it was concluded that the issue not be made into a requirement (see the interpretation for E-2).

#### E-6.Discharge of water pollutants

The following issue was discussed:

(1) When discarded and used as landfill material, returnable products must not release water-degrading substances.

When a plain glass bottle is discarded as cullet, no harmful substances are released. When a plastic-coated glass bottle is simply thrown away, problems could occur as discussed in E-8 (use or release of harmful substances). This issue is more

important with plastic containers and packaging materials, as well as with soft packaging materials and their attachments made of regenerating resources.

Thus the issue was made into a requirement.

#### E-7. Discharge/disposal of wastes

The following issues were discussed:

- (1) Plastic carrying means should be recycled as plastic material when discarded, but there is a possibility that they could be burned.
- (2) If FRP containers were broken into fine pieces when discarded, there is a possibility that some of such fine pieces could fly away.
- (3) For drum cans and other reusable containers, how to process their contents could be a problem.
- (4) Disposal of reused products (especially nets and other flexible containers) that can no longer be reused or recycled.
- (5) The percentage of waste of discarded returnable products must be smaller, or the treatment of the waste must be easier, as compared with comparable one-way products.

Issue (1) above was discussed along with that of E-4 (effect on ecological system), and was made into a requirement.

Issue (2) above was made into a requirement requiring that FRP and other products be duly disposed of when discarded.

Issue (3) above was made into a requirement requiring that metal containers and packaging materials be able to be easily and safely disposed of when discarded.

Issue (4) above was made into a requirement requiring that plastic and other synthetic products be able to be easily classified to make collection-by-material possible.

It was decided that issue (5) above need not be made into a separate requirement because most returnable products (especially glass bottles, potteries, and earthenware containers, but excluding those having a very thick wall) would meet such a requirement. It was agreed, however, that the cap and the main body of a plastic container or packaging material could be made of different materials. Thus this issue was considered when other requirements were stipulated.

#### E-8. Use/discharge of hazardous materials

The following issues were discussed:

- (1) There is a possibility that, when discarded, returnable products (especially plastic carrying means) could be burned to release harmful substances.
- (2) When discarded and used as landfill material, returnable products must not release harmful substances.

Issue (1) above is similar to that of E-7, and they were made into a requirement as described earlier.

Issue (2) above was discussed along with that of E-6 (release of water-degrading substances). For soft packaging materials and their attachments made of

regenerating resources, mold-preventing agent, leather tanning agent, dye, or additives could be released. Thus the issue was made into a requirement.

## F. Recycling Stage

### F-1.Resource consumption

The following issues were discussed:

- (1) For a product to be recycled effectively, the nature of its material is important.
- (2) Recycling must not require much energy or water resources.

Issue (1) above is not likely to result in a serious problem, and was not made into a requirement.

While issue (2) above is important, especially for a cleaning process, it is difficult for returnable product providers to comply. Thus the issue was not made into a requirement.

### F-2.Discharge of greenhouse gases

The following issue was discussed:

- (1) No or least amount of carbon dioxide or other global warming substances must be released (e.g., this can be achieved by making products more compact).

This issue is not likely to result in a serious problem and, at the same time, it is difficult for returnable product providers to comply.

Thus the issue was not made into a requirement.

### F-3.Discharge of the ozone layer depleting substances

The following issue was discussed:

- (1) No ozone-layer destructive substances must be used or released in the recycling stage, especially in a cleaning process.

This issue is not likely to result in a serious problem, and was not made into a requirement.

### F-4.Destruction of eco systems

The following issue was discussed:

- (1) No waste that could affect the ecological system must be released during product collection or in a recycling process.

This issue is not likely to result in a serious problem, and was not made into a requirement.

#### F-5. Discharge of atmospheric pollutants

The following issues were discussed:

(1) No more nitrogen oxide or other air pollution substances must be released during product collection or in a recycling process, as compared with comparable one-way products (e.g., this can be achieved by making products more compact).

Like the discussion in F-2 (release of global warming substances), this issue is not likely to result in a serious problem and, at the same time, it is difficult for returnable product providers to comply. Thus the issue was not made into a requirement.

#### F-6. Discharge of water pollutants

The following issue was discussed:

(1) No water-degrading substances must be released during cleaning or in a recycling process.

Like the discussion in F-5 (release of air pollution substances), this issue is not likely to result in a serious problem and, at the same time, it is difficult for returnable product providers to comply. Thus the issue was not made into a requirement.

#### F-7. Discharge/disposal of wastes

The following issues were discussed:

(1) Paints and impurities must be identified (for metal containers).  
(2) When returnable products become no longer usable for the original purpose, they should be able to be reused for any other purpose.

These issues above are important, especially for facilitating recycling of metal containers and packaging materials. Thus these issues were made into a requirement.

#### F-8. Use/discharge of hazardous materials

The following issues were discussed:

(1) No harmful substances must be released during cleaning or in other recycling processes.

This issue is not likely to result in a serious problem and, at the same time, it is difficult for returnable product providers to comply. Thus the issue was not made into a requirement.

## 6. Other Requirements

About paragraph (1) of 6, Others, returnable product providers include a business that leases pallets to another business while operating a system for collecting the pallets, as defined in 3, Terminology. Returnable product providers also include a carrier that rents pallets from another business to transport goods on the pallets to consumers while maintaining a system for collecting the pallets. In this example, it can be said that there are larger and smaller returnable-product systems, where the larger system is operated by the pallet-leasing business, and the smaller system by the pallet-renting carrier. Thus, both the pallet-leasing business and the pallet-renting carrier can apply for eco-mark product approval.

## Product Weight Certificate

month day, year

(Name of manufacturer)

Company

Note: Do not leave any column blank.

Product's main materials					
	Component or product name	Material	Weight (g)	Percentage of the whole product (%)	Category
Component 1					
Component 2					
Component 3					
Component 4					
Component 5					
Component 6					
Total weight					

Accessories must also be included as components (must be indicated "accessories" in the Category column).

## Attachment 2 List of Certificates (for common requirements)

Product name	
Classification	

	4-1 Environmental requirements	Certifying method	Attachments	Confirmation by the executive office
(1)	Number of product's recycling uses	A document indicating the actual average number of recycling uses of a product (for new products, the data for comparable products may be submitted instead).		
(2)	Design for recycling	Certificates by a third party or company design documents describing: 1. Strength (except for the classification "G. Pottery or earthenware containers") 2. Cleaning characteristics (for containers only) 3. Label's adhesive or removable characteristics (for those products requiring attachment or removable of a label for each reuse)		
(3)	*A system to collect returnable products shall be established. *Necessary information shall be printed or otherwise indicated.	1. A document describing a system or a product collecting route to make a product returnable 2. A document or photos illustrating a container (if any) in which returnable products are put for transportation 3. Marking or indication stating that a product is reusable		
(4)	Discharging of any harmful substance or water-degrading substance from a manufacturing installation shall comply with relevant local environmental laws and regulations.	A statement by a manufacturer stating that it complied with relevant local environmental laws and regulations for five years at the time of application.		
(5)	Of coloring substances used on labels or as coating or in product material, printing ink shall comply with the negative list issued by the Ink Industries Association of Japan, and the coloring substances other than printing ink shall comply with the recommendations by Japan Hygiene Council for Polyolefin and Other Substances requiring no more than 0.01% lead, 0.01% cadmium, 0.005% arsenic, 0.005% mercury, and 0.05% free amine.	A declaration by a product manufacturer or a material supplier, or a test report from an independent testing authority (a product manufacturer or a material supplier may simply declare in writing that the product contains no such harmful substance if it is the case).		
	Containers designed to contain food shall also pass the coloring-substance leak test as defined by Japan Hygiene Council for Polyolefin and Other Substances. A manufacturing installation shall not discharge any water-degrading substance as a result of product cleaning. Attachments to a food-containing container shall not use such harmful substances as controlled by the Food Hygiene Law of Japan.			

	4-1 Environmental requirements	Certifying method	Attachments	Confirmation by the executive office
(6)	Containers and packaging materials shall be designed lightweight, compact, and stackable. They shall be able to be folded into smaller sizes for easier returning for reuse.	A document describing how containers and packaging materials are designed more lightweight, compact, and stackable in distribution and use than comparable ones for one-way use, and how they can be folded into smaller sizes for easier returning (such a document need not be submitted if there are no one-way containers or packaging materials to be compared with).		
(7)	The amount of the material, such as throw-away attachments, of containers and packaging materials which is discarded during distribution or after use shall be smaller than or equal to that of one-way containers and packaging materials (this requirement does not apply to the coating to protect class-A glass surfaces, or to the protective covering of class-I containers).	A declaration in writing by an applicant that the amount of the material, such as labels and caps, of containers and packaging materials which is discarded during distribution or after use is smaller than or equal to that of comparable one-way containers and packaging materials (such a declaration need not be submitted if there are no comparable one-way containers or packaging materials).		
(8)	The amount of the material, such as helping material, which is added during distribution or before use shall be little or none.	A declaration in writing by an applicant that the amount of the material which is added during distribution or before use shall be zero, or smaller than that of comparable one-way containers and packaging materials (such a declaration need not be submitted if there are no comparable one-way containers or packaging materials).		
(9)	When a product is discarded, any substance that is defined as destructive to the ozone layer according to Attachments A, B, C and E to the Montreal Memorandum 1999 (see separate table 1) shall not be released or shall be collected.	A document certifying that, when a product is discarded, any substance that is defined as destructive to the ozone layer according to the Montreal Memorandum 1999 is not released or is collected.		
(10)	Any part of a product which is not recycled shall be duly disposed of when the product is discarded.	A document describing how a product is disposed of.		

	4-3. Quality requirements	Certifying method	Attachments	Confirmation by the executive office
(26)	The quality of a product shall comply with the Food Hygiene Law of Japan, and relevant JIS and industry standards of Japan.	For compliance with the Food Hygiene Law of Japan, a test report from an independent testing authority. For compliance with relevant JIS or industry standards, a declaration in writing by an applicant.		

Notes on how to fill in:

- 1 ) If a document to be submitted is accompanied by an attachment, indicate the designation (e.g., Certificate 1-(1) of that attachment in the "Attachments" column.
- 2 ) Leave the "Confirmation by the executive office" column blank.

Date:

Applicant:

\_\_\_\_\_

Sign of the representative person or official seal of the applicant company.

### Attachment 3 List of Certificates (for applicable requirements only)

Product name	
Classification	

	4-2. Applicable environmental requirements	5-2. How to certify compliance with "4-2 Applicable environmental requirements"	Columns to be filled in by an applicant			Confirmation by the executive office
			Requirements applicable to a product	Component number	Attachments	
<b>A. Glass bottles</b>						
(11)	When discarded, a glass bottle shall be crushed into cullet to serve as glass material.	A declaration in writing by an applicant that, when discarded, a glass bottle is crushed into cullet to serve as glass material.				
<b>B. Plastic containers and packaging materials</b>						
(12)	Plastic products shall not contain harmful substances. Specifically, they shall comply with Paragraphs 4-1 (3) and (4) of 4, Approval Requirements, of Product Classification No. 118, Plastic Products Made of Recycle Material.	*A certificate issued by a product manufacturer or a material supplier, or a test report from an independent testing authority (a product manufacturer or a material supplier may simply declare in writing that the product contains no such harmful substance if it is the case).				
	No foaming agent shall be used or, if used, foaming agent shall not use or release any substance that is defined as destructive to the ozone layer according to Attachments A, B, C and E to the Montreal Memorandum 1999 (See separate table 1).	*If foaming agent is used, a document identifying it.				
(13)	*When they are discarded, they shall be able to be easily classified by material to make collection-by-material possible. *When discarded, a product containing halogen-base polymer materials shall be recycled or disposed of by an applicant by a method other than burning which does not release dioxin.	*A document certifying that, when a product is discarded, it can be easily classified to make collection-by-material possible. *For a product containing halogen-base polymer materials, a document describing how it is recycled or disposed of.				
<b>C. Paper containers and packaging materials</b>						
	None			-	-	-

	4-2. Applicable environmental requirements	5-2. How to certify compliance with "4-2 Applicable environmental requirements"	Columns to be filled in by an applicant			Confirmation by the executive office
			Requirements applicable to a product	Component number	Attachments	
<b>D. Wood or bamboo containers and packaging materials</b>						
(14)	No antiseptic or other harmful substance shall be used when they are manufactured, or such harmful substance shall not leak out.	<p>*If antiseptic or insecticide is used as a treatment or smoking agent, a document certifying that no chromium- or arsenic-base chemicals or pyrethrum-containing chemicals are used or released outside of a factory (e.g., certifying that no such harmful substance remains in a shipped product, or is released into waste material, waste water, or the air).</p> <p>*If antiseptic or insecticide is used with a bottle, an approval certificate from the Wood Material Preservation Institute of Japan.</p>				
<b>E. Metal containers and packaging materials</b>						
(15)	When discarded, they shall produce little waste or be able to be recycled, or be able to be easily and safely disposed of.	An applicant must submit a document describing how a container or packaging material is discarded. An applicant must also submit a document certifying that a container or packaging material can be recycled as material or produces less waste than a comparable one-way container or packaging material (such a document need not be submitted if there are no comparable one-way containers or packaging materials).				
(16)	Collected metal containers and packaging materials for recycling shall be able to be easily identified with respect to its substance (e.g., steel or aluminum). A document shall be submitted indicating what percentage of a product can be recycled.	<p>*A photo indicating a marking of product substance on a container or packaging material</p> <p>*A document indicating what percentage of a container or packaging material is actually recycled</p>				
<b>F. FRP containers and packaging materials</b>						
(17)	FRP products shall be designed repairable.	A document indicating where FRP products can be repaired, how repair can be done, and to what extent repair is possible.				
(18)	When discarded, a product containing halogen-base polymer materials shall be recycled or disposed of using an applicant by a method other than burning which does not release dioxin.	For a product containing halogen-base polymer materials, a document describing how it is recycled or disposed of.				

	4-2. Applicable environmental requirements	5-2. How to certify compliance with "4-2 Applicable environmental requirements"	Columns to be filled in by an applicant			Confirmation by the executive office
			Requirements applicable to a product	Component number	Attachments	
<b>G. Pottery and earthenware containers</b>						
(19)	Pottery and earthenware containers shall not cause heavy metal or other harmful substance to leak out. Specifically, they shall comply with relevant paragraphs of 4, Approval Requirements, of Product Classification No. 109, Tiles and Blocks Made of Recycle Material (see Attached Material 5).	A certificate issued by a product manufacturer or a material supplier, or a test report from an independent testing authority (a product manufacturer or a material supplier may simply declare in writing that the product contains no such harmful substance if it is the case).				
(20)	When discarded, a pottery or earthenware container shall be able to be recycled as material.	A declaration in writing by an applicant that, when discarded, a pottery or earthenware container can be recycled as material.				
<b>H. Soft packaging materials and their attachments made of regenerating resources</b>						
(21)	Harmful substances shall not be used or released in cleaning, cleansing, or other manufacturing processes.	A document from a product manufacturer certifying that no harmful substance is used or released in cleaning, cleansing, or other manufacturing processes.				
(22)	The percentage of harmful substance at the time of use shall comply with relevant requirements of Product Classification No. 114, Paper Packaging, for paper products (see Attached Material 2); No. 105, Industrial Textile Products Made from Recycled PET Resin, for cotton and wool products (see Attached Material 3); No. 115, Used Wood, Thinned-out Wood, and Small-diameter Wood, for wood and bamboo products (see Attached Material 4); and the food and additives requirements of the Food Hygiene Law of Japan - 1959 for natural rubber products.	A certificate issued by a product manufacturer or a material supplier, or a test report from an independent testing authority (a product manufacturer or a material supplier may simply declare in writing that the product contains no such harmful substance if it is the case).				
<b>I. Soft packaging materials and their attachments made of non-regenerating resources</b>						
(23)	No foaming agent shall be used or, if used, foaming agent shall not use or release any substance that is defined as destructive to the ozone layer according to Attachments A, B, C and E to the Montreal Memorandum 1999 (see separate table 1).	A declaration in writing by a product manufacturer that no foaming agent is used during manufacturing or, if foaming agent is used, a document identifying the substances of the foaming agent				

	4-2. Applicable environmental requirements	5-2. How to certify compliance with "4-2 Applicable environmental requirements"	Columns to be filled in by an applicant			Confirmation by the executive office
			Requirements applicable to a product	Component number	Attachments	
(24)	Harmful substance shall not leak out when a product is used or consumed. Specifically, PET products shall comply with relevant paragraphs of 4, Approval Requirements, of Product Classification No. 105, Industrial Textile Products Made from Recycled PET Resin (see Attached Material 3), and other plastic or synthetic products (e.g., glass-wool and aluminum foil products) shall comply with relevant paragraphs of 4, Approval Requirements, of Product Classification No. 118, Industrial Textile Products Made from Recycled PET Resin (see Attached Material 1).	A certificate issued by a product manufacturer or a material supplier, or a test report from an independent testing authority (a product manufacturer or a material supplier may simply declare in writing that the product contains no such harmful substance if it is the case).				
(25)	*When they are discarded, they shall be easily separated into basic materials. *When discarded, a product containing halogen-base polymer materials shall be recycled or disposed of by an applicant, using a method other than burning which does not release dioxin.	*A document certifying that, when a product is discarded, it is easily separated into basic materials. *For a product containing halogen-base polymer materials, a document describing how it is recycled or disposed of.				

Notes on how to fill in:

- 1) In the column "Requirements applicable to a product," indicate applicable requirements with the symbol "O" and non-applicable requirements with the symbol "X".
- 2) In the column "Component number," enter a component number as defined in Product Weight Specification (see Attachment 1).
- 3) If a document to be submitted is accompanied by an attachment, indicate the designation (e.g., Certificate 1-(1)) of that attachment in the "Attachments" column.
- 4) Leave the "Confirmation by the executive office" column blank.

Applicant:

Sign of the  
representative person  
or official seal of the  
applicant

Date:



Eco Mark Product Category (Proposal)  
(Proposed) “Printers”

Japan Environment Association  
Eco Mark Office

### 1. Environmental Background

In recent years, along with the worldwide dissemination of personal computers, the annual output of printers in Japan increased in an accelerated fashion from about 25 million units in 1996 to 29 million in 1997 and further to 32 million in 1998. Japanese manufacturers' share in the world market is particularly large as will be described in more detail below.

There already is an Eco Mark product category applicable to printers, Category No. 53 covering “Low-Waste Printers for Business Machines.” Printers requiring replacement of only expendables, such as printing toner, or allowing repeated use of cartridges to reduce wastes are recognized as Category No. 53 printers. However, merely reducing expendable wastes can contribute little to alleviating the environmental load, and it is strongly urged to reduce the overall environmental load of printers, whose use is now dramatically expanding. This calls for consideration of the total lifetime of each printer from the consumption of raw materials till their recycling.

For printers, standardization is already in place with ecolabels prescribed by Germany, Canada and five Scandinavian countries. In Japan, “specific procurement items” under the Law Concerning the Promotion, Etc. of Procurement of Environmentally Sensitive Goods by the National Government, Etc. which came into force in April 2001 include printers, and the law also specifies certification criteria. The Green Purchasing Network has announced its purchasing guidelines (in November 1996), arousing further interest in the ecologically-conscious choice of printers. From the viewpoint of effective utilization of resources, the amended Law Concerning the Promotion of Effective Utilization of Resources, effective April 2001, took up secondary batteries as “designated reusable products,” and at the same time designated printers as machines using small secondary batteries, designated reusable products. Arrangements are ready for the collection of used secondary batteries from April this year on.

Japanese-made printers enjoy a dominant share in the world market, about 97% for the wire dot type, 85% for the electrophotographic type and 60% for the ink jet type. Thus, together with copying machines, printers are an international item supplied by Japanese manufacturers to users worldwide. Therefore, it is essential to give due consideration to international conformity in formulating qualification criteria for ecolabels. For “copiers” for which Eco Mark qualification criteria were set forth in November 1999, JEA is making conformity efforts with Nordic White Swan through the GEN (Global Ecolabeling Network), and a similar approach is also likely to be needed for printers in the future.

In view of these circumstances, it is considered very meaningful, internationally as well, to discard the existing provisions regarding “Low-Waste Printers for Business Machines” and institute anew a product category covering environmentally-friendly printers.

## 2. Applicable Products

The subject of this new Eco Mark categorization mainly consists of printers commonly used in offices and families and intended for connection to computers. Following the classification by the Japan Electronics and Information Technology Industries Association (JEITA), Terminology for Printer Catalogs, Fourth Edition (in Japanese), the category includes printers of the wire dot, thermosensitive, ink jet and electrophotographic types (see the “Coverage” graphic shown in Fig. 1). It also covers multifunctional machines whose main function is printing. Therefore it does not include ticket vending machines in stations of traffic facilities, order ticket issuing machines to serve people waiting in a queue, cash registers and search equipment for use in medical facilities or public libraries.

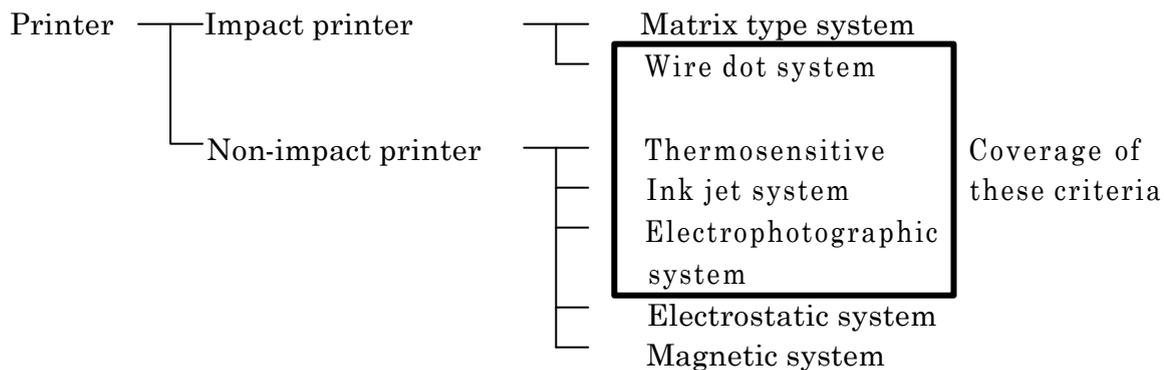


Fig. 1 Coverage

## 3. Terminology

- Printer: A machine having function as its standard features which presuppose connection to a personal computer via a parallel port, USB interface or network interface. It may also perform direct printing via a memory card or some other medium.
- Component of formula: Any component intentionally added for the purpose of giving a characteristic(s) to the product. Impurities which inevitably come in during the manufacturing process do not fit this definition.
- Plastic: A material consisting of one or more polymers and any additive, filler, etc. added for the purpose of giving a characteristic(s).
- Polymer: A high molecular material constituting a main constituent of a plastic.
- Homopolymer: A polymer of monomers of a single type.
- Copolymer: A polymer of monomers of two or more types.
- Polymer alloy (polymer blend): A generic term for multiple-component high molecules resulting from the mixture or chemical combination of two or more

kinds of high molecules. A polymer blend is a physical mixture of different kinds of high molecules.

- Reclaimed plastic: A plastic consisting of a pre-consumer material and a post-consumer material.
- Pre-consumer material: A material or a rejected item emerging in the manufacturing process of a product, not to be recycled as a raw material in the same process (plant).
- Post-consumer material: A material or a product discarded after being used as a product.
- Reclaimed plastic component: A plastic-made component containing any reclaimed plastic.
- Reused component: A component used in the past and now in use again.
- Back side printing: Printing again on a sheet of paper, of which one side is already printed, on the other side with the same machine by putting it into a paper feed tray or otherwise.
- Double side printing: Automatic printing on both sides of a sheet of paper.
- Multi Functional Printer (MFP): A machine having a printing function as one of its standard features plus one or more of copying, scanning or facsimile functions.
- Printing speed in pages per minute(PPM): For monochrome printers, the number of pages that can be printed per minute as determined according to ISO/IEC 10561: 1999, though for color printers the speed is stated by each manufacturer as there is no standardized criterion.
- Large size printer: A printer with a printing function for printing A2 or larger size sheets.
- Vital component: An indispensable component for keeping the product functional.
- Vital component for repair use: A vital component for replacement.
- Recycling: Refers to material recycling only, not to energy recovery (thermal recycling).
- Box: External cover
- Large box component: A box component of 25g or more in weight or 200mm<sup>2</sup> or more in square measure.
- Battery: A primary or secondary battery. A primary battery is no longer used once its charge is exhausted, while a secondary battery can be recharged for repeated use.
- Stack form: A continuous long strip of paper for computer print-out use. It may be perforated at regular intervals to facilitate folding into a box shape.

#### 4. Criteria for Eco Mark Certification

##### 4-1. Environmental criteria

##### 4-1-1. 3R Design

##### 1) Printer per se

- (1) A printer shall satisfy the requirements of the “design suitable for printer recycling” in Attachment 1.
- (2) The vital components for repair use and expendables shall be kept in stock

for at least five years after the manufacture of the relevant product is discontinued.

- (3) The arrangements for meeting repair needs shall be adequately developed to enable repairs requested by printer users to be accomplished (repair system). The arrangements shall include adequate supply of information on 1) the availability of repair service and 2) the available range of repair service, required length of time, cost and way of access for printer users.
- (4) One or more kinds of recycled paper with 100% used paper content shall be usable, except for thermosensitive type printers.
  - (5) A printer shall be able to reduce the quantity of paper consumption (by double side printing, compressed printing, back side printing or otherwise).
  - (6) An electrophotographic or multifunctional printer (PPM > 24) shall be capable of double side printing as either a standard or an optional function. This provision, however, shall not apply to any printer using a stack form.

## 2) Components using plastic materials

- (7) A plastic-made large box component shall consist of one homopolymer or copolymer. The use of a polymer blend (polymer alloy) is acceptable. This provision, however, shall not apply to components weighing less than 25g each.
- (8) A plastic-made box component or chassis shall consist of four or fewer kinds of separable polymers or polymer blends. This provision, however, shall not apply to components weighing less than 25g each or vital components constituting a chassis.

## 3) Battery

- (9) A battery fitted to a printer shall be replaceable or removable when it has become exhausted, when the printer is to be repaired or in any other like situation without having to replace the whole printed circuit board or the like on which the battery is mounted (this applies to what falls under any of A through F in Attachment 4). A battery fitted to a substrate or the like whose removal by the printer user shall have a useful life of at least 10 years.
- (10) The user manual shall contain information on the collection, reuse, recycling or disposal as waste matter of used secondary batteries.

## 4) Toner cartridge and ink cartridge

- (11) For toner cartridges (including toner containers) and ink cartridges manufactured or marketed by the applicant, there shall be a system of collection and recycling.
- (12) Collected toner cartridges (including toner containers) or unusable parts of ink cartridges, shall be processed and/or disposed of in a manner harmonious with the environment.
- (13) A toner cartridge shall bear a label conforming to the Guidelines on Labeling for Ensuring the Safety of Office Machinery Products of the Japan Business Machine Makers Association.

#### 4-1-2. Chemical Substances

##### 1) Plastic materials

- (14) No plastic shall contain polybrominated biphenyl (PBB), polybrominated diphenyl ether (PBDE) or chlorinated paraffin (having a chain of 10 to 13 carbon atoms and a chlorine concentration of 50% or more) added as a formula component.
- (15) No plastic (including any plastic used for packaging) in any box or box component shall have a halogen-containing polymer added as a formula component, except for organic fluorine additives of no more than 0.5 wt% in content used for improving the physical properties of the plastic or components of less than 25 g in weight.
- (16) No plastic in any box or box component shall have cadmium or lead added as a formula component. No plastic in any box or box component should have any carcinogenic substance (anything classified by IARC as a carcinogenic substance of Group 1, 2A or 2B), except for titanium yellow, antimony trioxide and carbon black.

##### 2) Battery

- (17) No battery shall contain cadmium, lead, mercury or any compound thereof added as a formula component.

##### 3) Chlorofluorocarbons, harmful substances, etc.

- (18) Any plastic packaging material to be used by the applicant shall contain no specified chlorofluorocarbon (CFC) (any of the five CFCs; see Attachment 5).
- (19) It shall be definitively demonstrated that neither the final assembly plant nor the manufacturing plant of plastic box components or large box components uses any of the specified CFCs (the five CFCs), any other CFC, carbon tetrachloride or trichloroethylene, or discharges any alternative CFC (which refers to HCFC in this context). It shall also be definitively demonstrated regarding the discharge of harmful substances that the final assembly plant and the manufacturing plant or plants of plastic box components and large box components are observing relevant local environmental laws and regulations, anti-pollution agreements and the like. A component purchase contract or the like, however, may be substituted for certification by the plant manager of the supplier of plastic box components or large box components to the applicant.

##### 4) Photosensitive unit

- (20) The photosensitive unit of an electrophotographic type printer shall contain no cadmium, lead, mercury or any compound thereof as a formula component.

##### 5) Toner for electrophotographic system, ink for ink jet system and ink ribbon for wire dot system

- (21) As a heavy metal content of toner for electrophotographic type printers, ink for ink jet type printers and ink ribbon for wire jet type printers, no

cadmium, lead, mercury, hexavalent chrome or any compound thereof can be added as a formula component.

(22) Toner for electrophotographic type printers, ink for ink jet type printers or ink ribbon for wire jet type printers shall contain none of the substances mentioned in (a) through (d) below as a formula component.

(a) Substances for which labeling of the following R numbers is mandatory under Attachment I (List of hazardous substances and preparations) to the EC Council Directive 67/548/EEC regarding the conformity of EU laws, regulations and administrative rules on the classification, packaging and labeling of hazardous substances.

R26 (Very toxic if inhaled)

R27 (Very toxic in contact with skin)

R40 (Possible risk of irreversible effects)

R42 (May cause sensitization by inhalation)

R45 (May cause cancer)

R46 (May cause heritable genetic damage)

R49 (May cause cancer if inhaled)

R60 (May impair fertility)

R62 (Possible risk of impaired fertility)

R63 (May cause harm to an unborn child)

R64 (May cause harm to breast-fed babies)

(b) Substances classified as carcinogenic substances (Groups 1, 2A, 2B) by the International Agency for Research on Cancer (IARC), except carbon black.

(c) Substances which necessitate labeling of the whole product with a hazard symbol under Attachment II to the EC Council Directive 67/548/EEC regarding the conformity to EU laws, regulations and administrative rules on the classification, packaging and labeling of hazardous substances.

(d) Substances which necessitate labeling of the whole product with R43 under Attachment III to the EC Council Directive 67/548/EEC regarding the conformity of EU laws, regulations and administrative rules on the classification, packaging and labeling of hazardous substances.

(23) An azo colorant (dye or pigment) of toner for electrophotographic type printers, ink for ink jet type printers or ink ribbon for wire dot type printers shall contain none of the carcinogenic or possibly carcinogenic substances classified as such in the MAK list (III1, III2 or III3) as an amine content. This provision, however, shall not apply to any azo colorant in color toner, ink or ink ribbon where its safety has been confirmed by an Ames test.

6) Dust, ozone and styrene

(24) Dust emissions from an electrophotographic printer shall not exceed a concentration of 0.075mg/m<sup>3</sup> in indoor atmosphere. The dust concentration shall be measured under the test conditions specified in the applicable standard

of the Japan Business Machine Makers Association (JBMS-66) or in Attachment 3 to Blue Angel RAL-UZ62. This provision, however, shall not apply to printers for printing stacked forms faster than 60 PPM.

(25) Ozone emissions from an electrophotographic printer shall not exceed a concentration of 0.02mg/m<sup>3</sup> in indoor atmosphere. The ozone concentration shall be measured under the test conditions specified in the applicable standard of the Japan Business Machine Makers Association (JBMS-66) or in Attachment 4 to Blue Angel RAL-UZ62. This provision, however, shall not apply to printers for printing stacked forms faster than 60 PPM.

(26) Styrene emissions from an electrophotographic printer shall not exceed a concentration of 0.07mg/m<sup>3</sup> in indoor atmosphere. The styrene concentration shall be measured under the test conditions specified in the applicable standard of the Japan Business Machine Makers Association (JBMS-66) or in Attachment 5 to Blue Angel RAL-UZ62. This provision, however, shall not apply to printers for printing stacked forms faster than 60 PPM.

#### 4-1-3. Energy Consumption

(27) Electric power consumption shall conform to (1) through (4) in Attachment 6 based on the International Energy Star Program (hereinafter referred to as Energy Star).

(28) A main power switch shall be provided. Power consumption with the main power switch off shall not exceed 2 W.

(29) No function of the printer shall be adversely affected by keeping it unplugged from an A.C. outlet for a relatively long period (at least four weeks) (any loss of timer information including the date and hours is not deemed to be an adverse effect in this context).

(30) The user manual provided by the supplier for an electrophotographic type printer shall contain information on the maximum power consumption in the operating state.

(31) The applicant shall state in the user manual detailed information on the consumption of energy in the mode of “power off” and, if any energy is consumed in this mode, expressly indicate that this energy consumption cannot be avoided unless the printer is unplugged from an A.C. outlet.

#### 4-1-4. Noise

(32) Noise shall be measured in the best quality mode in accordance with ISO 7779: 1999 (the Japanese Industrial Standards include an identical standard - JIS X 7779: 2001). On the basis of the actual measurement thereby obtained, the value of the A Designation Characteristic Sound Power Level  $L_{WA,d}$  under 3.2.5 of ISO 9296: 1988 shall not exceed the applicable value in Attachment 7.

#### 4-1-5. Safety and Electromagnetic Compatibility

(33) The printer shall be a product satisfying the safety requirements of the Safety Standards on Data Processing Equipment (JEIDA-37) of the Japan Electronics and Information Technology Industries Association (JEITA) or the Safety Standards on the Products of Information Technology (J60950) of the

Japan Electrical Safety & Environment Technology Laboratories (JET) (both conforming to IEC 60950).

- (34) The printer shall be a product satisfying the electromagnetic compatibility requirements of the voluntary regulatory measures of the Voluntary Central Council for Interference by Information Technology (VCCI).

#### 4-1-6. User Manual

- (35) The user manual provided by the applicant shall be compatible with the Eco Mark Certificate Criteria “Paper Printed Matter”. However, what is printed overseas should be made of used paper and bound in a manner posing no impediment to recycling.

#### 4-1-7. Packaging Materials

- (36) Any plastic material used for packaging shall be labeled in conformity with JIS K 6899-1: 2000. However, labeling of the material may be dispensed with in conformity to “Measures Concerning Plain Containers and Packaging,” “Measures Concerning Containers and Packaging with Physical Constraints Including Labeling Space, etc.,” “Labeling Requirements and Labeling Method for Multi-layered Containers and Packaging,” “Measures Concerning Packaging Marked with Company Name, Brand Name, etc.” and “Measures Concerning Imported Items” on identification marks in the Report of the Container and Packaging Recycling Subcommittee of the Ministry of International and Trade and Industry (predecessor of the present Ministry of Economy, Trade and Industry) (July 2000).

- (37) Any packaging material shall be compatible with the Guidelines on the Preparation of Advance Assessment Manuals in Product Designing to Contribute to the Promotion of the use of Recycled Resources, etc.” (July 1994, Waste Matter Disposal and Recycling Subcommittee, Industrial Structure Council).

#### 4-1-8. Conditions of Installation

- (38) If there is any matter to be specifically stated regarding the conditions of installation, it shall be expressly stated in the user manual.

#### 4-2. Quality Criteria

None

### 5. Certification Procedure

The applicant (in the case of a raw material, the supplier thereof) shall submit as a seal-bearing document each of the certificates listed in Table 1. A duplicate copy of each certificate shall be acceptable.

Compatibility with other certification criteria stated in 4-1 (e.g., “Paper Printed Matter”, “Energy Star” and so forth) shall be deemed to be certified if the relevant item is compatible with the current version of the applicable certification criteria at the

time of applying for an Eco Mark.

- (1) Regarding certification criteria 4-1. (1), submit Attachment 1, "Design Suitable for Recycling of the Product," properly filled out.
- (2) Regarding certification criteria 4-1. (2), submit a certificate regarding the minimum stock period for vital components for repair use and expendables. Also submit a user manual or the like expressly stating this fact.
- (3) Regarding certification criteria 4-1. (3), submit a certificate regarding the availability of repair service as requested by the user of the printer. Also submit a user manual or the like expressly stating that arrangements are well developed for the purpose (with reference to the processing capacity, particulars of information supply as prescribed by the criteria, etc.).
- (4) Regarding certification criteria 4-1. (4), submit a certificate that a 100% used paper content is compatible. Also submit a raw material certificate stating the name of the manufacturer of the printing paper to be used, brand name of the product and that the used paper content is 100%.
- (5) Regarding certification criteria 4-1. (5), submit a certificate that a function to reduce the quantity of paper consumption (by double side printing, compressed printing, back side printing or otherwise) is provided. Also submit a user manual or the like expressly stating this fact.
- (6) Regarding certification criteria 4-1. (6), submit a relevant part of the user manual.
- (7) Regarding certification criteria 4-1. (7) and (8), submit a certificate expressly stating these criteria are observed. Also submit a list of the plastic materials used (Attachment 3).
- (8) Regarding certification criteria 4-1. (9), submit a certificate regarding the position where the battery is used, the method of removing it in accordance with Attachment 4 (specify the section sign) and so forth.
- (9) Regarding certification criteria 4-1. (10) submit a manual regarding the arrangements developed for collection, reuse, recycling or processing and/or disposal (collection system, processing capacity, particulars of processing, etc.).
- (10) Regarding certification criteria 4-1. (11), submit a description of the mechanism of the recovery system (collection system, processing capacity, particulars of processing, etc.).
- (11) Regarding certification criteria 4-1. (12), submit a manual regarding the arrangements developed for collection, reuse, recycling or processing and/or disposal (collection system, processing capacity, particulars of processing, etc.).
- (12) Regarding certification criteria 4-1. (13), submit a certificate that the product is labeled in conformity with the Guidelines on Labeling for Ensuring the Safety of Office Machinery Products.
- (13) Regarding certification criteria 4-1. (14), make it definitively clear by a component purchase contact or the like that no PBB, PBDE or chlorinated paraffin is added.
- (14) Regarding certification criteria 4-1. (15), submit a list of the plastic materials used on the form in Attachment 3, expressly stating the names of the

- manufacturers of the raw materials and whether or not there is the addition of any polymer containing halogen and/or any organic halogen compound.
- (15) Regarding certification criteria 4-1. (16) and (17), submit a list stating the presence or absence of any relevant substance contained therein.
  - (16) Regarding certification criteria 4-1. (18), submit a certificate issued by the manufacturer of the packaging material, the person responsible for the management of the business establishment or the manager of the plant where the product is assembled to the effect that the plastic packaging material used in the packaging done on the applicant's responsibility contains no specified CFC.
  - (17) Regarding certification criteria 4-1. (19), submit a certificate issued by the manager of the plant where the product is manufactured to the effect that relevant local environmental laws, regulations and the like have been observed with no violation for the last five years before the filing of the application. A component purchase contract or the like may be substituted for certification by the plant manager of the supplier of plastic box components or large box components to the applicant.
  - (18) Regarding certification criteria 4-1. (20) through (23), submit a list stating the presence or absence of any relevant substance contained therein.
  - (19) Regarding certification criteria 4-1. (24), submit a certificate that the method of measurement meets the relevant standard in JBMS-66 or Attachment 3 to RAL-UZ62, together with actually measured data.
  - (20) Regarding certification criteria 4-1. (25), submit a certificate that the method of measurement meets the relevant standard in JBMS-66 or Attachment 4 to RAL-UZ62, together with actually measured data.
  - (21) Regarding certification criteria 4-1. (26), submit a certificate that the method of measurement meets the relevant standard in JBMS-66 or Attachment 5 to RAL-UZ62, together with actually measured data.
  - (22) Regarding certification criteria 4-1. (27), submit a certificate that the criteria of (1) through (4) in Attachment 6 are conformed to.
  - (23) Regarding certification criteria 4-1. (28) and (29), submit a certificate that these requirements are fully met.
  - (24) Regarding certification criteria 4-1. (30), submit a relevant part of the user manual stating the maximum power consumption measured under the applicant's own conditions.
  - (25) Regarding certification criteria 4-1. (31), submit a relevant part of the user manual.
  - (26) Regarding certification criteria 4-1. (32), conduct measurement in the best quality mode of ISO 7779: 1999, and submit data indicating the value of the A Designation Characteristic Sound Power Level  $L_{wAd}$  under 3.2.5 of ISO 9296: 1988.
  - (27) Regarding certification criteria 4-1. (33), submit a certificate of compatibility with the Safety Standards on Data Processing Equipment or the Safety Standards on the Products of Information Technology.
  - (28) Regarding certification criteria 4-1. (34), submit a certificate that the product is compatible with the voluntary regulatory measures of VCCI.
  - (29) Regarding certification criteria 4-1. (35), submit information material certifying

compatibility with the items of the Eco Mark Certificate Criteria “Paper Printed Matter”. Where printing is done overseas, it has to be explained that used paper is employed and no material identified as an inhibitory factor to the recycling of used paper is employed.

- (30) Regarding certification criteria 4-1. (36), submit a certificate regarding the presence or absence of material labeling.
- (31) Regarding certification criteria 4-1. (37), explain compatibility with the guidelines; more specifically, 1. explain that the packaging material is selected in accordance with a packaging material assessment manual prepared in accordance with the guidelines [submit an information material (a list of contents or the like) which reveals the contents of the manual], and 2. state the name(s) of the packaging material(s) used.
- (32) Regarding certification criteria 4-1. (38), submit a relevant part of the user manual if there is any matter specifically stated regarding the conditions of installation.

## 6. Other Requirements

- (1) A product category shall consist of a product model or a series of models. One application may cover a whole series, but each model of the series should be compatible with the relevant criteria.
- (2) The statement in the lower part of the mark shall be “resources-saving, energy-saving, low waste emission.”

Or, if desired to make the contents of the aforementioned words appearing with the mark more clear and specific, it may contain environmental information, and this shall consist of three lines justified on the left side encircled in a rectangular as illustrated below.

ちぎゅうにやさしい  
Friendly to the Earth



This is a low-waste printer,  
consuming less energy during standby,  
whose components are reused or recycled.

Scheduled for institution on October 1, 2001.

These certification criteria for the product category will be reviewed in five years after the date of enactment, and the certification criteria and/or the product category will be revised or abolished.

## Attachment 1: 3R Design of Printer Per Se

Requirements (Category M: Requirements which should absolutely be satisfied;  
 Category S: Requirements which should desirably be satisfied)  
 Requirements of "3R Design" are deemed to be met when the reply regarding every  
 "M" requirement is "Yes."

Requirement	Relevant subassembly	Category	Satisfied?
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### Ease of utilization as reused component or recycled resource

1	<p>Is direct printing on plastic components limited to the required minimum (e.g., manufacturer's name)?</p> <p>A plastic component having a large area of coating requires removal of the coating when it is to be recycled. Laser marking and the like are not "printing" in this context. This item does not apply to coating of the same material as the plastic component, electroconductive coating for the prevention of electromagnetic hazards involving the printer or the like.</p>	Box	S	Yes/No
2	<p>Is any reclaimed plastic material used?</p> <p>Use of any reclaimed plastic material containing PBB, PBDE or chlorinated paraffin should be avoided.</p>	Whole printer	M	Yes/No
3	<p>Is any reusable unit or component employed?</p> <p>*Use of general-purpose units/components</p> <p>*Use of common units/components</p>	Whole printer	S	Yes/No

### Facilitation of separation/disassembling (including facilitation of crushing/incineration)

4	<p>Are subassemblies made of mutually incompatible materials separable or joined with a separating aid?</p> <p>What is relevant here is the combination of a box component with a subassembly, especially an electronic circuit subassembly, adjoining it. An adhered mark plate (e.g., corporate logo or label) is also relevant. "Compatibility" between materials can be checked with reference to a compatibility matrix. A "separating aid" may be a part intended for destruction for instance. [Translator's note: For the "compatibility matrix" here, see 4.3 (Attachment 2 in particular) of VDI2243 Blatt1, for instance.]</p>	Box components, chassis, mechanical components	M	Yes/No
5	<p>Is the joint to be undone easy to find?</p> <p>Any joint to be undone in disassembly should be easy and quickly locatable. If it is in a hidden position, the product should be marked with an instruction on how to address it (e.g., by extrusion molding or laser).</p>	Box components, chassis, mechanical components	M	Yes/No
6	<p>Can it be disassembled using only usual tools?</p> <p>"Usual tools" means ordinary, commercially available tools. Radio equipment and AC adapter boxes under the Radio Law are excluded.</p>	Whole printer	M	Yes/No
7	<p>Is there consideration for a grip point and a work space needed for disassembling tools?</p> <p>The "grip point" is the point where force is to be applied to the joined element. For execution of disassembly with any tool, there should be a large enough work space.</p>	All subassemblies	M	Yes/No
8	<p>Is every screwed element to be decomposed provided with a sufficient space for unscrewing?</p> <p>If manual access to the joint to be undone is difficult or impossible directly, extra man-hours will have to be spent on disassembly, and inhibit in other ways advancement of recycling.</p>	Whole printer	S	Yes/No
9	<p>Can screwing elements for fixing subassemblies be undone with only one kind of tool?</p> <p>Standardized and/or unified joining elements serve to reduce the man-hours spent on disassembling. The lower the frequency of changing the tool, the easier the disassembling. (The same is true of assembling.)</p>	Box components, electronic circuits, subassemblies	S	Yes/No

	Requirement	Relevant subassembly	Category	Satisfied?
10	Can snap joints to be separated simultaneously be undone by <u>only one worker?</u>	Box, chassis	S	Yes/No
	If there is an undercut angle of, e.g. 90° or more, any number of snap joints in the same joining direction can be joined simultaneously, but they cannot always be undone at the same time. This requirement applies to cases where two or more joints have to be undone simultaneously.			
11	Can the total disassembling process be carried out without changing the supporting face?	Unit of more than 5kg in mass	S	Yes/No
	This requirement serves to check indirectly whether or not the unit has a layered structure. If it has, the handling man-hours in assembling/disassembling can be correspondingly saved.			
12	Is the number of electronic circuit subassemblies fixed to the box zero?	Box components	S	Yes/No
	To remove and separate harmful substances from the substance groups of electronic circuits thoroughly and quickly, every electronic circuit subassembly should be fixed to the chassis. An operation panel fixed to the box and a box component concurrently functioning as the chassis are not covered by this item.			

#### Facilitation of sorting of components, etc.

13	Are plastic components marked at least in accordance with ISO 11469? This does not apply to components of less than 25 g in weight or having a flat part of less than 200mm <sup>2</sup> .	Components of $m \geq 25g$ or $m \geq 200mm^2$	M	Yes/No
	Marking of plastic components serves to facilitate sorting of different kinds of plastics.			

#### Securing safety of processing/disposal, etc.

14	Are components containing any harmful substance easy to locate and removable?	Electronic subassemblies	S	Yes/No
	Easier removal of harmful substances ( chemicals specified in the certificate criteria or other substances specified by law, etc. ) has to be an essential aspect of designing in anticipation of eventual recovery.			

#### Extended useful life

15	The work memory, if any, of an electrophotographic printer should permit either expansion or replacement, except where the printer can completely print the maximum paper size ( <u>print area</u> ) at its maximum resolution.	All subassemblies	M	Yes/No
	To enhance the system performance, certain conditions have to be met from the outset. This makes possible an extended useful life of the product. More specifically, this includes upgrading of the RAM.			
16	Has the manufacturer done trial disassembling and taken record of it in accordance with 4 , 5 , 6, 7, 8, 9, 10, 11, 12 and 14 (not applicable to printers of $60 < CPM$ )?	Whole printer	M	Yes/No
17	Were materials selected and taken record of in accordance with Nos 1 and 2?	Box, chassis	M	Yes/No

## Attachment 2

VDI2243, Part1, 30/42

Table 2 : Compatibility of thermoplastics [49;67]

	Name of plastics	Additive of plastic											
		PE	PVC	PS	PC	PP	PA	POM	SAN	ABS	PBTP	PETP	PMMA
Plastic matrix	PE	1	4	4	4	1	4	4	4	4	4	4	4
	PVC	4	1	4	4	4	4	4	1	2	4	4	1
	PS	4	4	1	4	4	4	4	4	4	4	4	4
	PC	4	3	4	1	4	4	4	1	1	1	1	1
	PP	3	4	4	4	1	4	4	4	4	4	4	4
	PA	4	4	3	4	4	1	4	4	4	3	3	4
	POM	4	4	4	4	4	4	1	4	4	3	4	4
	SAN	4	1	4	1	4	4	4	1	1	4	4	1
	ABS	4	2	4	1	4	4	3	4	1	3	3	1
	PBTP	4	4	4	1	4	3	4	4	3	1	4	4
	PETP	4	4	3	1	4	3	4	4	3	4	1	4
	PMMA	4	1	3	1	4	4	3	1	1	4	4	1

- 1: Conformance
- 2: Limited conformance
- 3: Conformance if a little
- 4: Nonconformance



## Attachment 4 Ease of Removal of Battery

Class		Item		Typical Criterion of Evaluation
Range	Sign	Subclass	Sub-subclass	
Easy	A	One-touch	One-touch	Power supply unit is separate, allowing one-touch unloading of battery (pack)
	B	Manual unlidding	One-touch	Lid can be manually removed, allowing one-touch unloading of battery (pack)
			Connector undoing	Lid can be manually removed, allowing unloading of battery (pack) by undoing connector
	C	Lid unscrewing	One-touch	Unlidding by unscrewing is possible, allowing one-touch unloading of battery (pack)
			Connector undoing	Unlidding by unscrewing is possible, allowing unloading of battery (pack) by undoing connector
	D	Lid unscrewing	Cutting	Unlidding by unscrewing is possible; battery (pack) can be unloaded by cutting connection with nippers, etc.
	E	Total disassembly (Unscrewing)	Connector undoing	Total disassembly by unscrewing is possible, allowing unloading of battery (pack) by undoing connector
F	Total disassembly (Unscrewing)	Cutting	Total disassembly by unscrewing is possible; battery (pack) can be unloaded by cutting connection with nippers, etc.	
Difficult	G	Total disassembly (Dismantling)	Connector undoing	Total dismantling is possible, allowing unloading of battery (pack) by undoing connector
			Cutting	Total dismantling is possible; battery (pack) can be unloaded by cutting connection with nippers, etc.

# Attachment 5

Substances prescribed in 4-1. (18)(19)

Specified CFCs	trichlorofluoromethane
	dichlorodifluoromethane
	trichlorotrifluoroethane
	dichlorotetrafluoroethane
	chloropentafluoroethane
Other CFCs	chlorotrifluoromethane
	pentachlorofluoroethane
	tetrachlorodifluoroethane
	pentachlorofluoropropane
	hexachlorodifluoropropane
	pentachlorotrifluoropropane
	tetrachlorotetrafluoropropane
	trichloropentafluoropropane
	dichlorohexafluoropropane
	chloroheptafluoropropane
	carbontetrachloride
	1,1,1-trichloroethane
CFCs substitute (HCFC)	dichlorofluoromethane
	chlorodifluoromethane
	chlorofluoromethane
	tetrachlorofluoroethane
	trichlorodifluoroethane
	dichlorotrifluoroethane
	chlorotetrafluoroethane
	trichlorofluoroethane
	dichlorodifluoroethane
	chlorotrifluoroethane
	dichlorofluoroethane
	chlorodifluoroethane
	chlorofluoroethane
	hexachlorofluoropropane
	pentachlorodifluoropropane
	tetrachlorotrifluoropropane
	trichlorotetrafluoropropane
	dichloropentafluoropropane
	chlorohexafluoropropane
	pentachlorofluoropropane
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	trichlorotrifluoropropane
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dichlorofluoropropane	
chlorodifluoropropane	
chlorofluoropropane	

## Attachment 6 Standards on Power Consumption

((1)) Monochrome printers (except large paper size printers; monochrome printers include ink jet type color printers) should meet the following standards.

Printing speed (PPM: No. of printed pages/minute)	Transfer to low power mode in	Power consumption in low power mode
0<PPM≤10	≤ 5 minutes	≤10W
10<PPM≤20	≤15 minutes	≤20W
20<PPM≤30	≤30 minutes	≤30W
30<PPM≤44	≤60 minutes	≤40W
44<PPM≤60	≤60 minutes	≤75W
60<PPM	Not prescribed	Not prescribed

((2)) Color printers (except large paper size printers; color printers do not include ink jet type color printers) should meet the following standards.

Printing speed (PPM: No. of A4 color-printed pages/minute)	Transfer to low power mode in	Power consumption in low power mode
0<PPM≤10	≤30 minutes	≤35W
10<PPM≤20	≤60 minutes	≤45W
20<PPM	≤60 minutes	≤70W

((3)) Wire dot printers should meet the following standards, except for Chinese character line printers.

Transfer to low power mode in	Power consumption in low power mode
≤30 minutes	≤28W

((4)) Large paper size printers (compatible with A2 size paper) should meet the following standards.

Printing speed (PPM: No. of printed pages/minute)	Transfer to low power mode in	Power consumption in low power mode
0<PPM≤10	≤30 minutes	≤ 35W
10<PPM≤40	≤30 minutes	≤ 65W
40<PPM	≤90 minutes	≤100W

N.B.

1) For printers falling under ((1)) which are no faster than 20 PPM in printing speed and having a network function, 5W can be added to the power consumption standard in the low power mode as an interim measure until October 31, 2001.

2) For printers falling under ((2)) which are no faster than 10 PPM in printing speed and having a network function, 5 W can be added to the power consumption standard in the low power mode as an interim measure until October 31, 2001.

3) For printers falling under ((3)), 2 W can be added to the power consumption standard in the low power mode as an interim measure until October 31, 2001.

4) The application of standards to different types can be summarized as below.

Application Principle Differentiated by Monochrome/Color and Type

Type	Wire dot	Thermosensitive	Ink jet	Electrophotographic	Large size
Monochrome	((3))	((1))	((1))	((1))	((4))
Color	((3))	((2))	((1))	((2))	((4))

## Attachment 7 Permissible Limits of Noise

Printing speed (PPM: No. of printed pages/minute)	Thermosensitive type Ink jet type $L_{WAAd}$	Electrophoto- graphic type $L_{WAAd}$	Wire dot type $L_{WAAd}$
0<PPM≤7	5.9B	6.6B	7.2B
7<PPM≤14	6.3B		
14<PPM≤30	6.7B		
30<PPM≤50	7.1B	7.1B	
50<PPM≤70	7.8B	7.8B	
70<PPM	Not prescribed	Not prescribed	Not prescribed

Color electrophotographic printers should be measured in the best quality monochrome mode.

The printing speed of large paper size printers should be measured in an A4 size equivalent.

Where the indicated characteristic A sound power level  $L_{WAAd}$  [unit:B] is to be calculated from the actual measurement  $L_{WA}$  per printer, the following equation shall apply.

$$L_{WAAd} [B] = 1/10 \times (L_{WA} + 3.0)$$

where  $L_{WA}$  is the measured characteristic A sound power level (dB)

## Interpretation

# Product Certification Criteria for “Printers” (Proposed)

Scheduled for institution on October 1, 2001

### 1. Environmental Background

General Catalog of Printers, '99, published by the Japan Economic Center, Inc. (in Japanese) was referenced for the trend of the production figures of major printers in Japan.

### 2. Applicable Products

The limitation of the subject to “mainly printers commonly used in offices and by families” is due to the difficulty of applying uniform standards to such special-purpose printers as those for ticket vending machines in stations of transport facilities, order ticket issuing machines to serve people waiting in a queue, cash registers and search equipment for use in medical facilities or public libraries. Although the standards of Blue Angel and Nordic White Swan apply only to “machinery and equipment used in offices,” the inclusion of printers for family use is expressly stated here because, together with personal computers, the use of printers (especially of the ink jet type) by families is rapidly spreading.

The reference to “printers ... intended for connection to computers” is to make clear the exclusion of the above-mentioned special-purpose printers.

The printing systems of the different types of printers are based on the Japan Electronics and Information Technology Industries Association (JEITA), Terminology for Printer Catalogs, Fourth Edition (in Japanese) (September 2000).

### 3. Terminology

#### <Printer>

The term as used herein refers in principle to printers intended for connection to computers as stated above, but in view of the recent increase in printers using a memory card or some other medium on which pictorial information is stored and outputting is done without using a cable in-between, such printers are also covered by the term.

#### <Back side printing>

It was pointed out that, for instance, if a sheet of paper already printed on one side is printed on the other side with a different printer, the rollers of the second printer may pick up the ink of the first print on account of a difference in the fixing temperature of toner, and its useful life may be shortened. In view of this problem, for the purpose of this set of criteria, “back side printing” refers only to printing again on a sheet of paper, of which one side is already printed, on the other side with the same machine.

#### <Multi Functional Printer>

The multi functional printer is covered by this set of criteria and the Eco Mark

Certification Criteria No. 117 for the “Copier.” As the criteria for the “Copier” give no definition of a “multi functional printer,” the coverage of the concept includes such machines other than the “multi functional printer” defined in the criteria for the “Printer.” It is up to the applicant to decide what the main function of a given multi functional printer is.

<Stack form>

Criteria for the stack form conform to the Japan Business Machine Makers Association’s standard on the stacked form for the electrophotographic non-impact printer JBMS-31: 1987.

#### 4. Certification Criteria

##### 4-1 Details of Establishing Environmental Criteria

In setting the criteria, the Table for Selection of Environmental Impact Items at Different Life Stages of Products was referenced, and environmental impacts over the whole lifespan of the product were considered from an environmental perspective. Impact items regarded as particularly important in setting certification criteria were selected, and a qualitative or quantitative criterion was formulated for each of these items.

Environment load items considered for the category of "Plastics Products Using Recycled Materials" are as shown in the life stage environmental load item selection table (X in the table). Out of these items were finally selected as the environment-related criteria: A-1, B-1, B-3, B-5, B-8, B-9, D-1, D-2, D-8, D-9, E-5, E-7, E-8 and F-1 (XX in the table). The blank columns in the table show items which were out of the scope of review or which were reviewed in combination with other items. Following is the history of setting up the environment-related criteria.

Table 1: Chart for Selecting Environmental Impact Items at Each Stage of Product Life Cycle

Environmental Impact Item	Product Life Stage					
	A. Resource Extraction	B. Manufacturing	C. Distribution	D. Use/Consumption	E. Disposal	F. Recycling
1.Resource consumption	XX	XX	X	XX		XX
2.Discharge of greenhouse gases				XX		
3.Discharge of the ozone layer depleting substances		XX				
4.Destruction of eco systems						
5.Discharge of atmospheric pollutants		XX			XX	
6.Discharge of water pollutants						
7.Discharge/disposal of wastes					XX	
8.Use/discharge of hazardous materials		XX		XX	XX	
9.Other environmental impacts		XX		XX		

A. Resource Extraction Stage

A-1.Resource consumption

The following points were considered under this title.

<p>(1) Use of reclaimed plastic components and reuse of components  (2) Use of common components  (3) Compatibility of applicant-presented user manual with Eco Mark Certification Criteria “Paper Printed Matter”</p>
--

The use of reclaimed plastic components under (1) was selected as a criterion, because it would contribute to reducing the consumption of resources and the discharge of waste matter. The reuse of components, though seldom found in existing printers, was also selected in view of the need to encourage it in the future. It has to be noted, however, that the former is “mandatory” under Attachment 1: “Design suitable for printer recycling” 2 (Requirements which shall absolutely be satisfied) while the latter is “desirable” under Attachment 1-3 (Requirements which should desirably be satisfied).

Regarding the use of common components under (2), there was a proposal to adopt a criterion that “at least 50% of components shall be used in printers of the same generation and of the same performance class by the same manufacturer,” but it was decided not to adopt this requirement because models of the same generation usually employ common components and accordingly there was no need to adopt this proposed criterion.

Regarding (3), printers are much less expensive products than personal computers, resulting in a high proportion of the cost of the user manual to the product price, and manuals are often produced and packaged overseas. This circumstance makes it

difficult for user manuals to be compatible with the Eco Mark Certification Criteria “Paper-Made Printed Matter,” and accordingly an exceptional provision was stipulated regarding printing paper for user manuals printed overseas.

## B. Manufacturing Stage

### B-1.Resource consumption

The following point was considered under this title.

- (1) Minimum duration of keeping in applicant’s stock vital components for repair use and expendables

Since the lifespan of a printer is shorter than that of a copier (about seven years) and the usual life of an electrophotographic type printer or the like is about five years, it was considered appropriate to prescribe that “the vital components for repair use and expendables shall be kept in stock for at least five years after the manufacture of the relevant product is discontinued.” The coverage of expendables by this criterion is the indispensability of expendables for the use of any printer.

### B-3.Discharge of the ozone layer depleting substances

The following points were considered under this title.

- (1) Prohibition of use of specified CFC (any of five CFCs) in packaging material
- (2) Restraint on emission of specified CFCs in component production and final assembly

Some packaging materials for use under heavy load referred to in (1) contain alternative CFC (HCFC). As the use of only specified CFCs is regulated in Japan at present, the coverage is confined to them.

Regarding (2), printer manufacturers usually produce constituent units as well, unlike the “assembly system” for personal computers, whose manufacturers outsource constituent units. Direct suppliers of printer components are manufacturers of such mechanical elements as screws and springs, and it was argued that certificates would be difficult to obtain from 200 to 300 component suppliers. However, there was also an argument that it would be necessary to obtain certificates from at least the manufacturing plants of main components, and the acquisition of certificates from the manufacturing plants of plastic box components and large box components was added to the requirement under this title.

Further for this product category, referencing the Law Concerning the Protection of the Ozone Layer by Restricting Specified Substances, Attachment 5 was prepared to formulate criteria prohibiting the use of specified CFCs (five CFCs), other CFCs, carbon tetrachloride and 1,1,1-trichloroethylene and the discharge of any alternative CFC (HCFC) from the manufacturing plant.

Models of relevant statements in the plant manager’s certificate and in the component purchase contract under the Eco Mark Certification Criteria are presented below.

<Model of plant manager’s certificate>

#### 1) For the applicant’s own plant

“This is to certify that the plant owned by the applicant neither uses any of the

specified CFCs (the five CFCs), any other CFC, carbon tetrachloride or 1,1,1-trichloroethylene, nor discharges any alternative CFC (which refers to HCFC in this context).”

2) For the plant of a plastic box component and large box component supplier

“This is to certify that the XX manufacturing plant neither uses any of the specified CFCs (the five CFCs), any other CFC, carbon tetrachloride or 1,1,1-trichloroethylene, nor discharges any alternative CFC (which refers to HCFC in this context).”

<Model of component purchase contract>

It shall be prescribed that “(the manufacturing plant of components to be purchased) neither uses any of the specified CFCs (the five CFCs), any other CFC, carbon tetrachloride or 1,1,1-trichloroethylene, nor discharges any alternative CFC (which refers to HCFC in this context),” and that “a party hereto (the component manufacturer) shall include in its purchase contract for components which constitute components to be shipped to the applicant, who is the other party hereto, a representation that there is neither the use (by the manufacturing plant of the components to be purchased) of any of the specified CFCs (the five CFCs), any other CFC, carbon tetrachloride or 1,1,1-trichloroethylene, nor the discharge of any alternative CFC (which refers to HCFC in this context).”

#### B-5. Discharge of atmospheric pollutants

The following point was considered under this title.

(1) Observance of relevant local environmental laws and regulations, anti-pollution agreements, etc. by final assembling plant and component manufacturing plants
---

Since it is necessary to give consideration as stated in (1) above regarding the use and emission of air pollutants, water pollutants and other harmful substances, this criterion was adopted. The same criterion is also provided for in the Eco Mark Certification Criteria No. 119 "Personal Computer."

Models of relevant statements in the plant manager’s certificate and in the component purchase contract under the Eco Mark Certification Criteria are presented below.

<Model of plant manager’s certificate>

1) For the applicant’s own plant

“This is to certify that, regarding the emission of harmful substances, the plant owned by the applicant is observing relevant environmental laws and regulations, anti-pollution agreements and the like effective in the geographical area in which the plant is located.”

2) For the plant of a plastic box component and large box component supplier

“This is to certify that, regarding the emission of harmful substances, the XX manufacturing plant is observing relevant environmental laws and regulations, anti-pollution agreements and the like effective in the geographical area in which the plant is located.”

<Model of component purchase contract>

The component purchase contract of the plant owned by the applicant shall

provide:

No.1: “(the manufacturing plant of components to be purchased), regarding the emission of harmful substances, is observing relevant environmental laws and regulations, anti-pollution agreements and the like effective in the geographical area in which the plant is located,” and “a party hereto (the component manufacturer) shall include in its purchase contract for components which constitute components to be shipped to the applicant, who is the other party hereto, a representation that, regarding the emission of harmful substances, (the manufacturing plant of the components to be purchased) is observing relevant environmental laws and regulations, anti-pollution agreements and the like effective in the geographical area in which the plant is located.”

#### B-6. Discharge of water pollutants

The following point was considered under this title.

- |   |
|---|
| (1) Observance of relevant local environmental laws and regulations, anti-pollution agreements, etc. by final assembling plant and component manufacturing plants |
|---|

The treatment is the same as that regarding B-5: Air pollutants.

#### B-8. Use/discharge of hazardous materials

The following points were considered under this title.

- |   |
|---|
| (1) Observance of relevant local environmental laws and regulations, anti-pollution agreements, etc. by final assembling plant and component manufacturing plants |
| (2) Harmful heavy metal contents in photosensitive unit of electrophotographic system   |

Regarding (1), the same as that regarding B-5: Air pollutants.

The prohibition of the use of any harmful substance in the photosensitive unit under (2) was adopted as a criterion for its environmental significance. Although inclusion of selenium in the harmful substances was also considered, selenium is used only in some very large printers, and such printers are recovered without fail. Therefore, it was decided not to prohibit its use. The same criterion as this one is also included in Blue Angel RAL-UZ85 “Printer” and the Eco Mark Certification Criteria No. 117, “Copier,” both prohibit the use of similar harmful substances.

#### B-9. Other environmental impacts

The following points were considered under this title.

- |   |
|---|
| (1) Statement of suitable design for printer recycling in user manual provided by applicant |
| (2) Arrangements for repair service and supply of relevant information                      |

Regarding (1), because a detailed statement of a suitable design for printer recycling in the user manual would be lengthy and no previously certified machine was subject to such a requirement, it was decided not to adopt this proposed criterion.

Regarding (2), such arrangements constitute an important aspect of extending the service life of a printer, and can effectively contribute to reducing environmental loads, including the consumption of resources, at different stages of a printer’s life. Therefore, this requirement was adopted as a criterion, which also applies to repair

service commissioned by the applicant to some other commercial operator.

Specific measures of evaluation are:

((1)) The user manual shall expressly contain information to the effect that “Repair service for this printer will be provided at the request of its user” in a manner evident to the user of the printer.

((2)) Care shall be taken to present the foregoing information ( ((1)) ) independent of any other information and in a manner clearly recognizable by the user of the printer.

Examples: A page carrying only such information can be inserted; the information can be printed in larger characters; it can be printed in a different type from other contents around; it can be contained in a frame; a different color can be used, and so on

((3)) Information needed for requesting repair (range of repair items (contents of service), required length of time, cost, flow of repair procedure for the printer user, etc.) shall be expressly stated, or the contact shall be clearly identified so that necessary information can be provided.

Example: “If your printer needs repair, please tell our service center (contact) what the trouble is. If you require, we can explain the range of available repair items (contents of service), estimated cost of repair, required length of time, repair procedure and so on.”

Note: The contact means the telephone number, FAX number, URL address or the like.

### C. Distribution Stage

#### C-1.Resource consumption

The following points were considered under this title.

- |   |
|---|
| (1) Promotion of use of low-environmental impact means in distribution and transportation |
| (2) Reduction of product size, both in bare and packaged states                           |

As it is difficult to enumerate numerical criteria for (1) and (2) and to prove satisfaction of such criteria, these points were not adopted as criteria. Particularly regarding (2), it is true that low-environmental impact means in distribution and transportation are required for not only printers but also many other product items. This is an aspect deserving further consideration in formulating the Eco Mark Certification Criteria for services. The issue of (1) has already been addressed by manufacturers.

### D. Use/Consumption Stage

#### D-1.Resource consumption

The following points were considered under this title.

- |  |
|--|
| (1) Requirement of usability of recycled paper for printing                            |
| (2) Function to reduce printing paper consumption                                      |
| (3) Double side printing function of electrophotographic and multi functional printers |

(1) was considered a requisite for reducing the consumption of resources, and the criterion was formulated to require usability of one or more kinds of recycled paper with 100% used paper content. For thermosensitive type printers, however, an exception was made because a high content of used paper would make it impossible to maintain satisfactory smoothness. In particular, thick paper, which has a large thermal capacity, is susceptible to incomplete fixation. The aspect of printer performance to be checked for compatibility with recycled paper with 100% used paper content is the paper guiding capability.

Reducing the consumption of printing paper under (2) is an essential factor of eventual contribution to the conservation of resources, and accordingly this criterion was adopted. It was also decided to show examples of individual specific functions.

Criterion (3) was adopted for the same reason as for (2). Referencing the corresponding criterion of Nordic White Swan, this was made applicable to electrophotographic printers and multi functional printers (MFP). Wire dot, thermosensitive and ink jet type printers are not covered because such printers usually do not have a double side printing function. Some are structurally unable to have this function, which would entail excessive equipment in some cases.

#### D-2. Discharge of greenhouse gases

The following points were considered under this title.

- (1) Adherence to International Energy Star Program regarding power consumption
- (2) Installation of main power switch
- (3) Functional trouble during non-use for a relatively long period
- (4) Marking of maximum power consumption on electrophotographic printers

Power consumption under (1) is an essential factor in the context of restraining the emission of green effect gases. As it was decided to base criteria for energy saving designs and low power consumption on Energy Star in principle, this criterion was adopted.

Regarding ((1)) in Attachment 6, although Energy Star has only one printing speed class in the range of 44 PPM and above, a speed class of up to 60 PPM, which is predicted to be dominant in the medium speed range, was specified because high speed printers would be difficult to meet the criterion. Regarding the speed class of over 60 PPM, most of the printers in this class are intended for connection to large computers, and in operation all the time. Therefore, any rule is “Not prescribed” for the low power mode in the table of ((1)). Concerning ((3)), although Energy Star applies only to A3 paper size, the A4 size is also covered by the Eco Mark product category because wire dot printers for paper of this size do exist. An exception is also made for “Chinese character line printers” mainly accompanying large computers, among wire dot printers, for the same reason as for the above-60 PPM class. Incidentally, printers are not covered by the Law Concerning the Rationalization of Energy Use.

Criterion (2) was adopted with reference to the relevant provisions in the Eco Mark Certification Criteria No. 119, “Personal Computer,” though the upper limit of power consumption while the main power switch is kept “off” was set to 2 W following the relevant provision of Blue Angel.

Criterion (3) was adopted with reference to Eco Mark Certification Criteria No. 119, "Personal Computer."

Regarding the electrophotographic printer under (4), as it requires high actuating power at the time of start of printing, the resultant overload might invite a power cut and affect other devices around. Therefore, inclusion of this information in the user manual was considered meaningful from the viewpoint of power supply designing or trouble prevention, and for this reason this criterion was adopted.

Incidentally, non-electrophotographic printers were excluded from the coverage of this criterion because their maximum power consumption is not so great.

#### D-8. Use/discharge of hazardous materials

The following points were considered under this title.

- |  |
|--|
| <ol style="list-style-type: none"><li>(1) Restraint on emission of dust, ozone and styrene</li><li>(2) Prohibition of use of heavy metals in toner, ink and ink ribbon</li><li>(3) Substances not allowed to be used in azo colorant for use in toner, ink and ink ribbon</li><li>(4) Prohibition of use of harmful substances in toner, ink and ink ribbon</li><li>(5) Labeling of toner composition</li><li>(6) Labeling regarding use of harmful substances including cadmium</li><li>(7) Prohibition of use of heavy metals in batteries</li></ol> |
|--|

Regarding dust, ozone and styrene under (1), Blue Angel also has provisions. An exception is made for large printers (above 60 PPM) for stacked form printing, which are usually employed in rooms dedicated to them.

Regarding (2), it was considered necessary for environmental conservation to prohibit the use of heavy metals in toner for electrophotographic type printers, ink for ink jet type printers and ink ribbon for wire jet type printers, and accordingly this criterion was adopted. Blue Angel also provides for the prohibition of the use of heavy metals in these expendables.

Regarding (3), the Eco Mark Certification Criteria No. 117, "Copier," has a criterion that "no azo colorant (dye or pigment) of toner for electrophotographic type printers, ink for ink jet type printers or ink ribbon for wire jet type printers containing as its amine content any of the carcinogenic or possibly carcinogenic substances classified as such in the MAK list (III1, III2 or III3) shall be used." Since the MAK list is based on German domestic law and not taken up in the Nordic White Swan draft of core standards on reciprocal recognition, there was an argument that the Eco Mark rules need not have this criterion. However, it was eventually adopted in view of the findings that there are substances which are not carcinogenic in themselves but become carcinogenic in vivo.

(4) Harmful substances considered for prohibition from use in toner and the like include carcinogens. While both IARC and the MAK list include provisions in this regard, IARC's criteria were followed in view of their international acceptance. Carbon black, however, was excluded in view of the technical difficulty to substitute any other pigment for it. Incidentally, the IARC-prescribed levels are cited from the Preliminary Survey for the Compilation of the Handbook of Chemical Substances Commissioned by the Environment Agency in Fiscal 1997 (1) (March 1998), prepared by JEA.

Regarding the labeling of toner composition under (5), it was decided not to include this requirement in the criteria because the use of harmful substances was already prohibited under another criterion.

Regarding (6), cadmium, cyan, lead, chromium, arsenic, mercury, fluorine, boron, selenium, PCB and antimony were suggested for inclusion, but it was decided not to adopt this provision because those whose use was otherwise predictable among the cited substances were already addressed by prohibitive or recovery measures. However, if so requested by any printer user, MSDS will be disclosed.

Regarding (7), in view of possible reciprocal recognition with Blue Angel, the contents were assimilated to the corresponding provisions in Blue Angel RAL-UZ85 "Printer" and the Eco Mark Certification Criteria No. 117, "Copier," and No. 119, "Personal Computer."

Incidentally, the Eco Mark Certification Criteria No. 119, "Personal Computer," provide that this criterion does not apply where a machine involving the battery is fully recovered. However, since the relevant legal system does not envisage collection of used printers, no similar exceptional provision is applied to printers.

#### D-9. Other environmental impacts

The following points were considered under this title.

- |   |
|---|
| <ol style="list-style-type: none"><li>(1) Noise of printer</li><li>(2) Safety of printer</li><li>(3) Electromagnetic compatibility of printer</li><li>(4) Any specific provision regarding conditions of installation</li><li>(5) Supply of information regarding "power off" mode</li><li>(6) Marking of toner cartridge</li></ol> |
|---|

Regarding (1), ISO 7779 (Measurement of airborne noise emitted by information technology and telecommunications equipment) and ISO 9296 (Declared noise emission values of computer and business equipment) applicable to printer noise are followed. For the regulation level, relevant values prescribed by Blue Angel and Nordic White Swan were referenced. Incidentally, any rule is "Not prescribed" for 70 < PPM because such printers are likely to be installed in dedicated rooms.

Regarding (2), a standard extensively used in the industries concerned was cited.

Regarding (3), the criterion was made compatible with the voluntary regulatory measures of VCCI, so that electromagnetic noise generating from printers and the like might not interfere with receivers such as TV sets. Incidentally, a similar provision to this criterion is found in the Eco Mark Certification Criteria No. 117, "Copier," and No. 119, "Personal Computer."

Regarding (4), it was prescribed with a view to ensuring amenity in the space where the printer was used that any specific provision regarding the conditions of installation should be expressly stated in the user manual (e.g., the number of printers used in a room necessitating forced ventilation). A similar provision to this criterion is found in the Eco Mark Certification Criteria No. 117, "Copier."

Regarding (5), where there is a provision in 4-1. (30), there is little recognition of energy consumption during the operating mode of "power off." Therefore, inclusion of this information in the user manual was considered meaningful from the viewpoint of

energy conservation, and accordingly it was adopted as a criterion. This criterion finds a parallel in Blue Angel.

Regarding toner cartridges under (6), it was decided to require labeling in conformity with the Guidelines on Labeling for Ensuring the Safety of Office Machinery Products of the Japan Business Machine Makers Association, because, while recovery and recycling of toner cartridges is required under (11), any improper handling might invite dust emission or a burn on the skin. A similar provision is found in the Eco Mark Certification Criteria No. 117, "Copier."

#### E. Disposal Stage

##### E-5. Discharge of atmospheric pollutants

The following point was considered under this title.

- |  |
|--|
| (1) Prohibition of use of halogen compound-containing plastics for boxes, box components and packaging |
|--|

Regarding (1), relevant possibilities include the relationship of the presence of vinyl polychloride, vinylidene polychloride or bromic fire retardant with the generation of dioxin when the plastic is incinerated (including incineration for energy recovery). After discussions, it was decided to formulate a criterion in this regard with a view to minimizing the generation of the harmful substance while adequately ensuring safety against fire.

##### E-7. Discharge/disposal of wastes

The following point was considered under this title.

- |   |
|---|
| (1) Treatment of recovered toner cartridges (including toner containers) and ink cartridges |
|---|

Whereas recovered toner cartridges (including toner containers) and ink cartridges are to be recycled in principle, some parts of them may be found unusable. As such parts should be processed and disposed of in an environmentally-friendly way, this criterion was adopted.

##### E-8. Use/discharge of hazardous materials

The following points were considered under this title.

- |  |
|--|
| (1) Prohibition of use of halogen compound-containing polymers and organic halogen compounds in plastics |
| (2) Prohibition of use of cadmium-containing plastics for boxes and box components                       |
| (3) Provision regarding carcinogenic substances in liquid crystal displays (LCDs)                        |
| (4) Prohibition of use of organic bromic compounds in printed circuit boards                             |

Regarding (1), prohibition of the use of compounds whose presence might lead to a dioxin content was considered. This was adopted as a criterion with a view to minimizing the generation of the harmful substance while adequately ensuring safety against fire. Concerning the use of organic halogen compounds, collection, reuse and recycling are well functioning under the Eco Mark Certification Criteria No. 117 "Copier," and the use of fire-retardant ABS is permitted partly because of its recycling ease. Since in the collection of used printers there is no standard practice, there was

an argument that chemical substances they contain are out of control and therefore the use of organic halogen compounds should not be allowed, but their use was considered necessary for ensuring the safety of the heater section against accidental fire, and it was decided to permit the use of organic halogen compounds under this scheme. This, however, was conditional on further progress in the collection, reuse and recycling of used printers when this product category was to be reviewed next time.

Criterion (2) was adopted with the basic understanding that the addition of no cadmium, lead or carcinogen would be allowed at the time of manufacturing the product.

However, the carcinogenic property of carbon black is attributed to its particulate form, and when bound in a plastic or the like it manifests no carcinogenic activity. Nor does Blue Angel in its February 2001 version prohibit the use of carbon black whether in toners or in box plastics.

Regarding (3), it was decided not to make any provision because few models used LCDs and moreover their display areas were small.

(4) is covered by 4-1. (14).

## F. Recycling Stage

### F-1.Resource consumption

The following points were considered under this title.

- (1) 3R (reduce/reuse/recycle) design of printer per se
- (2) Recovery/recycling system for printer per se
- (3) Consideration for recyclability of plastic-made large box components
- (4) Reduction of variety of materials for plastic-made components
- (5) Recovery/recycling system for ink ribbon cassettes, toner cartridges (including toner containers) and ink cartridges sold by applicant
- (6) 3R (reduce/reuse/recycle) design of packaging
- (7) Marking of plastic-made components
- (8) Marking of plastics used for packaging
- (9) Useful life of battery whose removal by printer user is not anticipated
- (10) User manual should include information on collection, reuse or recycling of used secondary battery or on waste disposal

Regarding the 3R design of the printer per se under (1), it was decided to follow a checklist prepared with reference to the Eco Mark Certification Criteria No. 119, "Personal Computer," a checklist on recycling-compatible designs in Blue Angel RAL-UZ85 "Printer" and a checklist prepared with reference to Environmental Design Assessment Guidelines for Data Processing Equipment (September 2000) (in Japanese) published by the Japan Electronic Industry Development Association (JEIDA; predecessor of today's Japan Electronics and Information Technology Industries Association (JEITA)).

Regarding (2), at the moment printers are not designated for compulsory compatibility with reutilization under the Law Concerning the Encouragement of Effective Utilization of Resources. Nor has a system for its recovery/recycling been fully built up. This point was not adopted as a criterion because collection and reuse or recycling of printers would be difficult in practice.

Regarding boxes and other large plastic-made components under (3), from the viewpoint of recycling ease, it is desirable to integrate different types of plastics used in large components including boxes, into a few. However, in view of consumers' interest in the color design, it was considered impractical to use only two or fewer varieties of plastics for boxes and chassis, and the upper limit was set to four types. For printers themselves, since vital components may constitute the chassis either in part or in whole, an exception was made for lighter than 25 g or chassis-constituting vital components.

Regarding (4), integration of types and grades involving all the plastics used would contribute to recycling ease. Therefore, this was adopted as a criterion. Incidentally, this also is an item in the checklist on recycling-compatible designs in Blue Angel RAL-UZ85 "Printer."

There was an argument that too strict criteria might not find any product satisfying them, but in March 2000 about 30 models produced by Japanese manufacturers satisfied the Blue Angel criteria, and accordingly it was concluded that there was no problem in this respect.

Criterion (5) regarding expendables was adopted because a well-developed recovery/recycling system would contribute to reducing the volume of waste matter and restraining the consumption of resources. However, since the ink ribbon cassette contains a cloth ribbon which is infiltrated with a pigment and therefore difficult to be revived for reuse and, moreover, the sales of wire dot type printers which use such cassettes are shrinking at a rate of about 10% a year (according to JEIDA, A Survey Report on Printers [in Japanese] [March 2000]), this item was excluded from the coverage of the criterion.

For (6), guidelines prepared by the Waste Disposal/Reutilization Subgroup of the Industrial Structure Council of the Ministry of International Trade and Industry were referenced. As the guidelines set forth no quantified provisions, the examination procedure would involve confirmation of a written explanation by the applicant that the relevant product was designed in conformity with the viewpoints of the guidelines.

3R (reduce/reuse/recycle) assessment criteria for packaging are set forth regarding product items, including personal computers and copiers, designated for particular emphasis in resources conservation or promotion of reuse (designs embodying consideration for reuse/recycling and designs embodying consideration for reuse: products for which a structure permitting ready removal of small secondary batteries is compulsory are excluded; printers fall under this category) under the recently amended Law Concerning the Encouragement of Effective Utilization of Resources, and these criteria will be followed. Printers, however, are not designated products under the law. Therefore, regarding the recycling design of packaging, it was decided to seek compatibility with prior guidelines.

Regarding (7), separation by type would facilitate recycling of plastics. For this purpose, it would be useful to indicate the type of plastic material used, and a criterion was adopted to this effect.

Regarding the labeling expression of plastics used for packaging under (8), a provision is supposed to be made under the Law Concerning the Encouragement of Effective Utilization of Resources, but the relevant Cabinet and Ministry orders under the law are yet to be formulated. For the moment, an expression based on the Eco

Mark Certification Criteria No. 119, "Personal Computer," is being used, subject to a review after such orders are formulated. Labeling signs prescribed under JIS K 6899-1: 2000 (ISO 1043-1: 1997) are scheduled for use, and they will be adopted for the present purpose.

Regarding the removal of batteries under (9), even if some batteries do not allow removal by the printer user, possibility of removal by the used printer collector will be acceptable if the arrangements for used printers are well developed in the future. It was considered essential for the manufacturer or the like to be able to replace the battery without having to replace the whole circuit board when the printer is entrusted for repair. More specifically, on the basis of the "Assessment Manual on the Removing Ease of Nickel-Cadmium Batteries" in the Clean Japan Center, A Survey Report on the Encouragement of Reutilization of Used Nickel-Cadmium Batteries, a National Government-subsidized Project of Fiscal 1991 (in Japanese), Attachment 4: Ease of Removal of Battery was prepared for use as the criterion in this respect.

Regarding the recovery/recycling of secondary batteries under (10), a provision is supposed to be made under the Law Concerning the Encouragement of Effective Utilization of Resources, but the relevant Cabinet and Ministry orders under the law are yet to be formulated. However, in the Possible Measures for the Encouragement of Recovery/Recycling of Small Secondary Batteries (January 22, 2001; by the joint consultation meeting of the Secondary Battery Recycling System Study Group of the Ministry of Economy, Trade and Industry and the Study Group of the Recycling of Personal Computers, etc. of the Ministry of Environment), it is cited as the role of battery manufacturers to label such batteries for identification as such, develop an effective recovery arrangement and, if requested by the machine manufacturer or municipal government concerned, collect their products. The manufacturers of machines using small secondary batteries on their part are called upon to design their products to permit ready battery removal, indicate the use of such a battery by labeling or otherwise, and voluntarily recover such batteries after they have been used up.

Therefore, Eco Mark has decided to request inclusion of relevant information in user manuals so that printer users can dispose of secondary batteries appropriately after their full use.

Table 1 List of Certificates

			Collective name of series														
			Name of individual model		(1)		(2)		(3)		(4)				(n)		
			Name of individual machine														
No	Certification cri	Item	Required certificate, etc.	With/without supporting item	Office	.....	.....	With/without supporting item	Office	Special remarks							
1	4-1.(1)	Compatibility with Attachment 1 "Design Suitable for Recycling of the Product"	Compatibility with Attachment 1 "Design Suitable for Recycling of the Product"														
2	4-1.(2)	Minimum stock period of vital components for repair use and expendables	Certificate, user manual, etc. expressly stating minimum stock period of vital components for repair use and expendables														
3	4-1.(3)	Availability of repair service	Certificate expressly stating availability of repair service as requested by printer user, user manual, etc. expressly stating preparedness of such service, etc.														
4	4-1.(4)	Use of reclaimed paper for printing	List of 100% used paper stocks used and raw material certificate														
5	4-1.(5)	Paper saving function	Certificate of capability for double side printing, compressed printing, back side printing, etc. (e.g., copy of relevant part of user manual)														
6	4-1.(6)	Double side printing function	Certificate of capability for double side printing (e.g., copy of relevant part of user manual)														
7	4-1.(7)	Limitation on material variety of large plastic box components	Certificate expressly stating the criteria are observed; Attachment 3 "List of Plastic Materials Used"														
8	4-1.(8)	Limitation on material variety of plastic box components and chassis	Certificate expressly stating the criteria are observed; Attachment 3 "List of Plastic Materials Used"														
9	4-1.(9)	Battery (replacement of battery whose removal by printer user is not anticipated )	Location of battery use, certificate on removing method, etc. according to Attachment 4														
10	4-1.(10)	Information on handling of secondary battery	Manual regarding arrangements developed for collection, reuse or recycling (collection system, processing capacity, particulars of processing, etc.)														
11	4-1.(11)	Recovery and recycling of toner cartridge or ink cartridge	Certificate of mechanism of recovery system (collection system, processing capacity, particulars of processing, etc.)														
12	4-1.(12)	Proper processing/disposal of toner cartridge or ink cartridge	Manual regarding arrangements developed for collection, reuse or recycling (collection system, processing capacity, particulars of processing, etc.)														
13	4-1.(13)	Labeling of toner cartridge	Certificate that labeling is in conformity with Guidelines on Labeling for Ensuring Safety of Office Machinery Products														
14	4-1.(14)	Plastics (fire retardants)	Certificate expressly stating the criteria are observed, component purchase contract, etc.														
15	4-1.(15)	Plastics in box and box components (halogen)	List of plastic materials in Attachment 3 form, expressly stating names of manufacturers of raw materials and whether or not there is addition of any polymer containing halogen and/or any organic halogen compound														
16	4-1.(16)	Plastics in box, box components (heavy metals/carcinogenic substances )	Certificate expressly stating the criteria are observed														

Table 1 List of Certificates

			Collective name of series													
			Name of individual model		(1)		(2)		(3)		(4)				(n)	
			Name of individual machine													
No	Certification cri	Item	Required certificate, etc.	With/without supporting item	Office	.....	.....	With/without supporting item	Office	Special remarks						
17	4-1.(17)	Batteries (heavy metals)	Certificate issued by battery manufacturer													
18	4-1.(18)	Specific CFCs in plastic packaging materials	Certificate issued by manufacturer of packaging material, person responsible for management of business establishment or manager of plant where the product is assembled													
19	4-1.(19)	Use/emission of CFCs and other harmful substances	Certificate issued by manager of plant where product is manufactured or component purchase contract, etc.													
20	4-1.(20)	Absence of any heavy metal in photosensitive unit	List showing presence/absence of relevant substance													
21	4-1.(21)	Absence of any heavy metal in toner, ink or ink ribbon	List showing presence/absence of relevant substance													
22	4-1.(22)( a )	Absence of any hazardous substance in toner, ink or ink ribbon (EU Council Directive)	List showing presence/absence of relevant substance													
23	4-1.(22)(b)	Absence of any carcinogenic substance in toner, ink or ink ribbon ( IARC)	List showing presence/absence of relevant substance													
24	4-1.(22)(c)	Absence of any hazardous substance in toner, ink or ink ribbon (EU Council Directive, hazard symbol for whole product)	List showing presence/absence of relevant substance													
25	4-1.(22)(d)	Absence of any hazardous substance in toner, ink or ink ribbon (EU Council Directive, hazard symbol for whole product, R43)	List showing presence/absence of relevant substance													
26	4-1.(23)	Dust emission	Certificate that method of measurement meets relevant standard of Japan Business Machine Makers Association or Blue Angel, together with measured data													
27	4-1.(24)	Ozone emission	Certificate that method of measurement meets relevant standard of Japan Business Machine Makers Association or Blue Angel, together with measured data													
28	4-1.(25)	Styrene emission	Certificate that method of measurement meets relevant standard of Japan Business Machine Makers Association or Blue Angel, together with measured data													
29	4-1.(26)	Compatibility with Energy Star program standards	Certificate that criteria of (1) through (4) in Attachment 6 are met													
30	4-1.(27)	Main power switch	Certificate expressly stating the criteria are observed													
31	4-1.(28)	Any functional trouble when unplugged	Certificate expressly stating the criteria are observed													
32	4-1.(29)	Statement of maximum power consumption (for electrophotographic system alone)	Copy of relevant part of user manual, etc.													

Table 1 List of Certificates

				Collective name of series												
				(1)		(2)		(3)		(4)				(n)		
				Name of individual machine												
No	Certification cri	Item	Required certificate, etc.	With/without supporting item	Office	.....	.....	With/without supporting item	Office	Special remarks						
33	4-1.(30)	Supply of information on power-off state	Copy of relevant part of user manual, etc.													
34	4-1.(31)	Noise	Certificate that the criteria of Attachment 7 are met													
35	4-1.(32)	Safety of printer	Certificate that Safety Standards on Data Processing Equipment or Safety Standards on Products of Information Technology are met													
36	4-1.(33)	Electromagnetic compatibility of printer	Certificate that VCCI standards are met													
37	4-1.(34)	User manual	Certificate of compatibility with Eco Mark Certificate Criteria "Paper-Made Printed Matter"; where printing is done overseas, certificate that used paper is employed and no material identified as inhibitory factor to recycling of used paper is employed													
38	4-1.(35)	Packaging material	Certificate on presence/absence of material labeling													
39	4-1.(36)	Packaging material	Explain compatibility with guidelines (1. documentation revealing contents of assessment manual prepared in accordance with guidelines and 2. name of packaging material used													
40	4-1.(37)	Conditions of installation	Copy of relevant part of user manual, etc.													

Notes on entry

- 1) Your application can cover either an individual model or a model of a series.
- 2) If there is anything to append, enter "Exhibit 1-(1)" or the like in the column of "With/without supporting item."
- 3) Do not write anything in the "Office" column.

Seal of applicant

