

Interpretation

Product Certification Criteria for “Sanitary Paper” Version 2.1

Established on February 20, 2003

1. Environmental Background

In 2000, 320 million tons of paper was consumed throughout the world, and approximately 32 million tons of paper and paper board was produced in Japan during the year period. The amount of this paper and paper board consumed in Japan during the year was 250 kg per person, which corresponds to approximately 60,000 sheets of A4-sized copy paper. The world average consumption is 53 kg of paper per person per year, and Japan consumes 5 times this amount.

On the other hand, approximately 19 million tons of waste paper was collected in Japan for the year 2001, and the waste paper recovery rate was approximately 62% (waste paper received - imported waste paper + exported waste paper / paper & paperboard shipped for the domestic market + imported paper & paper board - exported paper & paper board). The waste paper utilization rate for paper and paperboard as a whole was roughly 58% (amount of waste paper consumption / total amount of fibrous raw materials used for the domestic production of paper and paperboard), but the waste paper utilization rate for printing paper and paper for communication remains at the low level of approximately 21%.

Furthermore, approximately 36 million cubic meters of wood is being used yearly as raw material for paper production.

In 2000, 20.45 million tons of sanitary paper was consumed throughout the world and 3.4Kg of sanitary paper was consumed per capita. In Japan, 13.5 Kg of sanitary paper was consumed per capita during the year period and it is approximately 4 times of that throughout the world. 7.6 Kg, more than a half of sanitary paper consumed in Japan was toilet paper. The toilet paper using waste paper reduces production contrary to the toilet paper without using waste paper.

2. Applicable Products

Tissue paper, toilet paper and bathroom paper shall be treated as targets for these criteria. Other sanitary papers have not been selected to be objects at the present time because amount of their production is small. Paper towel, which becomes to be familiar primarily in foods industry, is thought to be improper as an object of Eco Mark because it is an unnecessary throwaway good.

3. Terminology

We have cited the terminology of post-consumer material and pre-consumer

material from the “Recycled Content/Material” section in the ISO/CD 14021.2 to indicate the meanings of the terms “municipally recovered waste paper” and “industrial waste paper”. The ISO definition is provided below (Reference ; ISO/TC 207/SC3 N65).

“Post-consumer material”

Material generated by commercial, industrial and institutional facilities, or households, which can no longer be used for its intended purpose. This includes returns of material from the distribution chain.

“Pre-consumer material”

Material diverted from the waste stream during a manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

Under the current criteria, the term “waste paper composition rate” has been adopted to refer to the weight ratio of raw materials contained in the paper at the time of manufacturing. Further, an air-dry weight containing 10% water has been adopted for pulp composition.

“Fluorescent Whitening Agents”, published by the Japan Dyestuff and Chemical Industry Association, was referred to for a definition of “fluorescent whitening agents”.

4. Certification Criteria

4-1. Details of Establishing Environmental Criteria

For setting up the criteria, environmental impact over the whole life cycle of a product was considered, using Table: Chart for Selecting Environmental Impact at Each Stage of Product Life Cycle. As a result, impact items that are considered to be important to establish criteria for Eco Mark certification were selected in view of environmental impacts over the whole life cycle of the product. For these items, qualitative or quantitative criteria were considered.

Environment impact items considered for the category of “Paper for Communication” are as shown in Table: Chart for Selecting Environmental Impact at Each Stage of Product Life Cycle (X in the table). Out of these items were finally selected as the environmental criteria: A-1, B-5, B-6, B-8, B-9, C-1, C-7, D-8 and D-9 (XX in the table). The blank columns in the table show items that were out of the scope of review or that were reviewed in combination with other items. Following is the details of establishing the environment criteria.

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

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

A. Resource Extraction Stage

A-1 Resource consumption

The following points were reviewed under this item.

- (1) The compounding ratio of waste paper, as a raw material, shall be 100%.
- (2) The waste paper generated in Japan shall be utilized.
- (3) Non-wood pulp.
- (4) The control of paper resources (control of consumption, decreasing paper weight, core tube and narrow goods etc.)

In considering point (1) above from the standpoint of promoting the use of waste paper, it is desirable to use waste paper as 100% of the raw materials for the manufactured product in order to preserve the forests and reduce paper waste, and it has been recognized to have reached a level where one can promote the use of waste paper as 100% of the raw materials.

Regarding point (2) above, it is improper that the Eco Mark program limits

the import-export trade of waste paper, and waste paper is imported only partially because of lacking of it in winter. So this has not been selected as an item for these criteria at present.

Regarding point (3) above, the opinion was given that the positive use of non-wood pulp must be promoted.

The definition of “non-wood” is extensive, however, and since there is insufficient data on the influence of non-wood pulp on the environment, it is too early to assess this and its criteria have not been set at the present stage. Its addition and revision will be examined in the future, however, when new knowledge has come to light.

There was also an opinion to investigate non-wood as a separate category.

Accordingly, using non-wood pulp as an alternative raw material for manufacturing paper, or limiting its use hasn't been selected as an item for these criteria.

Even in the review for revised Verison2.0, the non-wood pulp issue continued to be discussed. As a result, it was confirmed that non-wood pulp evidently does not have environmental advantage over wood pulp for the following reasons: there is an increase in energy consumed because non-wood pulp is bulky; raw materials of non-wood pulp deteriorate during stocking; the quality of paper drops due to cell elements other than fibers such as parenchyma cells; and difficulty in recovering chemicals using the soda method and craft method (including those that contain a high amount of silica). In regions where forest resources are difficult to foster, however, some utility is seen for the use of non-wood pulp. Although the reuse of agricultural disposal-type non-wood resources for manufacturing paper are said to contribute to waste reduction, its environmental advantage is not necessarily evident compared to uses other than raw material for paper manufacturing, such as returning to farms and use as fuel. Therefore, the non-wood pulp issue was not selected as an item for these criteria.

Regarding the consumption controls referred to in point (4) above, consumers are being educated, as part of the Eco Mark program, that “just because a product has the Eco Mark doesn't always mean that it's environmentally friendly to purchase too much of it or to use it excessively.”

Decreasing paper weight can be looked at from the standpoints of area amount and paper size, and it is thought to be something effective upon resource saving. However, since it is thought that a discrimination among the products of 100 % of waste paper compounding ratio should be avoided to have a purpose of the most priority of recommending a product with 100 % of waste paper compounding ratio at present, this item has not been selected as an item for these criteria.

From the same reason, core tube and narrow goods have not been selected as an item for these criteria too.

Incidentally, there was an opinion that prompting a consumer to consider resource saving as the problem of the way of using is more important than prescribing the size of the sanitary paper as Eco Mark, too.

B. Manufacturing Stage

B-1 Resource consumption

The following point was reviewed under this item.

(1) Consumption of resources like energy and tap water.

A large amount of water is used in manufacturing paper. Fifty cubic meters of water is used to produce one ton of cardboard paper and 160 cubic meters of water is used to produce one ton of high quality paper used in books and notebooks.

In effect, larger amounts of water are used to produce paper which has a higher degree of whiteness. Because of this, lowering the degree of whiteness and reducing the amount of water used in the manufacturing process is more environmentally friendly.

The amount of water used for industrial purposes is managed at the level of the individual factory, however. Factories are circulating and reusing their water as much as possible, and compared to their water use in the 1980s, they have reduced by approximately 40% on average the amount of new water used in the process of manufacturing each one ton of paper.

The situation is the same for energy use. They have reduced by 27% on average the amount of energy used in manufacturing paper, compared to the figures for 1980. The effective use of energy, by recovering black liquid and using wastes effectively, and the amount of energy used in the manufacturing process, is managed at the level of the individual factory, and whether they do this in the production facilities or the production process greatly affects the results.

Accordingly, it is difficult to select these points as criteria, and they have not been selected at the present time.

B-3 Discharge of the ozone layer depletive substances

Since specified chlorofluorocarbons are not used in the paper manufacturing process, this item was not selected as an item for these criteria.

B-4 Destruction of eco systems

The following point was reviewed under this item.

(1) A decline in the number of plant and animal habitats in the areas surrounding factories, damage to the scenery, etc.

It is extremely important to take into account the eco system in the areas surrounding industrial sites.

However, it is difficult to create criteria for industrial production sites as the Eco Mark, which are used to evaluate products, so this item was not selected as an item for these criteria.

B-5 Discharge of atmospheric pollutants

The following point was reviewed under this item.

(1) To conduct proper management with regard to air pollution.

Regarding the air pollutants which are emitted in the paper manufacturing process, it has been thought that the environmental load can be reduced by adhering to the relative environmental regulations and agreement on environmental pollution controls, so this item was selected for these criteria.

B-6 Discharge of water pollutants

The following points were reviewed under this item.

(1) AOX (as an alternative index of dioxins) in effluent water
(2) To conduct proper management with regard to effluent water.

The dioxins that are discharged in the paper manufacturing process became a problem in 1990 when it was reported that dioxins had been detected in fish. The Machine Made Japanese Paper Association and the Japan Paper Association established target figures for self-regulatory standards, and all factories reached these target figures by the end of 1993. Then, as a result of a survey conducted by the Environment Agency, Ministry of Public Welfare and the Fisheries Agency from 1990 to March 1991, it was determined that "the environments surrounding the factories are at the same level as the general environment, and cannot be considered to be of any damage to health." Furthermore, according to a fact-finding survey conducted in 1996 by the National Chemical Pulp Factory, it was reported that dioxins have been reduced further by over 90%.

Accordingly, since a very small amount of dioxins are discharged in the paper manufacturing process, and it is thought to have only a slight impact on the environment, this item was not selected for these criteria.

On the other hand, regarding the study of environmental labels given by the WTO and other organizations, examinations are being continued because opinions have been indicated that there is a possibility that the enactment of environmental criteria for the manufacturing process would become a non-tariff barrier to trade. The working group has also carried out serious investigations of the problem of creating standards with regard to AOX.

The thinking of the Eco Mark program is that even with the regional environment problem, the manufacturing process, which places a great burden on the environment, must be dealt with. Opinions have also been registered that those who use substances which may have an impact on the environment must themselves provide evidence of how they are affecting the environment and that it is necessary to conduct further investigations, realizing that this is an extremely important point.

Regarding the water contaminants which are discharged in the paper

manufacturing process, it has been thought that the environmental load can be reduced by adhering to the relative environmental regulations and agreement of environmental pollution controls, so this item was selected as an item for these criteria.

B-7 Discharge/disposal of wastes

The following points were reviewed under this item.

- (1) That black liquid and sludge be used as fuel
- (2) That the sludge recycling rate be high
- (3) That waste (foreign matter, pin shive, etc.) be treated properly as industrial wastes.

With regard to flammable wastes like black liquid and sludge, these are being recovered and put to effective use as fuel, among other things. The situation with this sludge is not certain on a national scale, but most of 720,000 tons of sludge produced in Fuji City in 1995, was put to effective use as fuel, and 60,000 tons, or less than half, of the incinerated ash was rejected for landfill. Progress is also being made in the effective use of sludge, but it is difficult to use this as a criterion and difficult to connect it to the use of waste paper, so it has not been selected as an item for these criteria. Incidentally, the reduction measure of sludge was examined in interpretation B-1 of "Paper for Communication"

With regard to point (4) above, there is thought to be no need to set any criterion specifically, so it was not selected as an item under these criteria.

B-8 Use/discharge of hazardous materials

The following points were reviewed under this item.

- (1) Toxic substances
- (2) Safety of chemical substances
- (3) Chlorine bleach
- (4) That the amounts of caustic soda, surface active agents, and paper strengthening agents used be small.
- (5) Deinking agents (surface active agents)
- (6) Degree of whiteness
- (7) Slimicides

Regarding point (1), as a result of reviewing the environmental load of paper, it was pointed out that considerable environmental load is generated in the manufacture of white paper. It includes increased manufacturing energy, stagnant reuse of low-grade waste paper, use of chemical substances, reduced yield, and an increasingly complicated drainage process.

However, there are no drainage problems with regard to bleaching because hydrogen peroxide is mainly used, and sodium hypochlorite is used in certain

facilities.

In the review, there were comments that setting an upper limit for the degree of whiteness may impede the reuse of waste paper unless consumer-orientation shifts towards non-white paper because the degree of whiteness of paper made of originally white waste paper such as milk cartons is high and the degree of whiteness of paper is a factor of sales competition.

On the other hand, there were comments that it is a contradiction that Eco Mark certification criteria prescribing a degree of whiteness below 70% for paper such as communication paper and printing paper used to produce toilet paper are established, but criteria on the degree of whiteness for sanitary paper are not established.

Essentially, there is no need for toilet paper to be white, and the upper limits should be developed in terms of the degree of whiteness. Unfortunately, an idea of brightness management in sanitary paper is not as extensive as with paper for communication. Consequently, at this point, there are concerns that establishing the degree of whiteness as a certification criteria for toilet paper made of 100% waste paper only under the Eco Mark program may pose as a negative factor in the promotion of recycling waste paper, due to consumer preference to white paper.

Since the top priority is promoting recycling of waste paper, it was decided that this item shall be reviewed again when consumer awareness towards degree of whiteness of toilet paper increases. This item was therefore not included in the criteria.

Regarding point (2), it was decided that the discharge of toxic substances from the manufacturing process must to be minimized. Criteria to ensure that agreements, ordinances, and laws of the area in which the paper manufacturing plant is located are managed appropriately without violation, etc. were therefore established.

Regarding point (3) above, Germany is restricting, as criteria, substances like ethylene diamine tetra acetic acid (EDTA). It has also been pointed out that asbestos talc contains carcinogenic substances. This is not used in Japan, however, and so it has been judged that there is no necessity for establishing a criterion for it. Opinions have arisen, however, chemical substances as a whole should be dealt with, and proper chemical substances management regarding the use and emission of chemical substances was selected as a criterion.

Further, regarding the management of chemical substances as part of the social system, it is believed that new investigations should be conducted when mutual agreements have been reached regarding both domestic and international controls.

Regarding point (4) above, it is believed that measures to counteract dioxins are progressing and the use of chloride compounds from chlorine bleach in the current manufacturing process are being switched over to oxygen bleach. As a result, there is very little emission of dioxins from the manufacturing process, as stated in B-6 (1), and the effect on the environment is insignificant, so this item was not selected as an item for these criteria in the certification criteria

established in 1997 (Version 1.0).

A problem of biodegradability with regard to the deinking agents and other surface active agents mentioned in points (5) and (6) above was indicated, but since there is little data regarding persistency and toxicity, the idea of making this a criterion has been shelved at the present time, and it was decided to examine the possibility again at the next revision. Also, since these chemicals are used only in small amounts, which decreases environmental load, but since there is also little data on the relationship between paper manufacturing and the use of these chemicals, it was not selected as an item for these criteria in the certification criteria established in 1997 (Version 1.0) .

With regard to point (7) above, after examining the environmental impact of paper, it was pointed out that most of the environmental impact occurs in the manufacturing of white paper. Some examples of this impact are the increase of energy needed for manufacturing, the stagnation in the recycling of low-grade waste paper, the use of chemical substances, the decrease in yields, and the increasing complexity of the emission process.

However, because the bleaching is mainly using hydrogen peroxide and is using sodium hypochlorite depending on the facilities, there is not a drainage problem.

In conducting these investigations, opinions were given that high-grade waste paper, which is already white like milk carton, be used as a raw material to manufacture paper which has a high degree of whiteness, and since the whiteness of paper is a major factor in sales competition, as long as consumer's inclinations do not move toward paper that isn't white, there is a possibility that establishing an upper limit to the whiteness can become a major factor which hinders the recycling of waste paper.

At the same time, it was pointed out that establishing criteria with equal to or less than 70 % of whiteness degree only for the communication paper and the printing paper which are the raw materials of the toilet paper, and no criteria with white degree for the sanitary paper was a reverse phenomenon.

Originally, it isn't necessary to make a toilet paper white and a criterion about the upper limit with whiteness degree should be established. In the sanitary paper, the point of view to the whiteness doesn't spread like the information form. Therefore, there is worrying with the possibility that establishing criteria with the whiteness degree for the toilet paper of 100 % waste paper which are dealt with for Eco Mark at the present time brings a negative effect to the use promotion of waste paper from the problem of the consciousness to the whiteness degree of the consumers, too.

The item of the most priority at the present time was the use promotion of waste paper, and it decided to examine once more in the step that the consciousness of the consumers to the whiteness degree of the toilet paper spread and not to make criteria at the present time.

B-9 Other environmental impacts

The following point was reviewed under this item.

(1) That proper management be conducted with regard to noise pollution and offensive odors.

This means that neighborhood complaints are to be dealt with properly, and it is thought that the impact on the environment can be reduced by adhering to the relative environmental regulations and agreement of environmental pollution control, so this was selected as an item for these criteria.

C. Distribution Stage

C-1 Resource consumption

The following points were reviewed under this item.

(1) Downsizing
(2) Types of packaging which are possible to reuse or recycle (a simple material, biodegradability)

Regarding the downsizing, it is an important factor in environmental conservation from a viewpoint of energy saving. But this was not selected as an item for these criteria from the standpoint of avoiding of differentiation among products of 100% waste paper.

Regarding packaging materials for sanitary paper of point (2) above, it has been thought that recycling as resources is effective to decrease environmental impact, but these were not selected as items for these criteria because of no collection systems serviced socially.

C-2 Discharge of greenhouse gases

Regarding this item, at present, since it is difficult to create criteria for alternative distribution means by the method of little discharge of carbon dioxide, it was not selected as an item for these criteria.

C-5 Discharge of atmospheric pollutants

The following point was reviewed under this item.

(1) Diesel trucks at own or related companies

At the present time, the effect on environmental preservation of this item at the product distribution stage cannot be judged, so this item was not selected for these criteria.

C-7 Discharge/disposal of wastes

The following points were reviewed under this item.

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| (1) Types of packaging which are possible to reuse or recycle (a simple material, biodegradability) (2) Disposal of packaging materials |
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Point (1) above has already been examined in conjunction with C-1, and the same results are written in that section, so they are omitted here.

Regarding to packaging materials of point (2), generally polyethylene is used and the amount of them is 20,000 tons a year in terms of 12 roll package. Easiness of treating wastes is important to decrease environmental impacts. The halogenous packaging materials which generates large environmental impacts were selected as an item for these criteria.

D. Use and Consumption Stage

D-8 Use/discharge of hazardous materials

The following point was reviewed under this item.

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| (1) AOX (as an alternative index of dioxins) in products |
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Surveys were conducted by organizations such as the Japan Paper Association and the AFPA regarding the residual dioxin of paper products mentioned in point (1) above, but no problems were reported.

Accordingly, this item was not selected for these criteria.

D-9 Other environmental impacts

The following point was reviewed under this item.

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|----------------------------------|
| (1) Fluorescent whitening agents |
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Opinions have been indicated that for the functions of sanitary paper, fluorescent whitening agents are unnecessary chemicals as Eco Marks, and in the proposal, criterion items were established that do not recognize its restore when the product is being manufactured.

E. Disposal Stage

E-6 Discharge of water pollutants

When toilet paper are disposed of with water after use, it doesn't become a problem as the cause of the water pollution at present. Accordingly, this item was not selected as an item for these criteria.

5. Quality Criteria

In JIS, it decided to evaluate compatibility, limiting an item from the viewpoint of saving resources.