Developing Environmentally Friendly Packaging

The Ajinomoto Group has worked to develop containers and packaging that minimize environmental impact while fully maintaining the quality of the food inside. Consumers today want to select products that are as environmentally friendly as possible, and the Group is determined to support this trend.

DATA

Household garbage, and containers and packaging

Japan disposes of 44.87 million tonnes of garbage a year, and household garbage accounts for 29.17 million tonnes, or approximately 65% of this. Containers and packaging account for a high 53% of household garbage.

Meeting customer needs, and future efforts

Containers and packaging serve an important role in maintaining the quality of the food they hold until opened, yet they account for approximately 54% of Japan’s household waste by volume. In a survey on daily dietary habits and environmental awareness conducted by Ajinomoto Co., Inc., more than 80% of consumers said that they “try to reduce garbage,” “separate garbage properly,” and “buy refillable products as much as possible.”

To address social issues around food, resource depletion, and energy, the Ajinomoto Group strives not only to reduce consumption of packaging materials and CO₂ emissions, but also to create innovative container and packaging technology. The Group’s innovations span many fields: reducing food loss with technologies that maintain product freshness and extend best-before dates and technologies that prevent food residue in packaging, introducing biomass plastics to replace petroleum-derived raw materials, developing ways to use inedible raw materials, introducing packaging free of aluminum foil (which requires a lot of energy to produce), and designing packaging for greater efficiency in logistics and delivery.

Organizing teams to improve containers and packaging

The products of the Ajinomoto Group require many different kinds of containers and packaging. To encourage each group company to make its containers and packaging more environmentally friendly, the Group holds events like the Ajinomoto Group Food Conference and the Packaging Designers’ Liaison Meeting. The Group will continue to leverage its comprehensive strengths to make further improvements toward environmentally friendly, easy-to-understand packaging design.

Cooperation with outside organizations

Nowadays, it is difficult for consumers to tell which type of packaging is sustainable, given the diverse materials and forms of packaging on the market. In order to address environmental problems relating to packaging throughout society, it is important that consumers choose sustainable products based on an understanding of the functions and roles of packaging.

The Ajinomoto Group promotes 3R activities by engaging with stakeholders through consumer dialogues and educating the public about new packaging technologies.

Containers and Packaging 3R Promotion Plan and environmental awareness initiatives

Each company in the Ajinomoto Group has its own mechanisms, targets and plans to promote environmental considerations.

In the 2011–2015 Containers and Packaging 3R Promotion Plan, Ajinomoto Co., Inc. has established overall reduction targets, specific goals on packaging for less waste, packaging that can be refilled, packaging that is easy to separate, and packaging materials that are environmentally superior.
In fiscal 2014, compared to the base year of fiscal 2010, plastic consumption per product weight was down 2.4% while paper consumption per product weight was 6.2% higher. While progress in reducing paper consumption was achieved for many products, the reasons for the increase include the growth in products for which packaging increased as a result of reductions in the volume of contents based on changes in consumption behavior, and products for which 3R activities were inappropriate in view of the suitability of facilities or product shelf life.

The Group will strive to conserve packaging materials and design environmentally friendly products in fiscal 2014, aiming to reach the targets for fiscal 2015, the final year of the plan.

### Major targets and results of the 2011–2015 Containers and Packaging 3R Promotion Plan

<table>
<thead>
<tr>
<th>Reduce</th>
<th>Targets to be achieved by fiscal 2015 (compared to fiscal 2010)</th>
<th>Fiscal 2014 results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastic consumption</td>
<td>Reduce by 2.0% per unit of product weight</td>
<td>Down 2.4%</td>
</tr>
<tr>
<td>Paper consumption</td>
<td>Reduce by 2.5% per unit of product weight</td>
<td>Up 6.2%</td>
</tr>
</tbody>
</table>

### Reuse
- Develop refillable product containers

### Recycle
- Develop packaging materials that can be readily separated and peeled for easy sorting (including easy peel labels, easily removable caps, boxes with perforations)
- Develop packaging using plant-derived biomass plastic (Use of shrink film made partly from polylactic acid derived from corn, polyethylene made from sugar cane)
- Providing information to consumers
  - Increase provision of information that promotes selection of environmentally friendly products and proper separation and disposal of garbage ("Ajinna Eco" mark labeling and publication of information on the Internet)

### Ajinomoto Co., Inc.

Ajinomoto Co., Inc. always conducts an environmental assessment of containers and packaging before a new product is released. The assessment is based on the company’s own Eco-Index for Containers and Packaging. Each product is checked from four perspectives: (1) reduction in weight of packaging materials; (2) selection of materials; (3) recyclability; and (4) labeling (customer appeal). Evaluation items are revised when needed. In the assessment, the company also calculates the LC-CO₂ of packaging, which it uses as supporting data when needed. In the assessment, the company also calculates the LC-CO₂ of packaging, which it uses as supporting data when needed.

### Container and packaging environmental assessment since 1991 (computerized in 2005)

The integrated assessment and “3R management system,” shown in the chart below, enables the company to: (1) use the data on the weight of used packaging materials indicated in the Eco-Index to calculate recycling fees; (2) share data on its intranet; and (3) update data on the weight of packaging materials used every month. This reliable information helps to improve management. Since integrating the two systems, not only has calculation of recycling fees and 3R promotion become easier; internal and external reporting and data provision to distributors and recycling organizations have also become more accurate.

### Eco-Index for Containers and Packaging (Household edition ver. 11)

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Evaluation item</th>
<th>Weight of disposed packaging materials</th>
<th>Weight reduction</th>
<th>Degree of inner packing</th>
<th>Appropriate space ratio (for boxed products)</th>
<th>Availability of refill products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotion of recycling</td>
<td>Availability of environmentally friendly labeling</td>
<td>Design data</td>
<td>Design data</td>
<td>Design data</td>
<td>Design data</td>
<td>Design data</td>
</tr>
</tbody>
</table>

### Recycling fees and weight of containers and packaging by material type for products

- Glass bottles
- Plastic
- PET bottles (for beverages)

The Environment
Developing environmentally friendly packaging

Since the Ajinomoto Group uses many forms of packaging, it is working to make them lighter using various means. The Group seeks to use less packaging for everything from jars, plastic film, pouches, and trays, to transport containers (cardboard) and paper boxes for products.

| Case study 1 | Improving logistics quality Transport Container Labeling and Design Improvement Projects, Ajinomoto Co., Inc. |

The manageability of goods at warehouses and other distribution facilities is an important key to optimizing logistics. Delivery errors lead to risks such as product waste, voluntary product recalls, health hazards, and loss of customer trust. Moreover, certain sizes and shapes of transport containers (cardboard) prevent them from being efficiently loaded onto pallets. To address these issues, Ajinomoto Co., Inc. implemented two improvements from its standpoint as the manufacturer.

1. Transport Container Labeling Improvement Project

Previous transport containers had labels that made necessary information hard to read, often leading to handling mistakes in the process of distribution. To improve identifiability and visibility, the company implemented Transport Container Design Guidelines to set rules for labeling, such as concentrating product-specific information on the upper right of the box sides. By fall of 2015 Ajinomoto Co., Inc. plans to introduce around 200 items with the new labeling design, and continue rolling it out going forward. The rules have also been extended to AJINOMOTO GENERAL FOODS, INC., J-OIL MILLS, Inc., YAMAKI Co., Ltd., and other group companies, which have started to introduce the new design.

Before

After

Changes
1) Product information concentrated in upper right
2) Font of distribution code changed
3) Product name added and matched to shipping documents

Quality Assurance & External Scientific Affairs Department, Ajinomoto Co., Inc.

We helped develop the Transport Container Design Guidelines from the perspectives of proposing labeling methods for products with legal requirements on transport container labeling, product distinguishability for the user, and compliance with ASQUA standards.

We are currently supporting the new design’s introduction by verifying through quality assessments whether design changes have been made in accordance with the guidelines.

Logistics Planning Department, Ajinomoto Co., Inc.

The Transport Container Design Guidelines are nothing less than an assembly of the best ideas from all divisions involved. The new transport container labeling in accordance with these guidelines are being introduced not only at Ajinomoto Co., Inc., but other Ajinomoto Group companies as well. We will continue to make improvements and achieve new efficiencies to contribute to stronger food and distribution industries.

Advertising Department, Ajinomoto Co., Inc.

The hardest part about creating the Transport Container Design Guidelines was identifying design elements that met labeling needs for everyone: all stages of distribution, all printing conditions, and all types of products, from consumer to commercial. We had to interview each division, propose ideas for improvement based on analysis of current conditions, and carefully resolve each issue that arose. We are happy to see that, since the guidelines’ introduction last year, adoption of the new design is gradually expanding across the Ajinomoto Group.

AJINOMOTO LOGISTICS CORPORATION

Transport container designs and labeling were changed to consolidate essential information, display the same product name as on the shipping document, and add indicators for products with bonus-size packaging or give-away merchandise. The changes have received positive feedback from warehouse and delivery staff for making the products more identifiable during handling, loading, and product verification at delivery.

2015 All-Japan Convention for Logistics Improvement Case Studies, Japan Institute of Logistics Systems Logistics Rationalization Award (Top Prize)
2. Transport Container Design Improvement Project

Adopting a new packaging design approach that starts from pallet loading efficiency, Ajinomoto Co., Inc. set a target of over 80% efficiency. The transport cardboard box is first designed based on the target, followed by the quantity of goods per box and individual packaging. This ensures that logistical concerns are incorporated into the process of designing and improving packaging.

The Transport Container Design Improvement Project began in April 2013 following a series of product collapses at distribution centers caused by changes in transport container design. As members of the design division, we launched an effort to improve logistics quality, not stopping at the mere processing of claims.

We began by surveying all distribution sites across the country (from Hokkaido to Okinawa). We found little consistency in the way products were loaded on pallets, creating various operational challenges for employees. Because the standard design flow decided on the size and quantity of individual products before the size of the transport container, pallet loading patterns varied widely, with some even resulting in a loading efficiency of less than 50%.

We then created a transport container design visualization sheet, and indicated areas with less than 80% efficiency as red zones. This made it possible to judge at a glance which container designs should never be adopted, using container size alone to determine whether pallet efficiency requirements would be met.

This new design flow allows us to confirm loading efficiency early on for new products as well as existing products undergoing revision. We can now assess dimensions on a scale of a few millimeters, and sometimes suggest to business divisions that they change the quantity of contents.

To keep this initiative going, the Logistics Planning, Advertising, Packaging Group (FAD-P), Product Development Center, Institute of Food Sciences & Technologies, Ajinomoto Co., Inc.

The sessions are paying off. Feedback has included comments such as, “Whenever we ask FAD-P to improve a packaging design, they always offer a solution from a logistics perspective,” and “We’d like to change the individual packaging without changing the distribution efficiency.” At a FAD-P meeting held to evaluate technologies under development, one person asked whether technologies help improve distribution.

The benefits of improvements in logistics quality are three-fold: higher product quality, lower costs, and smaller environmental impacts.

We hope to expand these efforts to the entire Ajinomoto Group.

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Case study 2 Smaller products, better taste

All AGF Blendy and three MAXIM Chotto Zeitakuna Kohiten stick coffee mixes series products

Thanks to a new technology that enhances the aroma of coffee and milk, revamping products for richer flavor provided the opportunity to use more environmentally-friendly packaging material and to downszie the packaging.

With this change in product volume, not only was the stick length shortened by two centimeters, but a biomass plastic film partially made from sugarcane-derived material was adopted as a printable film. The outer box packaging was made more compact along with the shorter sticks, and the box opening was modified to eliminate small bits of waste, such as the cardboard zipper.

As with individual packaging, the transport containers were also downsized, resulting in higher distribution efficiency. For 10-stick boxes of the popular Blendy Stick Cafe Au Lait, for example, the number of transport containers that can be loaded on one pallet increased from 40 to 64 cases.

These improvements are expected to cut approximately 400 tonnes of packaging material and 1,400 tonnes of CO₂ emissions annually.¹

¹ Calculated by AJINOMOTO GENERAL FOODS, INC. using a formula based on fiscal 2014 sales volume
Promoting “Aji-na Eco” and “Hotto-suru Eco” mark products with environmental packaging

Modern product packages are already small and thin, so it is often difficult for customers to notice changes made in package weight, thickness, and size and materials used. However, when the enormous sales volume of products is taken into account, the sum of these small efforts can result in significant environmental benefits.

Consumers want to purchase environmentally friendly products and to tell whether a product is eco-friendly at a glance, so the Ajinomoto Group began labeling products with its own ecomarks in 2010.

What is “Aji-na Eco”?
“Aji-na Eco” is a term describing the smart and ecological products or information provided by the Ajinomoto Group, and the logo mark evokes the image of our green planet, the pleasure of eating, and a global environment made even better through food.

What is “Hotto-suru Eco”?
“Hotto-suru Eco” indicates AJINOMOTO GENERAL FOODS, INC. products with environmental features. The logo mark evokes the comfort felt when drinking one’s favorite beverage, colored in an earth green. The “Hotto-suru Eco” label was introduced in spring 2015.

Number of “Aji-na Eco” mark products
165
As of August 31, 2015 (Ajinomoto Co., Inc., Ajinomoto Frozen Foods Co., Inc.)

Number of “Hotto-suru Eco” mark products
95
As of August 31, 2015 (AJINOMOTO GENERAL FOODS, INC.)

Data
Survey on environmental consciousness of customers

- I try to reduce garbage in my daily life
- 77%

- I take care to separate garbage properly
- 95%

- I try to buy refillable seasoning products
- 84%

- I think that there is a lot of waste in food packaging and trays for perishables
- 84%

Sample: 1,800 homemakers from households across Japan composed of two or more people aged 20–70.