



Advanced food packaging which contributes to promotion of exports of agriculture, forestry and fishery products and foods

農林水産省

Food Industrial Policy Office
Biomass Policy Division
Food Industry Affairs Bureau



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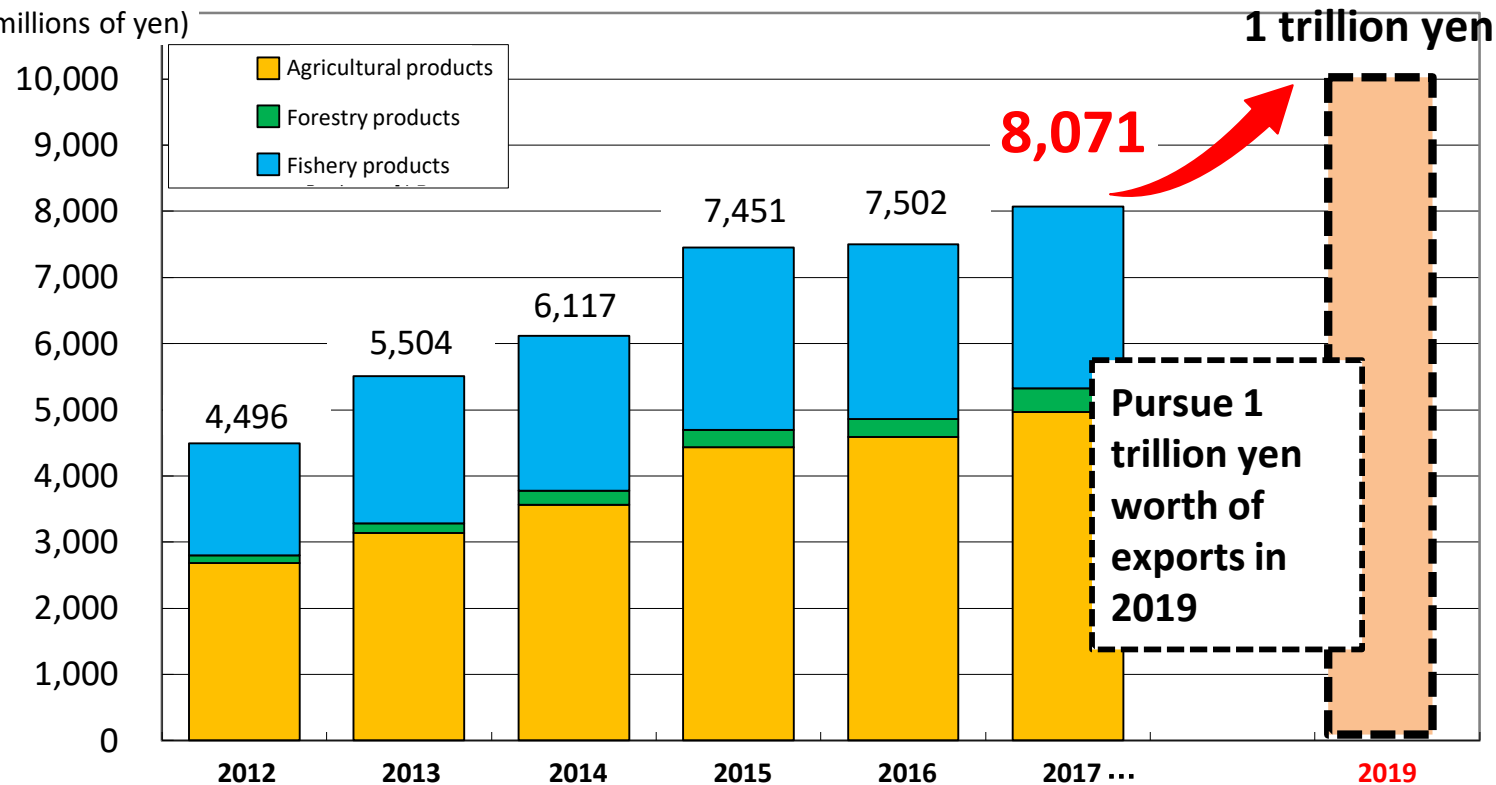
○ Exports of agricultural, forestry and fishery products and foods

農林水産省
食料産業局

- Exports of agricultural, forestry and fishery products and foods from Japan increased for the fifth consecutive year from 2013 to 807.1 billion yen in 2017, up 7.6% from the previous year.
- An export target of 1 trillion yen, set for 2020, has been moved up to 2019 in the Economic Measures for Realizing Investment for the Future (cabinet decision in August 2016)

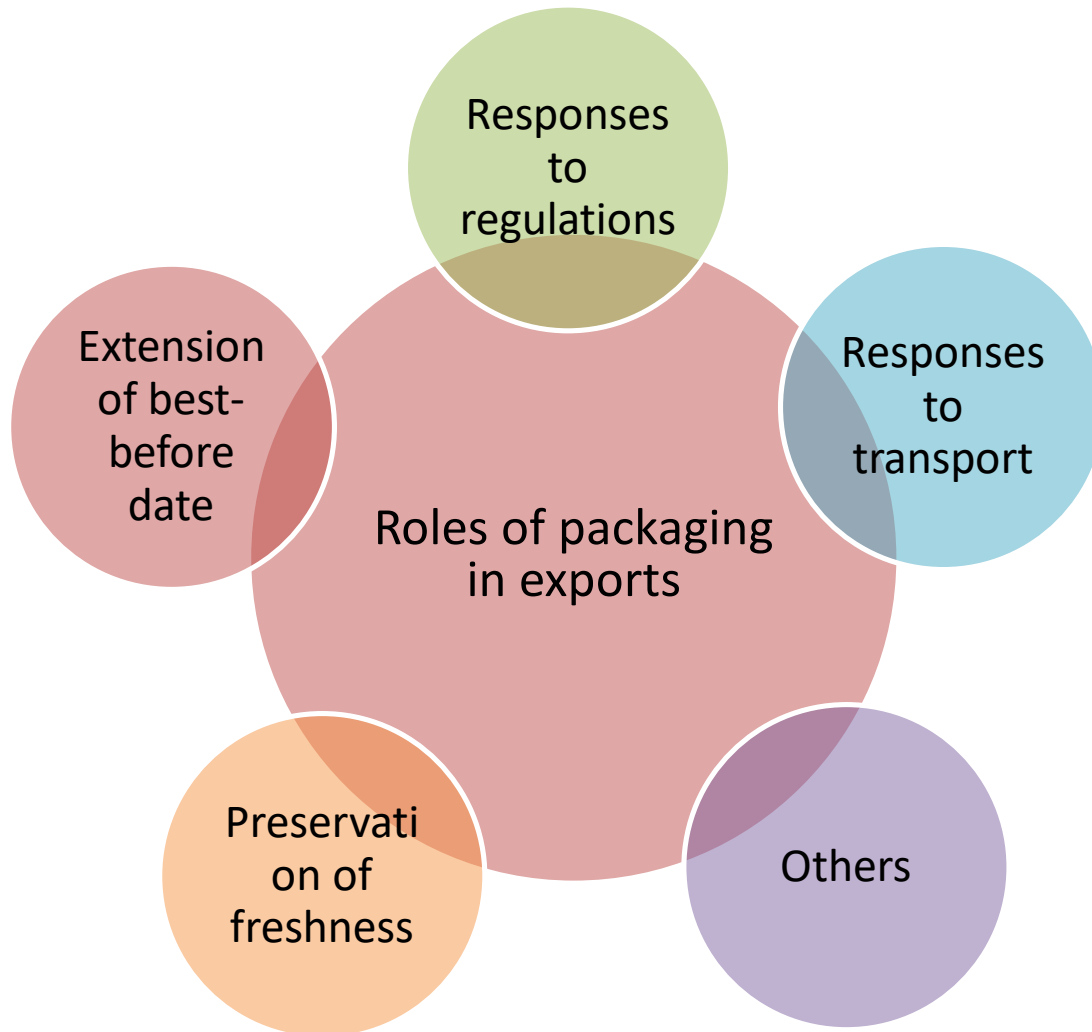
■ Changes in exports of agricultural, forestry and fishery products and foods

(in hundreds of
millions of yen)



○ Roles of packaging in exports

- Functions of packaging contribute to exports of agricultural, forestry and fishery products and foods from Japan
- Flexible measures are needed to respond to regulations in export destinations and deal with transport conditions different from those in Japan



Roles of packaging in exports

- Responses to regulations
Adopt materials, etc. responsive to regulations in export destinations
- Responses to transport
Protect products and reduce damage to them at distribution stage
- Extension of best-before date
Ensure time period from transport to sale (ensure period for quarantine inspection, etc.)
- Preservation of freshness
Ensure time period to preserve the freshness of vegetables and fruits
- Others
Improve user-friendliness and designability and design environment-friendly properties

<Column 1> Responses to regulations on food packaging in other countries

(Basic philosophy and points of consideration)

- Food packaging that comes into contact with foods should not violate regulations adopted by export destinations (approval criteria: positive list). A positive list prescribes ranges of base polymer, additive agents, etc. and restrictive provisions.
- Need to prepare documents to confirm packaging materials in conformity with regulations of export destinations.
- While screening procedures differ in accordance with export destinations, it is necessary to explain the absence of materials other than those on the positive list concerned.
- If a package concerned is multi-layered, it is necessary to explain that impurities do not leak out of a layer or layers, which do not come into contact with foods, or leak out, if ever, in an amount that does not affect human health.

(Attention is necessary as standards and necessary procedures differ in accordance with export destinations.)

(Related links)

<Reference: Link to “Institutions Related to Exports from Japan” on JETRO’s portal site>

(US) https://www.jetro.go.jp/world/n_america/us/foods/exportguide/

(EU) <https://www.jetro.go.jp/world/europe/eu/foods/exportguide/>

(Other information is also posted for regulations (including regulations on food packaging) for each country and each product)

US



EU



Link to QR Code→



<Column 2> Exports in food packaging made of recycled plastics



(In the case of the U.S.) Exports in food packaging made of recycled plastics are possible.

The U.S. does not differentiate food packaging materials, whether they are new or recycled, as long as they match specifications set forth in Title 21 of the Code of Federal Regulations.

The Food and Drug Administration implements administrative guidance based on the “guidelines for recycled plastics.” After confirming at each recycling process that impurities are removed to a level that they do not affect foods, the FDA issues a “no objection letter” to permit the use of recycled plastics in a layer that comes into contact with foods.

<Steps needed for a food maker’s exports to the U.S.> (In the case of using recycled plastics in the process that has received an NOL from the U.S. FDA)

- ① The food maker selects a food package made of materials clearing U.S. federal regulations.
- ② The food maker needs to explain, if requested by an importer, that the package clears U.S. Federal regulations and uses recycled plastics.
- ③ The package maker presents information on regulations concerned and a copy of the NOL to the food maker. (For detailed information, refer to the above-mentioned “related links.”)

*The FDA guidelines stipulate that business operators are required to submit written documents to receive evaluation on (1) confirmation of ways of recycling resources which are thrown into the recycling process concerned, their kinds and materials, quality, etc., (2) details of the process concerned, implementation of verification tests using alternative contaminants and standard clearance, and (3) restrictions on usage conditions (use and temperature/time).



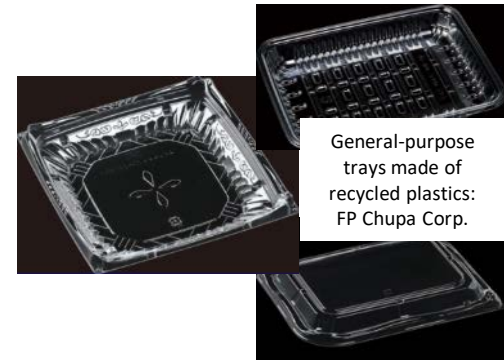
<Recycled plastics matching the U.S. FDA guidelines (Japan)>

Voluntary industry standards (Japan PET Tray Association) allow nothing but packages produced through recycling processes, which have received NOLs from the U.S. FDA, to come into contact with foods.

They match standards announced by the Food Safety Department at the Ministry of Health, Labor and Welfare in April 2012.

Recycled bottle materials registered with the Japan PET Tray Association are applicable to packages that come into contact with foods.

(Names of registered materials are available on the association’s homepage)



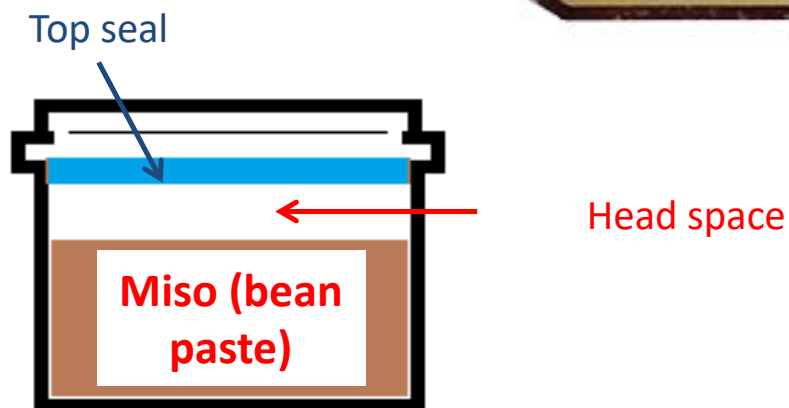
General-purpose trays made of recycled plastics: FP Chupa Corp.



(In the case of the EU)

- The European Food Safety Authority checks the rate of removal in each recycling process. Recycled materials processed at a plant, assured of quality, are applicable to food packages.
- A producer of packages concerned declares the conformity of them in writing in accordance with a format set by the EU and submits this to an importer.
- The Japan PET Tray Association and other organizations concerned as well as private analytical bodies and others in Japan assist the preparation of written declarations.

有機 玄米味噌



(Sale) From January 2017

(Improvement of packaging)

- Install a film valve in the top seal to eject carbon dioxide generated when the fermentation of miso advances. Curb browning by enclosing a deoxidation agent.
- Prepare the conformity of packages in writing before exports to the EU to meet the bloc's import regulations.

(Improvement at food production stage)

- Secure a wider head space (between miso and top seal) in the package than that for domestically distributed products to prevent issues with quality and damage to packages caused by rapid changes in temperature and atmospheric pressure during transportation.

(Marketing advantages for exports)

- Expansion of sales routes due to the use of packaging matching import regulations
- Exclusive use of domestically produced or organic soybeans and rice as materials for products (organic materials authorized by the Japan Organic & Natural Foods Association).
- Setting of 1-year best-before date

(Export destinations)

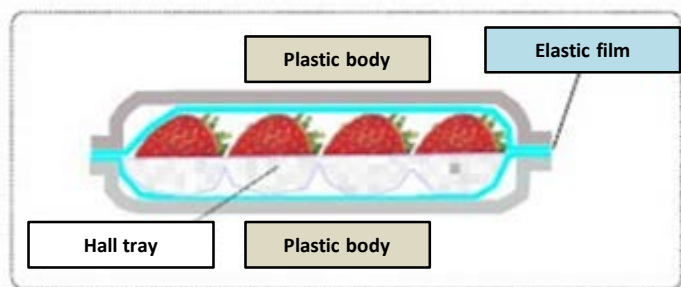
- Italy and Portugal

「いちご用フルテクター」

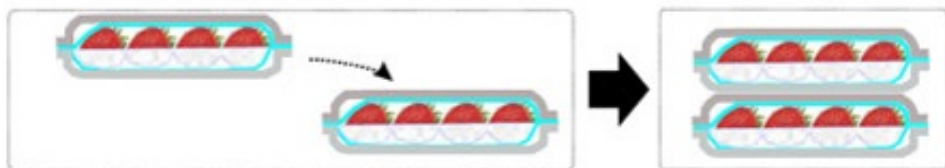
フルテクターなら



1. Strawberries stay static



2. Stacking packages is possible.



(Sale) From January 2014

(Improvement of packaging)

- Placement of strawberries in a hall tray and wrapping of them with elastic films attached to upper and lower plastic bodies curb their movements inside the package and protect them from shaking and shocks.



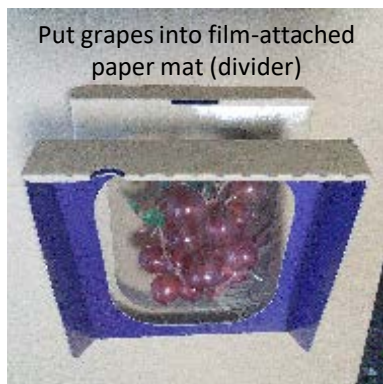
(Marketing advantages for exports)

- Stabilize quality at the time of arrival at destinations by preventing damage from shaking and shocks
- Damage is minimized after 2-week shipments by sea to Singapore and Bangkok
- Experiments have proved that shipments by international mail (by air) are possible
- Shipments aboard an ordinary cargo flight or as checked-in baggage (gifts) are possible

(Export destinations)

- Singapore and Thailand

「ぶどう用フルテクター」



and place them
in a box



(Improvement of packaging)

- Paste a film inside a paper material and put grapes into it
- The elastic film curbs the movements of grapes and give them resistance to shaking and shocks during transportation.
- The box can be directly placed in a decorated cardboard box.



(Marketing advantages for exports)

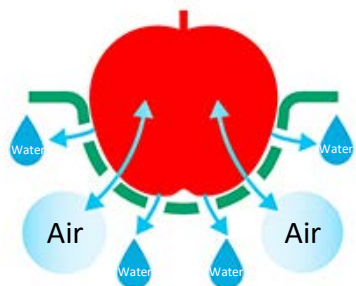
- Cut the number of grapes dropping off each bunch caused by shaking and shocks
- Used as display packages in export destinations

(Export destinations)

- Hong Kong and Thailand

(Sale) From May 2014

P S P (発泡)りんごパック



(Results of trial export to Thailand (Bangkok))

Category of package	Damage caused by apples' in-transit movements	Other kinds of damage	Surface
PSP Apple Pack	1	0	0
Incidence rate	1%	0%	0%
Ordinary tray	5	1	1
Incidence rate	5%	1%	1%

(Contents of trial)

Shipment by air from Japan

Outer package: 5kg cardboard box

Inner packaging: Single-faced, middle-divider cardboard box, PE Net

Volume: 6 boxes each in PSP Apple Pack and **ordinary tray for a total of 100**

apples each

(Sale) From September 2016

(Improvement of packaging)

- Piercing treatment of highly shock-absorbing PSP (foam) realizes shock-absorbing, ventilating, water-permeable, detachable and anti-tearable properties.
- Creation of ventilating holes and pathways lets bedewing water, generated by temperature changes, flow out of the package and preserves freshness.



(Marketing advantages for exports)

- Improved shock-absorption reduces damage to fruits during long-distance transportation.
- Water resistance makes the package anti-tearable, making work easier after arrival.

(Export destinations)

- Thailand and the Philippines

フレグランスパック



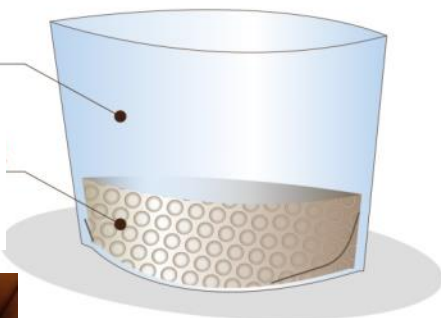
Front



Obliquely upper part

Film (with anti-dimming function)

Air-bubble absorption material
(with ethylene-gas evaporation and
dissolution functions)



(Composition drawing)



Packaging for actual export

(Sale) From November 2017

(Improvement of packaging)

- Air-bubble absorption material improves shock-absorption properties by protecting the bottom of each fruit.
- Entire sealing by a film gives favor-preserving properties and designability.
- Air-bubble absorption material is given ethylene-gas evaporation and dissolution functions.



(Marketing advantages for exports)

- Shock-absorbing nature of air-bubble absorption material reduces damage during long-distance transportation. Freshness is maintained by ethylene-gas evaporation and dissolution functions.
- Individual packaging makes the package look attractive and improves the effects of display for sale.
- Information on the exporting nation, etc. can be printed on the film for display.

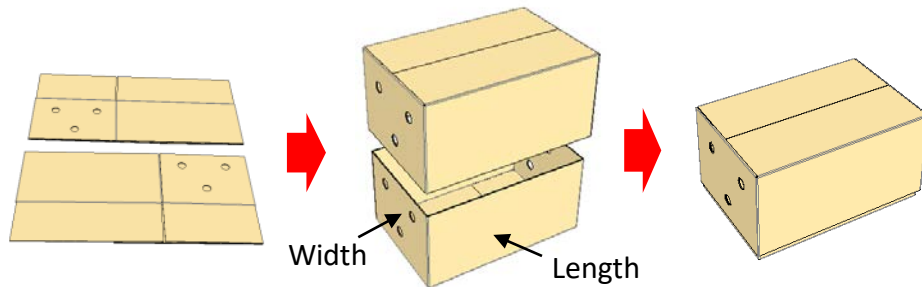
(Export destinations)

- Thailand and the Philippines

りんご輸出用外装容器（段ボール箱）



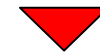
Strength raised by up to 40% or so



(Sale) From October 2017

(Improvement of packaging)

- Adopt relatively inexpensive cardboard boxes, though styrene foam boxes are often used for exports
- Designed with weight laid on strength to endure transportation exposed to long-lasting low temperature and high humidity.
- Adopt a two-piece format of inside and lid boards and supplement strength by doubling four faces (long and wide). Tests found the box up to 40% or so stronger than conventional cardboard boxes.



(Marketing advantages for exports)

- Maintain the necessary strength of cardboard boxes even under tough transit conditions
- Adopt printed designs for boxes to symbolize Japan -- an animation-like character, Mt. Fuji, a cherry tree and shrine gate.
- The packages help improve the image of products at the export destination because the designs make them readily understandable as made-in-Japan.

(Export destinations)

- Thailand

「飛び箱/Flying Fish Box」



Hollow groove



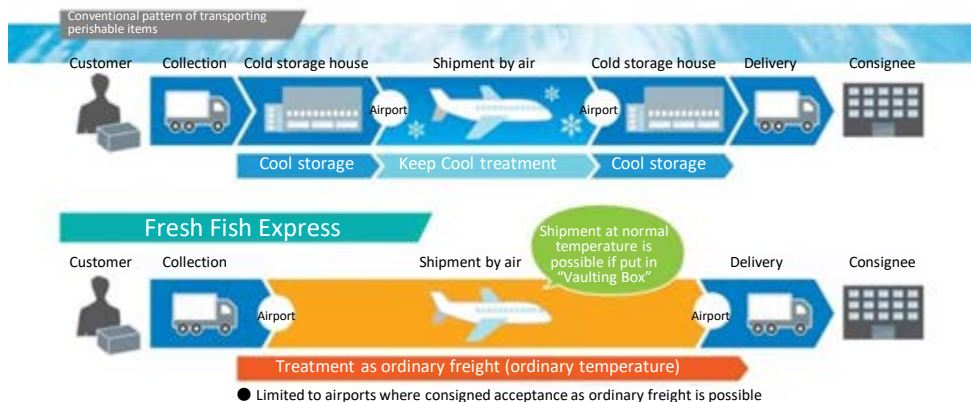
Dividing material



Flying Fish BOX

Air transport product using "Vaulting Box"

空飛ぶ鮮魚便
Fresh Fish Express



(Sale) From March 2017

(Improvement of packaging)

- Adopt hollow grooves on the sides and a dividing material, which curbs the transfer of heat from the bottom, and effectively separate melted water from ice.
- Curb the degradation of quality by improving cold storage properties and osmotic pressure and improve buffering properties against drop impact.
- Cold storage capacity and strength are roughly 2.8 and 2.4 times higher than conventional packages.

(Preservation of freshness)

- Extended hours of cold storage and higher cooling effects of refrigerant make it possible to preserve the freshness of fresh fish.



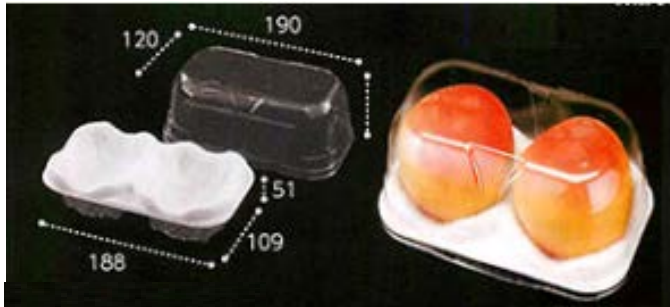
(Marketing advantages for exports)

- Cut in transportation cost without the need for cold storage at an airport and treatment as ordinary freight
- Cut in incidence of freight accidents accompanied by damage to packages during transportation

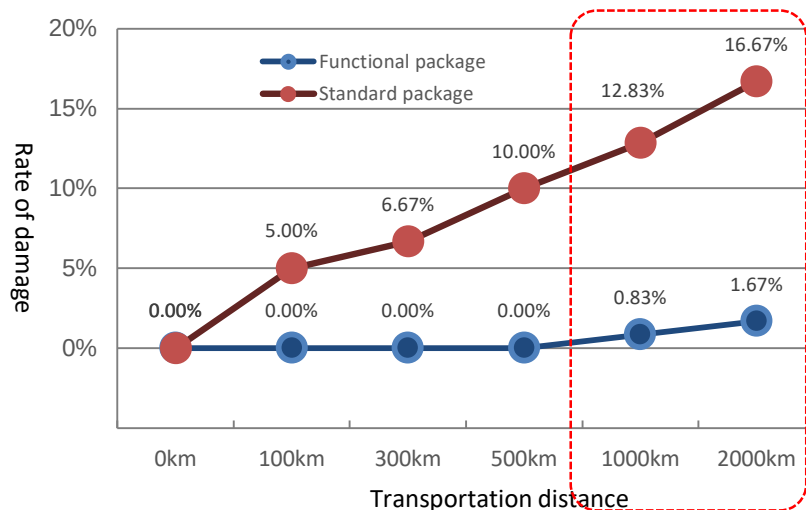
(Export destinations)

- The U.S., Vietnam, Singapore, Hong Kong, etc.

ふわりーと



■ Rate of damage by distance during transportation of peaches



Source: LCA Research and Study Report on Plastic Food Package (March 2016 - the Plastic Waste Management Institute)

(Sale) From August 1999

(Improvement of packaging)

- Functional packaging to reduce damage to vegetables and fruits during transportation
- Consists of unwoven fabric (polyester) to wrap peaches and molded-bottom container



(Marketing advantages for exports)

- Elasticity of unwoven fabric curbs damage to vegetables and fruits from shaking and shocks caused by transportation and freight handling

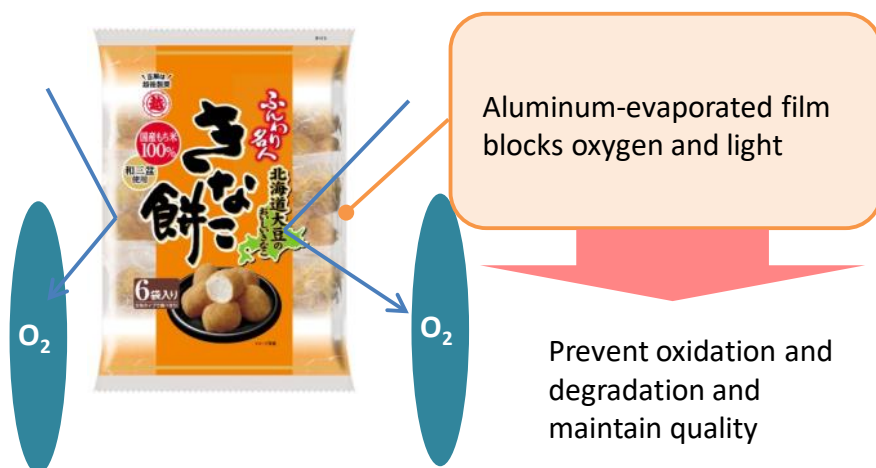
(Export destinations)

- The fabric is expected to be used for exports from Japan as it is suitable for long-distance transportation.

輸出用 ふんわり名人 きなこ餅、チーズもち



(Sale) From June 2012



(Improvement of packaging)

- Use of packaging material with high barrier properties against oxygen in barrier layer of outside film prevents oxidation of products



(Extension of best-before date)

- Greatly extend best-before date to 300 days, compared with 120 days for products for domestic market

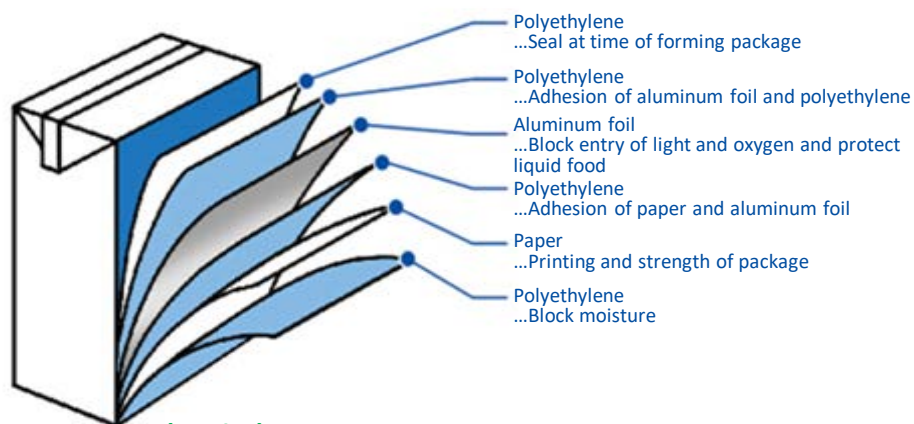
(Marketing advantages for exports)

- Extend best-before date to 300 days for exports, considering time needed for customs clearance procedures, etc.

(Export destinations)

- South Korea

輸出用 T O F U



(Sale) From 1977

(Improvement of packaging)

- While tofu is usually placed in a plastic container, a paper container, with attached aluminum foil to block oxygen and light, has been adopted to enhance barrier properties.

(Improvement at food production stage)

- Applying the long-life production method, contents and packages are separately sterilized and filling is made under germ-free conditions.



(Extension of best-before date)

- Realize 10-month best-before date, compared with conventional best-before date for tofu (approx. 1 week).

(Marketing advantages for exports)

- Extension of best-before date enables exports of tofu which have been impossible due to difficulties of transportation.

(Export destinations)

- Approx. 30 countries including those in the Middle East and Asia as well as Australia and South Africa.

四季とうふ



(Sale) From 2003

(Improvement of packaging)

- Use special paper package instead of conventional plastic package
- Use aluminum foil to block light and oxygen

(Improvement at food production stage)

- Implement unique sterilization of soy milk
- Package soy milk and brine through fully automated system and heat product in package

(Extension of best-before date)

- Best-before date of 180 days (cooling needed) is possible (usually 16 days or so)

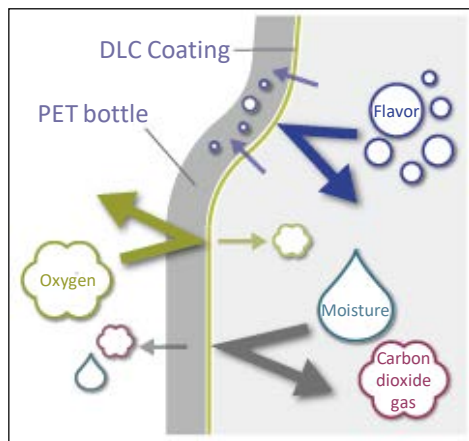
(Export destinations)

- Europe (Britain, Germany, France and others), South East Asia (Singapore), etc.

DLCハイバリアPETボトル



<Usage example: Hasegawa Saketen/PET-bottled Premium Japanese Sake>



(Sale)
From August 2017

(Improvement of packaging)

- Adopt PET bottles in place of conventional glass bottles for weight reduction
- Coating treatment inside PET bottles enhances gas barrier properties
- Adopt wholly color-printed shrink labels to block light



(Preservation of freshness)

- Preserve the same freshness as in glass bottles due to improved gas barrier properties by inside coating and light shielding by shrink labels

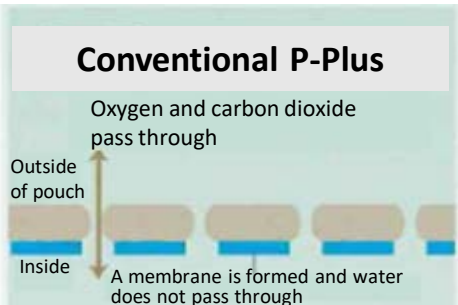
(Marketing advantages for exports)

- Reduce damage caused by in-transit shaking and shocks
- Reduce transportation cost due to weight reduction
- Use of plastic shrink labels reduces damage and peel-off caused by bedewing in comparison with paper labels

(Export destinations)

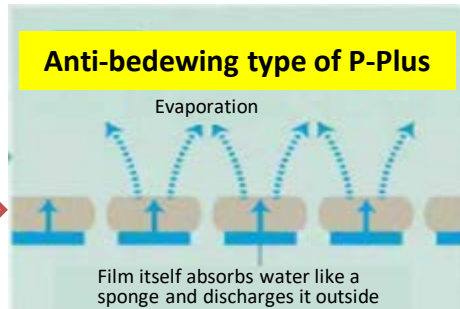
- The U.S., Australia, etc.

鮮度保持フィルム P-プラス結露防止タイプ



Treatment of creating micro-holes curbs the respiration of vegetables and fruits by controlling gas concentration inside the pouch.

Evolution



Concurrent function of moisture permeability **improves visual quality and prevents spoiling by bedewing.**

Conventional packaging with punched holes



Anti-bedewing type of PI-Plus



Demonstration of curbing molds and bud flushes

(Sale) From July 2015

(Improvement of packaging)

- Addition of original compounding and multi-stratification techniques to conventional freshness-preservation film gives it anti-dimming and moisture permeability properties
- Moisture generated by vegetables and fruits and attached to inside of film is discharged out of the pouch.



(Preservation of freshness)

- Creation of micro-holes in film curbs respiration by controlling gas concentration inside the pouch.
- Concurrent function of moisture permeability curbs bedewing inside the pouch and prevents spoiling and molds

(* P-Plus preserves freshness for approx. 14 days at temperature of 20 degrees C, compared with approx. 5 days for conventional pouch with punched holes)

(Marketing advantages for exports)

- Cut the rate of spoiled waste (to approx. 10% after evolution from approx. 40% before) in exports after arrival at destinations.

(Export destinations)

- Southeast Asia (Singapore, Malaysia, Hong Kong, Thailand, etc.)

生酒「AWANAMA」



Source: Homepage of Dai Nippon Printing Co.

(On trial) FY 2018

Fermentation technology + High pressure technology =
New brewing process



* The study has been conducted under the National Agriculture and Food Research Organization's "Innovative Technology Development and Emergency Deployment Project (Regional Strategic Project)."

(Improvement of packaging)

- Adopt PET bottle applicable to high-pressure sterilization treatment of undiluted sake after filling the bottle.
- Emphasis placed on designability in addition to functionalities such as light-blocking effects to protect content and oxygen barrier properties.

(Improvement at food production stage)

- Replace "hiire" heat sterilization of sake with high-pressure treatment
- Adopt brewing technology which retains the flavor of undiluted sake, etc. and has high preservability.



(Marketing advantages for exports)

- Adoption of light-weight PET bottles reduces transportation cost.
- Features good designability and flavor comparable with that ensured by glass bottles

(Export destinations)

- Exhibited at event held in New York in March 2018