Ⅳ Improving Containers and Packaging

1. Kikkoman's Guidelines for Containers and Packaging, and the Containers and Packaging Committee

<Reported in FY2017>

In March 2008, the Kikkoman Group stipulated the "Kikkoman's Guidelines for Containers and Packaging" to clarify the Group's attitude toward enhancing convenience and safety for customers, and reducing impact on the environment by reducing container and package weight, and recycling.

Kikkoman's Guidelines for Containers and Packaging

The Kikkoman Group will procure, develop, and merchandise containers and packaging with low environmental impact that are suitable for production, transportation, storage, and sales, and which are also safe and easy for consumers to use.

1. Reduce weight of containers and packaging.
2. Introduce and use returnable containers and packaging for our products.
3. Consider applying shapes, designs, and materials to containers and packaging that facilitate sorted collection and reuse. Promote repackaging current products in new containers and packaging in compliance with the relevant laws and regulations of each country.
4. Make greater use of sustainable resources.
5. Increase procurement from environmentally conscious suppliers and vendors.
6. Use materials with chemical compositions and shapes that have been verified as safe for humans.
7. Colect customer feedback and information regarding where and how they purchase and use our products and incorporate it into the development of new containers and packaging. Strive to develop new conatiners and Packaging.
8. Develop containers and packaging with universal designs to make them easy to use for a diverse range of customers.

The Containers and Packaging Committee chaired by the Corporate Executive Officer, and consisting of members from related divisions such as production, equipment, distribution, development, procurement and environment, solves various problems relevant to containers and packaging from the environmental aspect.

2. Containers and Packaging for Soy Sauce

<Reported in FY2017>

Soy sauce is a seasoning which has been used from olden times. It is not known exactly when it began to be used, but in the Taiho Code (701), the law in the Asuka period (550-710), there is a description that there was a division in the Imperial Palace responsible for the production and management of *hishio*, which is considered as a predecessor of soy sauce. Looking back upon the long history of the containers and packaging of soy sauce, we can learn that a great deal of inventiveness and various environmental considerations have been involved in their development.

● Ceramic bottles called “comprador bottles” (owned by the Kikkoman Institute for International Food Culture)

● Wooden barrel (owned by the Kikkoman Institute for International Food Culture)

Pottery and ceramic containers such as wide-mouth jars, small-mouth pots, and bottles had been used from the long past, and cedar wooden barrels began to be used in the early Edo period (1603-1868) when soy sauce was mass produced at major production sites and transported to many places across the country. These containers were returnable and cleaned for reuse.
In those days, there were relevant occupations such as brokers and rental traders of vacant containers (earthenware and barrels). In addition, there were craftsmen who mended broken earthenware using rice flour and clay, and who dismantled large barrels to reshape them as smaller barrels. They played a due role to promote the recycling of containers.

1) Glass

In the Meiji period (1868-1912), glass bottles were imported from Europe, and in the middle of Taisho period (1912-1926), they came to be used normally as soy sauce containers.
Glass bottles made of silica sand, lime and soda ash, like earthenware and wooden barrels, were returnable containers which could be cleaned and reused. Cullet can be melted for recycling. Therefore, glass containers are favorable for the sake of the environment. In addition, glass bottles are superior in keeping the contents as they are chemically stable and able to shut off the external air completely. However, they have the disadvantages of being heavy and breakable.

● Glass bottles in the past

● 1.8 liter(L) glass bottles of Kikkoman soy sauces at present

Since introducing glass bottles in 1918, Kikkoman still uses glass bottles partially for business use and processing use while improving the strength and lightening the weight.

2) Plastics (PET containers, etc.)

Today, polyethylene terephthalate (PET) bottles are used as the mainstream containers for soy sauce and other products. PET has advantageous properties including strong oxygen insulation, resistance to physical shock (hard to break), and transparency. Kikkoman Corp. adopted PET for soy sauce bottles in February 1977. It was the first time for PET bottles to be used in the food industry in Japan.

After the adoption of PET bottles, Kikkoman Corp. has been improving PET containers in cooperation with the plastic molding company to make thinner sheet (to reduce material use and weight), to enhance the strength and quality sustaining capability, and recyclability.

● Soy sauce PET bottle"500ml Man Pack" developed in 1977

● 1L and 750 ml PET bottles for Kikkoman Soy Sauces at present

The 1.8L Handy PET bottles are used for "Kikkoman Soy Sauce" manufactured by Kikkoman Food Products Co. In 2000, the material used for the handle was changed to the same PET as the body for the convenience of recycling. In 2009, the weight of the handle was reduced by 4g (from 14g to 10g). Further in FY2015, the weight of one whole bottle was reduced by 4g (from 72g to 68g) by thinning its thickness without affecting the strength.

● 1.8L Handy PET bottles for Kikkoman Soy Sauces

<Reported in FY2019>

In FY2016-2017, the weight of the 500ml PET bottles used for "Kikkoman Less Sodium Soy Sauce" was reduced by 3g (from 24g to 21g) by thinning its thickness.

● 500ml PET bottles for Kikkoman Less Sodium Soy Sauce

<Reported in FY2017>

Used PET bottles from households are collected, in principle, by the local governments to be sold to recycling contractors. They are treated as pellets and flakes which are to be reused for containers (egg packs), clothes, stationery and other products. Kikkoman Group devotes effort to making non-PET caps and labels easily removable to facilitate recycling and reuse.

● Previous Eco-Cap®

● Current Eco-Cap®

For example, in 1999, the Eco-Cap® (registered trademark No. 4319133) was developed and put into use. The inner stop of the Eco-Cap was improved to make it easily removable. Later, functionality has been pursued to make "easier to use" containers and "easier to remove" container parts. In 2002 and 2008, the forms and specifications of caps were changed. In 2000, the glue for the product label was changed to help consumers remove it more easily.

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<Reported in FY2019>

The soft plastic tabletop bottle, named "*Yawaraka Mippu Bottle*," is considered as a next-generation container. The bottle has the special function to keep the color, taste, scent of the soy sauce fresh at room temperature for 90 days after opening and to be able to pour soy sauce freely from one drop to necessary amounts. The weight of the bottle is 33g, which is much lighter than the conventional glass tabletop bottle (159g). In August 2011, the Kikkoman Group has released a raw soy sauce product named "*Itsudemo-Shinsen Shiboritate Nama-shoyu*" using this bottle in Japan.
In addition, the following improvements were added to the bottle in FY2018.
(1)The main material of the new bottle was changed from polyethylene to polyethylene terephthalate.
(2)A product label and a cap which can be removed easily were adopted in the new bottle, for recycling purpose.
(3)The weight of the new bottle became 10% lighter.
With these improvements, the new bottle that was named "*Mippu Eco Bottle*" also has a high recycling function. From February 2018, the new products using this bottle were introduced.

● The product bottled in a plastic tabletop bottle, named "*Yawaraka Mippu Bottle*"

● The products bottled in a new bottle, named "*Mippu Eco Bottle*"

3. Efforts by Nippon Del Monte Corp. for its Product Containers and Packaging

<Reported in FY2017>

Nippon Del Monte Corp. has been making efforts to lighten the containers, reduce the use of materials, and enhance recyclability for its products such as seasoning, drinks, and canned cooking ingredients. For this purpose, the company has attempted, in cooperation with container manufacturers, to thin the thickness of PET bottles and glass bottles to lower material use and weights, and to use Tetra Recart boxes (2007) in place of cans for cooking ingredients.

● Cooking ingredients in paper containers (Tetra Recart) : Tomato (left) and Corn (right)

In FY2014, Nippon Del Monte Corp. reduced the use of glass for its 800ml apple juice bottles by 58g per bottle by thinning the thickness of glass without sacrificing its strength. As a result, the weight of a bottle was reduced from 410g to 352g.
In FY2015, the weight of a 900g PET bottle for tomato juice and vegetable juice was lightened by about 16%.

● Assorted apple juice set (glass bottles)

● Tomato juice and vegetable juice (900g PET bottles)

<Reported in FY2019>

In FY2017, the weight of the 1kg and 800g bottles used for "Del Monte Tomato Ketchup" was reduced by 1g (1kg bottles: from 34.5g to 33.5g, 800g bottles: from 28.4g to 27.4g) by thinning its thickness, and the weight of the hinge caps was reduced by 2.2g (from 6.5g to 4.3g).

● Del Monte Tomato Ketchup (1kg and 800g bottles)

4. Efforts by Manns Wine Co., Ltd. for its Product Containers and Packaging

<Reported in FY2017>

Manns Wine Co., Ltd. has continued their efforts to reduce the weights of containers and the volume of materials used for containers, and to enhance recyclability. For example, in cooperation with container manufacturers, the company thinned the thickness of the standard glass bottle (720ml) (2003), developed and used aluminum cans only for wine (2012) and PET bottles (2012).

● Wines in aluminum cans (300ml)

● Wines in PET bottles (720ml)

In FY2014, Manns Wine Co., Ltd. launched a new style of package for wine, a product that is brewed all year round. The launch was specifically for two kinds of "Japanese Wine" (brewed only with grapes grown in Japan) using PET bottles produced without antioxidants for the first time in the industry in Japan. The PET is specially made with elements to maintain the quality of the wine which is carefully brewed using only "Muscat Bailey A" and "Koshu," grapes grown in Yamanashi prefecture which are registered with the International Organization of Vine and Wine (OIV).
In August 2014, sparkling wine (280ml) in a specially prepared can was launched nationally, the first of its kind in the Japanese wine industry. When the specially formulated can was filled with gorgeous tasting Chilean sparkling wine containing more than 3 barometric-pressure carbonic acid gas, the can retained its original shape and was not damaged.
While ensuring that both PET-bottled wine and canned sparkling wine are of equal quality to conventional glass-bottled products, they are lighter in weight, and can reduce CO_2 emissions during transportation. There are added benefits such as being more durable and not as easily breakable as glass bottles, light and easy to carry, making them good for picnics, and easy to recycle.

● Japanese Wines in PET bottles (720ml)

● Sparkling wines in cans (280ml)

5. Partnership and Collaboration with Related Organizations

<Reported in FY2017>

The Kikkoman Corp. is a corporate member of the Council for PET Bottle Recycling, Glass Bottle 3R Promotion Association, PET Bottle Committee of the Japan Containers and Packaging Recycling Association, and Liaison Council for Liquor PET Bottle Recycling. Through membership in these organizations, Kikkoman Corp. is promoting the recycling of containers and packaging.

In 2005, eight local governments in the Kanto area, namely, Saitama prefecture, Chiba prefecture, Tokyo Metropolitan, Kanagawa prefecture, Yokohama city, Kawasaki city, Chiba city, and Saitama city (later, Sagamihara city joined) announced the "Slim down Container and Package Declaration" to simplify containers and packaging to reduce the amount of waste. Kikkoman Corp. participated in the movement from the beginning, and has continued activities under the mottos "to use environmentally friendly packaging materials," "to examine ways to lighten the weights of containers and packaging, and to use materials to make waste sorting easier." Currently, the results of these efforts are reported every year on its website (only in Japanese).