Specifications and Standards for Foods, Food Additives, etc. Under the Food Sanitation Act (Abstract) 2010

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CONTENTS

(Tables)

PREFACE

This publication has been prepared to present an outline of specifications and standards for foods, milk and milk products, food additives, apparatus and container / packages, which are regulated under the Food Sanitation Act and relevant legislations. However, this publication has been produced with a focus mainly on user-friendliness: reference should be made to the original legislation, in order to confirm compliance therewith.

Herein presents a summary of the current situation in Japan, as of December 31, 2010, of specifications and standards set out in the "Food Sanitation Act", "Ordinance for Enforcement of the Food Sanitation Act", "Ministerial Ordinance Concerning Compositional Standards, etc. for Milk and Milk Products", relevant legislations (e.g., the Health Promotion Act), notices and announcements issued by the Ministry of Health, Labour and Welfare (MHLW), as well as legislations issued by the Consumer Affairs Agency (CAA) regarding food labeling. The Food Sanitation Act also applies *mutatis mutandis* to toys infants may put into their mouths, as well as cleaning agents (detergents) intended for use in washing vegetables, fruits, or tableware.

With regards to food labeling, the Consumer Affairs Agency was established on September 1, 2009, to hold overall jurisdiction over food labeling, which was formally under the jurisdiction of the MHLW, as far as regulations for the labeling are concerned. Likewise, with regards to the JAS Law which used to be under the jurisdiction of the Ministry of Agriculture, Forestry and Fisheries, the overall jurisdiction was transferred to the Consumer Affairs Agency as far as the regulations for the labeling are concerned. The Consumer Affairs Agency was to hold overall jurisdiction over food labeling, including measures to be undertaken to ensure compliance with Codex standards.

In the context of this publication's theme, i.e., "specifications and standards for foods, food additives, etc.," the Ministry of Health and Welfare Notification No. 370, 1959 (latest revision: MHLW Notification No.336, 2010) under the title of "Specifications and Standards for Food and Food Additives etc." is an important piece of legislation. Therein are set out all the specifications and standards for the following: foods; food additives; apparatus and containers/ packages; toys; and cleaning agents (detergents).

As to the labeling of foods or additives, Article 21 (Standards for Labeling) of the "Ordinance for Enforcement of the Food Sanitation Act" (Ordinance of the Ministry of Health and Welfare No. 23, 1948: Latest Revision No.74, 2010) provides the basic requirements. With regards to the labeling of milk and milk products, Article 7 of the "Ministerial Ordinance Concerning Compositional Standards, etc. for Milk and Milk Products" sets out the basic requirements.

With regards to the labeling of food additives, in association with the transfer of jurisdiction to the Consumer Affairs Agency, the previous notice was replaced with a

new one, “Labeling for Food Additives based on the Food Sanitation Act” (CAA Food Labeling Div. Notification No. 377, 2010), which incorporates certain amendments made to the previous one. The previous notice issued by MHLW under the same title (MHLW Environmental Health Buresu Notification No.56, 1996) was repealed.

With regards to the specifications and regulations for, as well as the labeling of, foods, in addition to the “Food Sanitation Act”, we have the “Health Promotion Act” under the MHLW jurisdiction (the Consumer Affairs Agency holds jurisdiction as far as the labeling is concerned), the “Law Concerning Standardization and Proper Labeling of Agricultural and Forestry Products (JAS Law)” under the jurisdiction of the Ministry of Agriculture, Forestry and Fisheries (the Consumer Affairs Agency holds jurisdiction as far as the labeling is concerned), and the “Agricultural Chemicals Regulation Law”. Assessment of the safety of foods in general is governed by the “Food Safety Basic Act” under the jurisdiction of the Cabinet Office, under which the Food Safety Commission was established to assess the safety of food additives and genetically modified foods. In this publication, reference is made to certain articles of these legislations, which are relevant to the “Food Sanitation Act”.

As for the international harmonization of the specifications and standards for foods being applied in Japan, we have been extensively involved in the activities of the Codex Committee (Japan became a member in 1966). The Department of Food Safety of the Ministry of Health, Labour and Welfare, the Food Safety and Consumer Policy Division of the Ministry of Agriculture and the Food Labeling Division of the Consumer Affairs Agency invite exchange of information from representatives of stakeholders.

The proceedings of regulatory amendments in the past two years (January 1, 2009 to December 31, 2010), relevant to the theme of this publication, i.e., the specifications and standards for, and the labeling of, foods, food additives, etc. are summarized below:

(1) Revision of laws and regulations concerning food labeling:

The Consumer Affairs Agency was established on September 1, 2009, to hold overall jurisdiction over food labeling as far as the regulations for the labeling are concerned. In this connection, the following three laws concerning the Consumer Affairs Agency were enacted and the Food Sanitation Act was partially amended.

- Consumer Affairs Agency and Consumer Commission Establishment Act (Act No.48, 2009:)
- Act on Improvement of the Related Acts Concerning Enforcement of the Consumer Affairs Agency and Consumer Commission Establishment Act (Act No.49, 2009)
- Consumer Safety Act (Act No.50, 2009)

(2) Revision of the Ordinance for Enforcement of the Food Sanitation Act

- New food additives approved (added to Appended “Table 1” of the Ordinance)

2009: Five flavors (Isovaleraldehyde, Valeraldehyde, 2,3-Dimethylpirazine, 2,5-Dimethylpirazine, 2,6-Dimethylpirazine), and one preservative (Nisin)

2010: Fourteen flavors (Isopentylamine, 2-Ethylpyrazin, 2-Ethyl-5-methylpyrazin, 5,6,7,8-Tetrahydroquinoxalin, Piperidine, Pyrrolidine, Phenethylamine, 3-Methyl-2-butanol, 2-Methylbutylaldehide, Butylamine, Propionaldehyde, 2-Pentanol, 6-Methylquinoline and 2-Methylpyrazine), one preservative (Calcium Sorbate), one flavoring-enhancing agent (monoammonium L-Glutamate), one emulsifier (Sodium stearoyl lactylate), and one processing aid (Magnesium silicate).

"Sodium starch phosphate" was eliminated from the list of designated additives.

- Partial revision of the Ordinance for Enforcement of the Food Sanitation Act, associated with the establishment of the Consumer Affairs Agency.
- Amendment to the specifications of raw materials for toys (regulation of phthalates was upgraded) (2010)
- Establishment of the maximum permissible level of cadmium contents in grains and pulses (2010)
- Taurine was added to the "List of the substances designated as having no potential to cause damage to human health." (2009)

(3) Discontinuation of "Pilot Sample System" for import clearance

(4) Other

- The maximum residue limit of many pesticides in agricultural products has been set.
- 130 varieties of genetically modified foods (crops) have been approved, but the number of approved genetically modified food additives has remained 14 for the last few years.

Legislations

[Those under the jurisdiction of the Ministry of Health, Labour and Welfare]

1) Food Sanitation Act (Act No.233, 1947): Latest Revision on June 5, 2009, Act No. 49)
2) Order for Enforcement of the Food Sanitation Act (Cabinet Order No.29, 1953): Latest Revision on August 14, 2009, Cabinet Order No.217)
3) Ordinance for Enforcement of the Food Sanitation Act (Ordinance of the Ministry of Health and Welfare No. 23, 1948): Latest Revision on May 28, 2010, MHLW Ministerial Ordinance No. 74
4) Ministerial Ordinance on Milk and Milk products Concerning Compositional Standards, etc. (Ministry of Health and Welfare Ordinance No.52, 1951): Latest Revision on October 30, 2007, MHLW Ministerial Ordinance No. 132)
5) "Specifications and Standards for Food and Food Additives, etc."

(Ministry of Health and Welfare Notification No. 370, 1959): Latest Revision on September 6, 2010, MHLW Notification No. 336)

6) "Japan's Specifications and Standards for Food Additives" (Eighth Edition) Published by the Ministry of Health, Labour and Welfare in 2007.

[Those under the jurisdiction of the Cabinet Office]

7) Food Safety Basic Act (Act No. 48, 2003)

[Those under the jurisdiction of the Ministry of Agriculture, Forestry and Fisheries]

8) Law Concerning Standardization and Proper Labeling of Agricultural and Forestry Products (commonly referred to as JAS Law: Law No. 175, 1950)
9) Agricultural Chemicals Regulation Law (Law No. 82, 1948)
10) Law Concerning Safety Assurance and Quality Improvement of Feeds (Law No.35, 1953)

[Those under the jurisdiction of the Consumer Affairs Agency]

11) Consumer Affairs Agency and Consumer Commission Establishment Act (promulgated on June 5, 2009, Act No.48, enforced on September 1, 2009)
12) Act on Improvement of the Related Acts Concerning Enforcement of the Consumer Affairs Agency and Consumer Commission Establishment Act (promulgated on June 5, 2009, Act No.49, enforced on September 1, 2009)
13) Consumer Safety Act (promulgated on June 5, 2009, Act No.50, enforced on September 1, 2009)
14) "Labeling for Food Additives based on the Food Sanitation Act" (MHLW Environmental Health Buresu Notification No.56, May 23, 1996: Latest revision on October 20, 2010 CAA Food Labeling Div. Notice No. 377, 2010)

Websites

Ministry of Health, Labour and Welfare http://www.mhlw.go.jp/english/index.html
Food Safety / http://www.mhlw.go.jp/english/topics/foodsafety/index.html
Food Safety Commission http://www.fsc.go.jp/english/index.html
Ministry of Agriculture, Forestry and Fisheries http://www.maff.go.jp/e/index.html
Japanese Agricultural Standard / http://www.maff.go.jp/e/jas/index.html
Consumer Affairs Agency http://www.caa.go.jp/en/index.html
The Japan Food Chemical Research Foundation
http://www.ffcr.or.jp/zaidan/ffcrhome.nsf/TrueMainE?OpenFrameSet

I. FOOD

1. Specifications and Standards for Food in General and for Individual Food Categories

Specifications and standards for foods under the Food Sanitation Act are set out in the Notification No. 370 (1959), "Specifications and Standards for Food and Food Additives, etc." (The Notification also provides specifications and standards for food additives, apparatus and containers, packages, toys and cleaning agents (detergents), which will be mentioned subsequently. The Notification will be frequently referred to in this publication.)

Notification "Specifications and Standards for Food and Food Additives, etc."
(Ministry of Health and Welfare Notification No. 370, 1959)
(Latest revision: MHLW Notification No.336, 2010)

Contents
Section 1. Food A General Compositional Standards for Food B General Food Production, Processing and Preparation Standards C General Food Storage Standards D Specific Items
Section 2. Food Additives A General Standards B General Test Methods C Reagents and Test Solutions, etc. D Specifications and Storage Standards for Individual Items E Production Standards F Standards for the Use of Food Additives Section 3. Implements, Containers, and Packaging A Standards for General Implements, Containers, Packaging, and their Component Materials B Testing Methods for General Implements, Containers, and Packaging C Reagents and Solutions D Material-specific Specifications for Implements, Containers, Packaging, and Raw Materials E Application-specific Specifications for Implements, Containers, and Packaging F Implements, Containers, and Packaging Production Standards Section 4. Toys Section 5. Detergents

1-1. Specifications and standards indicated in the table above for general foods (i.e. A, B and C in Section 1) are summarized in the appended table. ..... Table F01

1-2. Specifications and standards for individual food categories (D in Section 1) are summarized in the appended table. ..... Table F02

2. Maximum Residue Limits for Agricultural Chemicals, Feed Additives and Veterinary Drugs in Food

Foods having a higher level of pesticide, feed additive or veterinary drug than the regulatory maximum residue limit shall be prohibited from sale in Japan. Japan adopted the positive list system in 2006.

Residue limits for approximately 760 pesticides in individual food items (e.g. vegetables, cereals, pulses, fruits, meats, milk, fish) are set forth in Section A "Compositional Specifications for Food in General" of the "Specifications and Standards for Food and Food Additives, etc". Due to the large number of pesticides, the data are not referred to in this publication. New residue limits are set every year for each food item.

The uniform base limit set by the Minister, i.e. the amount unlikely to cause damage to human health, has been set at 0.01ppm under the provision of Article 11 of the Food Sanitation Act (MHLW Notification No.497, 2005).

Of raw materials including agricultural chemicals, 66 substances (paraffin, lecithin, etc.) have been designated by the Minister as "substances, which are quite unlikely to cause damage to human health" (substances outside the scope of the positive list). (Notice No. 334, 2009) Taurine was added in 2009.

The list of these substances is shown in the appended table. ..... Table F03

"Positive List System for Agricultural Residues in Foods" is available on the MHLW website :
http://www.mhlw.go.jp/english/topics/foodsafety/positivelist060228/index.html

3. Provisional Regulatory Limitations of Contaminants in Food

Provisional regulatory limitations have been set for the following food contaminants, i.e. PCB, mercury, radionuclide, aflatoxin, deoxynivalenol and shellfish poisons.

These are summarized in the appended table. ..... Table F04

4. Genetically modified foods

In 2001, assessment of the safety of a food and an additive produced by recombinant DNA techniques (GM food) was made mandatory before it received official approval.

The "Food Safety Commission," which was established under the Food Safety Basic Act (Cabinet Office, Law No.48, 2003), evaluates the safety of individual plants, foods, and food additives.

"Standards for the Safety Assessment of Genetically Modified Foods (Seed Plants)" is available on the website of the Food Safety Commission:
http://www.fsc.go.jp/english/standardsforriskassessment/gm_kijun_english.pdf

The "Standard for Manufacturing Foods and Food Additives Produced by Use of Recombinant DNA Techniques" (MHLW Notification No.234, 2000) provides the standards for the manufacture of GM foods.

As of December 31, 2010, 130 varieties of foods (crops) (corn, soybeans, etc.) and 14 additives (α-amylase, lipase, etc.) had been approved as "genetically modified foods and additives that have undergone safety assessments".

These are listed in the appended table. ..... Table F05

5. Foods for Specified Health Uses and Foods with Nutrient Function Claims

In 2001, the Food with Health Claims system was established for foods that comply with a set of designated criteria. Depending on the factions to be labeled, foods with health claims are divided in two categories, i.e. Foods for Specified Health Uses (FOSHU), and Foods with Nutrient Function Claims (FNFC).

FOSHU, i.e. "foods for which it is declared that consumption can be expected to contribute to the maintenance and promotion of health of the people who consume such foods for a specific health maintenance purpose" (Article 21, Paragraph 1 of the Ordinance for Enforcement of the Food Sanitation Act), shall be applied for under the Health Promotion Act, so as to have its effectiveness and safety assessed under the Food Sanitation Act in order to receive official approval. Originally, applications were assessed on an individual basis, but in 2005, as application for items in the similar categories increased, standards and specifications were established for foods with sufficient FOSHU approvals and accumulation of scientific evidence, a category of "Standardized FOCHO" was established. When an application meets the standards and specifications, "Standardized FOCHO" can be approved. As at the end of December 2010, total 967 items had been approved.

FNFC, i.e. "foods for which it is declared that consumption can be expected to provide a specified nutritional component, in compliance with the standards designated by the Minister, for people who consume such foods for the purpose of acquiring said specified nutritional component" are those foods, functions of whose nutritional components can be labeled (Article 21, Paragraph 1 of the Ordinance for Enforcement of the Food Sanitation Act). Foods which comply with the designated specifications and standards are permitted to be sold without filing an application or registration. Approved nutritional components are twelve vitamins (Vitamin A, Vitamin D, Vitamin E, Vitamin B1, Vitamin B2, Vitamin B6, Vitamin B12, niacin, folic acid, biotin, pantothenic acid, and Vitamin C) and five minerals (zinc, calcium, iron, copper and magnesium).

Information available in English:

"Food with Health Claims, Food for Special Dietary Uses, and Nutrition Labeling"
http://www.mhlw.go.jp/english/topics/foodsafety/fhc/index.html

"Regulatory Systems of Health foods in Japan (2010)"
http://www.caa.go.jp/en/index.html

6. Food Labeling

Specific administrative works were all transferred from Ministry of Health, Labor and Welfare to the Consumer Affairs Agency.

In September 2009, the new Consumer Affairs Agency issued the "Guidance for Food Labeling based on Ordinance for Enforcement of the Food Sanitation Act" and the paper "On Labeling of Milk and Milk Products based on Ministerial Ordinance on Milk and Milk products Concerning Compositional Standards, etc." ("On New Labeling based on the Food Sanitation Act," CAA Notification Label No. 8, September 17, 2009). These documents give the comprehensive practical information concerning the labeling of food, additives, milk/milk products, and toys.

In respect of the labeling of additives, the previous notice "On Labeling based on the Food Sanitation Act" (MHLW Environmental Health Buresu Notification No.56, May 23, 1996) was repealed and a new one, which includes some changes, was issued (CAA Notification Label No.377, 2010).

Although the jurisdiction over labeling was transferred to the Consumer Affairs Agency, the basic requirements for the labeling of food or additives are specified in Article 21 of the Ordinance for Enforcement of the Food Sanitation Act (Labeling) based on Article 19 of the Food Sanitation Act. (With regards to the labeling of milk and milk products, Article 7 of the "Ministerial Ordinance Concerning Compositional Standards, etc. for Milk and Milk Products" provides the basic requirements.)

Article 21 of the Ordinance provides the basic labeling requirements (mandatory labeling items, such as product name, use-by-date, best-before-date, address of manufacturer, labeling to be done in Japanese, and storage instructions). It also provides the basic requirements for the labeling of individual food categories and additives in respect of foods or additives listed in "Appended Table 3",

Examples of those food categories, for which specific requirements have been set, are: mineral water, tinned foods, frozen foods, raw fish, irradiated foods, oysters, allergy-related products, GM foods, and FOSHU / FNFC.

Appended Table 3 and the labeling standards are shown in table below.

Foods and Additives, for which labeling requirements have been set
(Ordinance for Enforcement of the Food Sanitation Act, Article 21, Table 3)

1. Margarine
2. Alcoholic beverages (i.e., beverages that contain 1% or more alcohol by volume (including drinks in powder form that, once liquid has been added, contain 1% or more alcohol by volume)
3. Soft drinks
4. Processed meat products
5. Fish meat ham, fish meat sausage, whale meat bacon, and the like
6. Pulses containing cyanide compounds
7. Frozen foods (meaning produced or processed food (excluding carbonated drinks, processed meat products, whale meat products, fish-paste products, boiled octopus and boiled crabs) and cut or shelled fresh fish and seafood (excluding raw oysters) which are frozen and packaged in containers and packaging)
8. Irradiated food
9. Food packed in containers and sterilized by pressurization and heating
10. Poultry eggs
11. Food packed in containers and packaging (excluding those listed in the preceding items) which are listed below:
(a) Processed meats, raw oysters, fresh noodles (including boiled noodles), instant noodles, ready-made lunches, prepared bread (i.e., bread used in ready-to-eat sandwiches containing, for example, ham, croquettes, or salad), fish-paste products, moist confectionaries, cut or shelled fresh fish and seafood (excluding raw oysters), and boiled crabs
(b) Processed foods other than those listed in (a)
(c) Citrus fruits, bananas
12. Food of farm products listed in the left columns of appended table 7, and processed food made from such food (including any food made from said processed food)
13. Food for special dietary use
14. Additives*

*Note: Item 14 refers to “food additives”

Ministry of Health, Labour and Welfare : Food
http://www.mhlw.go.jp/english/topics/foodsafety/
Consumer Affairs Agency :
http://www.caa.go.jp/en/index.html

6-1. Establishment of Consumer Affairs Agency

Following the enactment of the three related laws in May 2009, the Consumer Affairs Agency, Government of Japan (CAA) was established on September 1 of the same year, with a view to serving as an authority to supervise the overall government policies from the viewpoint of consumers. Although the Prime Minister serves as competent minister for the CAA and the Consumer Commission, which was established at the same time, the Minister of State for Consumer Affairs is to be permanently appointed. The head of the CAA is the Secretary-General and the staff is 202 persons.

The most important change in relation to the Food Sanitation Act is that the overall jurisdiction over food labeling was transferred to the CAA to take over the functions of the Ministry of Health, Labour and Welfare (in relation to the Food Sanitation Act and Health Promotion Act) and the Ministry of Agriculture, Forestry and Fisheries (in relation to the JAS Law).

In relation to food labeling, the CAA is:

- to have an overall charge of administrative affairs in the area of labeling regulations;
- to lay out policy measures concerning food labeling standards, etc.;
- to operate in collaboration with relevant government agencies (i.e. MHLW, MAFF, etc.);
- to be in charge of matters related to CODEX labeling.

Associated with the transfer of the jurisdiction over the food labeling, the new Consumer Affairs Agency issued the "Guidance for Food Labeling based on Ordinance for Enforcement of the Food Sanitation Act" and the paper "On Labeling of Milk and Milk Products based on Ministerial Ordinance on Milk and Milk products Concerning Compositional Standards, etc." ("On New Labeling based on the Food Sanitation Act," CAA Notification Food Labeling Div. No.8, September 17, 2009). These documents give the comprehensive practical information concerning the labeling of food, additives, milk/milk products, and toys.

In respect of the labeling of additives, following the transfer of jurisdiction thereover to the CAA, the previous notice "On Labeling based on the Food Sanitation Act" (MHLW Environmental Health Buresu Notification No.56, May 23, 1996) was repealed and a new one, which includes some changes, was issued (CAA Notice Label No.377, 2010).

Contact Information & Website

(Consumer Affairs Agency, Food Labeling Division)
Sanno Park Tower, 11-1, Nagata-cho 2-chome, Chiyoda-ku, Tokyo
Tel: 03-3507-8800
http://www.caa.go.jp/en/index.html
"Consumer Affairs Agency and Consumer Policy Framework"
"Jurisdiction of Consumer Affairs Agency"
"The main issues of objectives the Consumer Affairs Agency of Japan (CAA)"

6-2. Labeling of Food Consumption Date Limits

Two different systems are in use for the labeling of date limits:

(1) The "use-by-date" for foods whose quality may deteriorate rapidly; and
(2) The "best-before-date" for foods whose quality may deteriorate comparatively slowly.

The “use-by-date” should be indicated as follows: “use-by-date: Heisei 23, Jan. 01”, “use-by-date: 23.01.01”, or “use-by-date: 11.02.01”. However, it may be labeled using 6 digits, as in “use-by-date 110110”. As for box lunches, the time of day must also be stated depending on the necessity. In the case of milk, cream, fermented milk, lactobacillus beverages and milk drinks contained in paper, aluminum foil or other sealed containers, the labeling of date limits can be done by merely indicating the date.

The “best-before-date” should be indicated as follows: “best-before-date: Heisei 23, Jan. 10”, “best-before-date: 23.01.10”, or “best-before-date: 11.02.10”. However, where it is recognized that such indications are difficult to print, it may be labeled using 6 digits: 2 digits representing the year (the last 2 digits when using the western calendar) followed by two digits indicating the month and two digits indicating the day, as in “best-before-date: 230110”.

Some food categories (e.g. alcoholic beverages, raw material fruit juices, mineral water, etc.) are exempted from the mandatory date limit labeling.

6-3. Labeling of Genetically Modified Foods / Foods that can cause food allergy

[Labeling of genetically modified foods]
Labeling of foods, which are the crops produced by recombinant DNA technologies (“GM crops” hereinafter), and processed foods made from these foods is provided in Article 21 of the Ordinance (Labeling).

(1) Labeling of foods, which are GM crops, and processed foods made from these foods shall be done, as follows:
  a) Foods, which are the GM crops, and processed foods made from these foods (including those made from the said processed foods), for which Identity Preserved Handling is confirmed to have been conducted, shall be labeled as “genetically modified”.
  b) Foods, which are produced, distributed or processed in such a way as not to separate GM crops and non GM crops at any stage of the process, or processed foods made from these foods, shall be labeled as “as “Not segregated from GMO”.
  c) Foods, which are the non GM crops, or processed foods made from these foods (including those made from the said processed foods) may be labeled as “Non-GMO segregated from GMO” and “non genetically modified” on a voluntary basis.
(2) The following foods may be exempted from GM labeling.
  a) A processed food that does not use the crops listed in the left-hand column in Appended Table 7, or a processed food that does not contain processed foods made from those crops as raw materials, as a principal ingredient (“principle” meant here is that the material is one of the three major ingredients by weight and accounts for more than 5% of the product weight.).
  b) Processed foods, other than those shown in the right-hand column of Table 7 due to the calculated possibility of remaining recombinant DNA residues or specific proteins related to the DNA.
  c) Foods, which are not sold directly to consumers.

(3) In spite of the proper practices of controlling segregated handling during production and distribution, unintended migration of either GM or non-GM crops may occur to a certain extent. In such a case, when it is adequately confirmed that the control of segregated production and distribution has been performed, it shall be considered that the control of segregated production and distribution is in place (as long as the migration of GM soybean and/or GM corn is not more than 5%).

GM crops and the processed foods made therefrom
(Article 21 of the Ordinance, Appended Table 7)

Crop	Processed Food
Soybean (including immature soybeans and bean sprout)	1) *Tofu* (soybean curd) and *aburaage* (fried soybean curd) 2) *Koori-dofu* (frozen soybean curd), *okara* (dried *tofu* lees) and *yuba* (dried soybean milk membrane) 3) *Natto* (fermented soybeans) 4) Soybean milk 5) *Miso* (fermented soybean paste) 6) Soybean *nimame* (cooked soybean) 7) Canned soybeans and bottled soybeans 8) *Kinako* (roasted soybean flour) 9) Roasted soybeans 10) Food made mainly from the foods listed in item 1) to item 9) 11) Food made mainly from soybean for cooking 12) Food made mainly from soybean flour 13) Food made mainly from soybean protein 14) Food made mainly from immature soybean 15) Food made mainly from soybean sprouts
Corn	1) Corn snack and confectionary foods 2) Corn starch 3) Popcorn 4) Frozen corn 5) Canned corn and bottled corn 6) Food made mainly from corn flour 7) Food made mainly from corn grits 8) Food made mainly from corn for cooking 9) Food made mainly from the foods listed in item 1) to item 5)
Potato	1) Potato snack and confectionary foods 2) Dried potato 3) Frozen potato 4) Potato starch 5) Food made mainly from potato for cooking 6) Food made mainly from the foods listed in item 1) to item 4)
Rapeseed	
Cottonseed	
Alfalfa	Food made mainly from alfalfa
Sugar beet	Food made mainly from sugar beet for cooking

The English version of "Labeling System of Foods Produced by Recombinant DNA Technique" is available on the MHLW website at:

http://www.mhlw.go.jp/english/topics/foodsafety/dna/index.html

Detailed information on GM foods in English is available on the following MHLW website at:

http://www.mhlw.go.jp/topics/idenshi/index.html

[Labeling of foods that can cause food allergy]

Article 21 of the Ordinance provides the criteria for the labeling of food or food additives made from specified raw materials, as follows:

(1) Criteria for the labeling of foods made from specified raw materials

Of those foods that have been identified to have links to food allergies, seven kinds of food have been designated as "specified raw materials" in reference to the incidence and the severity of allergic reactions caused thereby, i.e. prawn, crab, wheat, buckwheat, eggs, milk, and peanuts. A processed food containing any specified raw material shall carry a label stating that it contains them. Foods, which contain additives derived from specified raw materials, shall carry a label, indicating that they contain these additives and that these additives are derived from specified raw materials.

Requirements for the labeling of allergic substances are different from that of GMO foods. These substances, including those used as raw materials in foods not sold directly to consumers, shall be labeled at all stages of food distribution.

(2) Labeling of foods made from materials similar to specified raw materials

Although seven foods are listed in the Ordinance as materials containing allergic substances, abalone, cuttlefish, salted salmon roe, oranges, kiwi fruit, beef, walnuts, salmon, mackerel, soybeans, chicken, banana, pork, *matsutake* mushroom, peaches, yams, apples and gelatin have also been found through experience and scientific studies to contain allergic substances. The MHLW recommends that processed foods, which contain these foods as raw materials, should indicate on their label that such foods are contained therein as raw materials as far as possible.

6-4. Food for Specified Health Uses (FOSHU) / Food with Nutrient Function Claims (FNFC)

With regards to the labeling of FOSHU, in conjunction with the provisions of the Health Promotion Act, Article 21 Paragraph 1 of the Ordinance for Enforcement of the Food Sanitation Act provides that the labeling of FOSHU shall include information on "the contents of the labeling permitted, content weight, recommended consumption per day, consumption methods, notes for consumption, etc." As FOSHU is to be approved on an individual basis, different wordings will be used in the labels of different FOSHUs.

With regards to the labeling of FNFC, in conjunction with the provisions of the Health Promotion Act, Article 21 Paragraph 1 of the aforementioned Ordinance provides that the labeling of FNFC shall include information on "the name and the function of nutrients, the amount of nutrients, calories, recommended consumption per day, consumption methods, notes for consumption, etc.". Specifically, labeling should be done in compliance with specifications and standards set out in the "Standards of Nutrition Labeling" (MHLW Director Notice 176, 2003, appended table 1: latest revision Consumer Affairs Agency Notice No.9, December 16, 2009) as well as in the "Standards of labeling of Food with Nutrient Function Claims" (MHLW Director Notice 97, 2001, appended table).

7. Discontinuation of “Pilot Sample System" for Import Clearance of Food

With regards to the procedures for importing foods to Japan, Article 27 of the Food Sanitation Act provides "A person who intends to import food, additives, apparatus or containers and packaging to serve for the purpose of marketing or to use in business shall make a notification to the Minister of Health, Labour and Welfare on a case-by-case basis, pursuant to an Ordinance of the Ministry of Health, Labour and Welfare."

For practical reasons within the context of import clearance, the "Pilot Sample (testing prior to undertaking) System" had traditionally been in operation ("Notice from the Ministry of Health and Welfare, Environmental Health Bureau, Food Safety Division" dated June 28, 1991). Under the "System", importers were required to get a small amount of sample for the purposes of in-house reviewing and testing prior to undertaking formal import procedures under the Food Sanitation Act, and to attach the test certificate issued by the inspection agencies designated by MHLW to the goods at the time of importation for clearance.

However, since the filing of any notification with the quarantine station under Article 27 of the Act was not required in the importation of pilot samples, it had become increasingly difficult to confirm the identity of foods and other goods, which were to be actually imported for marketing and business purposes, against their pilot samples. Against this background, the Notice was repealed and the new procedures were put in place on January 1, 2010 (Notice from the Office of Safety Monitoring of Imported Foods, Ministry of Health, Labour and Welfare No.0219004 of 2009). As from January 2010, in principle, a test certificate of a sample extracted from unloaded freight is required.

However, as an alternative measure to the Pilot Sample System, the "Product Items Registration System" was introduced. Under the system, the importer may register the test certificate for a sample that satisfies certain requirements and the results would be accepted at the time of the importation of the goods concerned. Accordingly, if the importer imports the same foods and products on a continuous basis, it can file the import notification only by declaring its registration number. Procedures under the Product Items Registration System:

(1) “Application Form” with attachments: 3 copies
The application must be filed with the quarantine station of the MHLW. The system applies to the product items for which the importer, at the time of the first import, applied for the registration as continuously imported items.

(2) Registration numbers are given to product items verified by the quarantine station as being in compliance with the Food Sanitation Act. Accordingly, the importer may omit the testing procedures as long as it declares the registration number in the column of "import items" in the "notification of import of foods and other products." However, the registration is valid for one year.

When a sampling test is to be conducted for the purpose of obtaining the product items registration, an unopened sample needs to be sent directly by the overseas manufacturer or by the importer to the registered inspection agency. If the quarantine station finds any discrepancy, even to the slightest degree, between the product and the sample, re-inspection is necessary. If there is any doubt, it is recommended that the importer should consult with the relevant authorities in advance.

II. MILK AND MILK PRODUCTS

Of legislation relevant to specifications and standards for foods, the "Ministerial Ordinance on Milk and Milk Products Concerning Compositional Standards, etc." is applied exclusively to milk and milk products. In this Ministerial Ordinance, "milk" means cow's milk, goat's milk and sheep's milk (Article 2), however, the far dominant kind of milk consumed in Japan is cow's milk. The Consumer Affairs Agency holds jurisdiction over milk and milk products as far as administrative works involved for the labeling of these products.

Summary (Ministry of Health and Welfare Ordinance No.52, 1951: Latest Revision in 2007, MHLW Ministerial Ordinance No. 132)
1. The milk from diseased animals is prohibited for sale (Article 9 Paragraph 1): [animal diseases and abnormalities are listed.] 2. Component specifications, and standards on manufacturing, cooking and storing methods, for milk, etc. in general (1) Milk etc. shall be free from antibiotics and from antimicrobial substances, which are chemical compounds. (2) Milk shall not be taken from cow, goat or sheep, which are to be classified into any of the following categories, i.e.: i. Those within 5 days after delivery. ii. Those, which have been either fed or injected with medicine that has an effect on milk and which are still within the period when medicine remains in milk. iii. Those, which have been injected with biological products and which are showing a significant reaction thereto. (3) Requirements for raw milk and raw goat's milk (specific gravity, acidity and bacterial count) (4) During the manufacturing process of liquid products, filtration, pasteurization, division and sealing operations shall be performed. (5) Permission and registration required for running business of Milk Processor, Special Milk Milking and Processing Operation, or Milk Products Manufacturer. [2] Component specifications, and standards on manufacturing, cooking and storing methods, for cow's milk, special milk, pasteurized goat's milk, composition-modified milk, low fat milk, skimmed milk and processed milk [3] Component specifications, and standards on manufacturing, cooking and storing methods, for milk products [4] Component specifications, and standards on manufacturing, cooking and storing methods for food using milk, etc. as main raw materials [5] Other specifications and standards concerning components of, or manufacturing and storing methods for, milk, etc. [6] Standards on cooking methods for fermented milk drinks to be cooked by cup-sales type vending machines [7] Testing Methods of Compositional Standards of Milk, etc. 3. Standards for general hygiene-controlled manufacturing or processing of milk, etc. and for

hygiene control methods
4 Specification for equipment or containers/packages of milk, etc. or raw materials therefor, as well as standards on manufacturing methods

Component specifications, and specifications and standards on manufacturing and storing methods for each of the following categories are listed in the table.

With regards to specifications and standards for equipment to be used during the process of manufacturing milk and milk products, as well as for containers and packages, reference should be made to Section IV “Apparatus, Containers/ Packages” of this publication.

“Ministerial Ordinance on Milk and Milk products Concerning Compositional Standards, etc.”
http://www.mhlw.go.jp/english/topics/foodsafety/

III. FOOD ADDITIVES

The Food Sanitation Act defines "additives" as “substances which are used by being added, mixed or infiltrated into food or by other methods in the process of producing food or for the purpose of processing or preserving food” (Article 4), designates additives that can be used (Article 10), and lists designated additives in Appended Table 1 of Article 1 of the Ordinance for Enforcement of the Food Sanitation Act.

Food additives are classified into 4-four categories in total.

(1) Designated Additives
(2) Existing Food Additives
(3) Natural Flavoring Agents
(4) Ordinary food used as an food additive

“Designated additives” and “Ordinary food used as an food additive” are not the official titles used in legislation, but are used for the sake of convenience.

Information about food additives is available on the following website at:

http://www.mhlw.go.jp/english/topics/foodsafety/foodadditives/index.html

1. Designated Additives

Article 10 of the Food Sanitation Act provides that “Additives (excluding natural flavoring agents and articles that have generally been served for human consumption and that are used as additives) and preparations and food containing additives shall not be sold, or be produced, imported, processed, used, stored, or displayed for the purpose of marketing, except for cases that the Minister of Health, Labour and Welfare specifies as having no risk to human health by hearing the opinions of the Pharmaceutical Affairs and Food Sanitation Council”, thereby introducing the “positive list” system, in which only those approved “designated additives” are allowed.

As of December 2010, 411 substances were listed in “Appended Table 1” of Article 12 of the Enforcement Regulations as designated additives: these are listed in appended table.

.....Table FA01

The specification and standard for each substance are set out in the aforementioned “Specifications and Standards for Food and Food Additives, etc.” (Ministry of Health and Welfare Notification No. 370, 1959, Section 2 Additives) (Latest Revision: 2010, MHLW Notification No. 336).

2. Standards for Manufacturing Food Additives

Notification "Specifications and Standards for Food and Food Additives, etc."
(Ministry of Health and Welfare Notification No. 370, 1959)
(Latest Revision: 2010, MHLW Notification No. 336)

Standards for Manufacturing
1. Water-insoluble mineral substances, e.g. acid clay, kaolin, bentonite, etc. (8 substances in total) shall not be used in manufacturing or processing an additive, except when the substance is indispensable for manufacturing or processing the additive. 2. (Unless otherwise specified,) preparations of additives shall be manufactured using only permitted additives, foods and potable water. 3. Manufacturing of additives using microorganisms obtained by recombinant DNA techniques shall be done in a way that has been confirmed to be in compliance with standards set by the Minister of Health, Labour and Welfare. 4. The spinal columns of certain designated cattle shall not be used as raw material for food additives.
Standards for manufacturing *kansui* (an alkaline agent used in the preparation of Chinese noodle) using chemically synthesized substances
(Standards for chemicals, which can be used in the manufacturing, processing and extraction, or for the combination thereof)
Processing standards for pigments, extracts and natural flavoring agents Turmeric oleoresin and 6 other pigments, oregano extract and 19 other extracts, and natural flavoring agents
1. In the extraction of the above noted pigments, extracts and natural flavoring agents, solvents other than those listed below shall not be used. acetone, butane, 1-butanol, 2-butanol, carbon dioxide, cyclohexane, dichloromethane, diethylether, ethanol, ethyl acetate, ethyl methyl ketone, edible fats & oils, glycerin, hexane, methanol, methyl acetate, nitrous oxide, propane, 1-propanol, 2-propanol, propylene glycol, 1,1,1,2-tetrafluoroethane, 1-1-2 trichloroethane, and water. 2. Of the above noted solvents, the residue limits of the following solvents in the final products are as follows: methanol, 2-propanol : 50 μg/g acetone : 30 μg/g dichloromethane and 1-1-2 trichloroethane : 30 μg/g (total amount) hexan : 25 μg/g

3. Standards for Use of Food Additives in General

1. Unless otherwise specified, if an additive preparation contains additives for which standards for use have been established, the established standards are regarded as standards for the use of the preparation.
2. When a food, listed in column 2 of the following table, which contains one of the corresponding additives listed in column 1, is used in the process of manufacturing or processing one of the corresponding foods listed in column 3, the additive is regarded as being used in the food listed in column 3.

Column 1	Column 2	Column 3
Potassium Pyrosulfite, Sodium Hydrosulfite, Sodium Pyrosulfite, Sodium Sulfite, Sulfur Dioxide	Candied cherries (candied and pitted cherries or such cherries with crystal of sugar applied on the surface or such immersed in the packaging media of syrup), Dijon mustard, dried fruits (excluding raisin), dried potatoes, *Kampyou* (dried gourd shavings), *Amanatto* (candied beans), food molasses, frozen raw crab, gelatin, miscellaneous alcoholic beverages, natural fruit juice to be served in 5-fold or more dilution, *Konjak* flour (Devil's tongue root flour), prawn, simmerd beans, starch syrup, tapioca starch for syrup, and wine	All foods excluding foods listed in column 2.
Sodium Saccharin	Flour Pastes	Confectionery
Calcium Sorbate Potassium Sorbate, Sorbic Acid	*Miso* (soybean paste)	*Miso* pickled foods
All additives	All foods	Milk, dairy products (excluding ice cream) prescribed in Article 2 of the Ministerial Ordinance Concerning Specifications of Composition of Milk and Milk Products, etc. (Ministry of Health and Welfare Ordinance No. 52, 1951)

4. Additives with Standards for the Use, and Additives with No Standard for the Use

Food additives are classified into to two groups, i.e. those, for which the standards for the use have been set, and those, for which no standard for the use has been set, and are listed separately.

List of food additives, for which the standards for the use have been set Table FA02
List of food additives, for which no standard for the use has been set Table FA03

5. Existing Additives

The Act Amending the Food Sanitation Act and the Nutrition Improvement Act (Act No. 101, 1995) provides (in Article 2) a legal basis for the aforementioned provisions concerning transitional measures. The list of existing additives is presented in the Notification No. 120 of the Ministry of Health and Welfare of 1996 (latest revision: Notification No.282 of 2007).

Reflecting the historical background of the regulation, no new existing additive will be added to the list. Rather, it is likely that any substance that has not been used for a long time would be deleted from the list. In 2010, a list of possible food additives to be deleted (80 substances) was published in the notification of the Ministry of Health, Labour and Welfare (May 18, 2010, Food Safety Office 0518 No. 1). The new list will be published in May2011.

The standards for the use have been set for some existing food additives.

Existing food additives are listed in the table. ..... Table FA04

6. List of source substances of natural flavoring agents

"The term "natural flavoring agents" as used in this Act shall mean substances obtained from animals or plants or mixtures thereof which are used for flavoring food." (Food Sanitation Act, in Article 4, Paragraph 3)

The specifications for natural flavoring agents have not been set. With regards to the labeling thereof, 612 kinds of agents (as of the end of December 2010) are listed in Appendix 2 of the "Food Additive Labeling under the Food Sanitation Act" (Consumer Affairs Agency, Food Label Dep. Notification No.377, 2010). Labeling shall be done by the name of source animals and plants, (e.g. strawberry, coffee), not by the name of chemical substances.

Source animals and plants to be used in natural flavoring agents are listed in the appended table. ..... Table FA05

7. Substances which are generally provided as food and which are used as additives ("Ordinary foods used as additives")

This category of foods, i.e., "substances which are generally provided as food and which are used as additives", is not referred to in the provisions of the Food Sanitation Act, either.

With regards to the labeling thereof, approximately 106 kinds of substances (as of the end of December 2010) are listed in Appendix 3 of the "Food Additive Labeling under the Food Sanitation Act" (Consumer Affairs Agency, Food Label Dep. Notification No.377, 2010).

These are referred to as "ordinary foods used as additives", and many are used as coloring agents (pigments in red cabbage, etc.). Others are used as thickeners (gluten etc.) or agents for quality improvement (gelatin, egg white, etc.). Component specifications have been set for some of these items.

Ordinary foods used as food additives are listed in the appended table..... Table FA06

8. Methods for labeling additives in food

With regards to the labeling of additives in food, in association with the transfer of jurisdiction to the Consumer Affairs Agency, the previous notice "Labeling for Food Additives based on the Food Sanitation Act" (Director-General of Environmental Health Bureau Notice,No.56 published on May 23,1996) was repealed and a new notice (CAA Food Labeling Div. Notification No.377,October20,2010), which incorporates minor amendments, was issued.

8-1. Additives to be declared on the label

With regards to food additives contained in foods listed in Appended Table 3 of the Ordinance for Enforcement of the Food Sanitation Act, declaration shall be made on the label of such foods to the effect that such additives are contained therein ("substance name" hereinafter), except for those additives used as nutrition reinforcing agents, processing aids as well as carry-overs. This requirement applies to food additives contained in foods subject to Ministerial Ordinance on Milk and Milk Products Concerning Compositional Standards, etc.

However, processing aides refer to substances: which are added in the manufacturing of a food and which are removed before the completion of its manufacturing process; which are converted into components that derive from the raw materials of the food and that are usually contained in such food; and which do not significantly increase the level of such components, or the level of such components in the food is low and which therefore do not affect the food by way of such components.

The "carry-over" refers to substances, which are used in the manufacturing or processing of the raw materials for a food and which are not used in the manufacturing or processing of such food, and which does not affect the food as its amount in the food is small.

8-2.Labeling methods

Labeling of additives in foods shall be done by substance name (including abbreviation, etc.), by substance name / category name in combination, or by collective name.

(1) Labeling of designated additives

It should be done by name listed in "Table 1" of the Ordinance for Enforcement of the Food Sanitation Act (alias included). Abbreviations shown in Appendix 1 of the CAA Food Labeling Div. Notification No. 377 in 2010. Other additives, which have similar functions and which are used in combination, can be labeled in a simplified manner, as shown in Appendix 2 of the Notification.

Example: labeling of Lactic acid, Sodium lactate and Calcium lactate used in combination: Lactic acid (Na, Ca)

(2) Labeling of existing additives

Additives on the list of existing additives (latest revision: MHLW Notification No.282 of 2007) shall be labeled by the name used in the list. However, labeling may also be done by name of article, alias, abbreviation, or by class name, listed in Appendix 1 of the aforementioned CAA Food Labeling Div. Notification No. 377 in 2010.

(3) Natural flavoring agents

Labeling of substance shall be done by name of source substance or alias listed in Appendix 2 of the aforementioned CAA Food Labeling Div. Notice No. 377 in 2010. The characters "香料" (flavoring agent) is required to be attached. Labeling of natural flavoring agents not mentioned in Appendix 2 shall be done by scientifically appropriate name, by which these additives can be identified.

(4) Labeling of "substances which are generally provided as food and which are used as

additives"[table FA06]shall be done by name (including name of article) or by abbreviation listed in Appendix 3 of the aforementioned CAA Food Labeling Div. Notice No. 377 in 2010. Labeling of substances not listed in Appendix 3 shall be done by scientifically appropriate name, by which these additives can be identified.

(5) Labeling by substance name/ category name in combination

Labeling of additives, which are mainly used as anti-molding agent, antioxidant, bleaching agent, color fixative, flavoring agent, preservative, sweetener, thickening agent /stabilize/gelling agent/thickener, shall be done by substance name/ category name in combination. However, in the case of additives that are used for the purposes of coloring, the category name can be omitted when labeling by substance name contains the character "色" (color).

(6) Labeling by collective name

Labeling of additives, which are referred to by name that is widely used in general, may be done by such name,

i.e.: yeast food, gum base, *Kansui* (alkaline preparations for Chinese noodles), enzyme, glazing agent, flavoring agent, acidifiers, softener (used exclusively for chewing gum), seasoning, coagulant for *tofu* (soybean curd), bittering agent, emulsifier, pH control agent, and raising agent.

With regards to seasoning: when the substance is composed exclusively of amino acids, labeling should be "seasoning (amino acid)"; when the substance composed mainly of amino acids, labeling should be "seasoning (amino acids etc.)"; when the substance is composed exclusively of organic acids, labeling should be "seasoning (organic acid)"; and when the substance is composed mainly of inorganic acids, labeling should be "seasoning (inorganic acids, etc.)". Raising agent can be labeled as raising agent, baking powder, or as baking soda. Flavoring agent can be labeled as synthetic flavoring agent.

8-3.Labeling of nutrition reinforcing agent

Additives used for the purposes of nutrition reinforcement are exempted from labeling (adjusted milk powers excluded). Reinforcing agents, which are used for a purpose other than nutrition reinforcement, shall be labeled by substance name.

8-4.Notice for labeling

(1) It is strictly forbidden to claim "natural" or any expression implying "natural" in the labeling of additives.

(2) Imazalil, *O*-phenyl phenol, sodium *O*–phenyl-phanate, diphenyl or thiabendazole used in citrus fruits and bananas, which are sold loose, must be labeled.

(3) Labeling by substance name, abbreviation or by class name shall be done in principle by name indicated in the Ordinance for Enforcement of the Food Sanitation Act, the list of existing additives, as well as in the Notice issued by Director of the Environmental Health Bureau, Ministry of Health and Welfare. However, it may be done using *hiragana*, *katakana* or Chinese characters, so long as the indication will not be misunderstood by consumers.

8-5. Omission of labeling

Labeling can be omitted for those products in a container/package with a surface area of not more than 30 cm^2.

Information in English is available at:

http://www.mhlw.go.jp/english/topics/foodsafety/foodadditives/index.html

IV. Apparatus and Containers / Packages

Article 18 of the Food Sanitation Act provides that "the Minister of Health, Labour and Welfare may establish standards for the apparatus or containers and packaging, or the raw materials therefor to serve for the purpose of marketing or to be used in business, or establish the criteria for the production methods thereof".

"Specifications and Standards for Food and Food Additives etc."
(Ministry of Health and Welfare Notification No. 370, 1959)
(Latest Revision in 2010, MHLW Notification No. 336)

Section 3. Apparatus and Containers/ Packages

- A Specifications for Apparatus or Containers/ Packages, or their Materials in General
- B Test Methods for Apparatus or Containers/ Packages in General
- C Reagents, Solutions, etc.
- D Specifications for Apparatus and Containers/ Packages, or their Materials by Material
- E Specifications for Apparatus or Containers/ Packages by Use
- F Standards for Manufacturing for Apparatus or Containers/ Packages

The component specifications, and the standards on manufacturing and storing methods are summarized in appended tables, as follows:

V. TOYS

The Food Sanitation Act provides that "(relevant Articles) shall apply *mutatis mutandis* to toys designated by the Minister of Health, Labour and Welfare as those likely to harm the health of infants when they touch such toys" (Article 62). Article 78 of the Ordinance for Enforcement of the Food Sanitation Act (revised in March 2008) classifies such toys into the below listed 3 categories. The scope of designated toys was expanded by the revision.

1. Toys intended to come into direct contact with infant's mouth (e.g., pacifiers, harmonicas)
2. Jewelry toy (i.e. toys used by infants as jewelries, e.g., rings, necklaces), *Utsushi-e* (decal sticker toy), rolly-polies, masks, *origami* (folding papers), rattles, intellectual development facilitating toys, wooden blocks, toy telephones, toy animals, dolls, clay, toy vehicles, balloons, toy building bricks, balls, housekeeping toys
3. Toys to be played with in combination with toy(s) above

Information in English on the scope of designated toys, "Outline of the 31st March 2008 revision of the preschool children toy regulation based on the Food Sanitation Law of Japan", is available on the MHLW website at:
http://www.mhlw.go.jp/topics/bukyoku/iyaku/kigu/dl/15.pdf

The 31st March 2008 revision established new requirements, as follows:

1. Specifications for raw material "coating agent" were replaced with those for "coatings" that are actually applied on the surface of toys.
2. Specifications for a raw material, i.e. "the base material made mainly of polyvinyl chloride", were replaced with those for parts of finished products actually made from the base material, thereby making it possible to test the finished products, as is in the case of 1) above.
3. Specifications for lead, etc. have been upgraded.
   Test conditions for the migration testing from polyvinyl chloride coating were revised. Lead was added as a test item (testing for heavy metals was abolished) and lead migration specification for "metal jewelry toy" was established.

The specifications and standards for phthalate esters used in designated toys were revised (MHLW Notification No. 336, Sep.6, 2010). Two kinds, i.e., Bis (2-ethylhexyl) phthalate (DEHP) and Diisononyl phthalate (DINP), had traditionally been subject to regulation. N-butyl phthalate (DBP), Benzylbutyl phthalate (BBP), Diisodecyl phthalate (DIDP) and Di-n-octyl phthalate (DNOP) were added and total six kinds are subject to regulation. The scope of target materials was also expanded to include, not only already regulated synthetic resins that are mainly composed of polyvinyl chloride, but also "parts made from plasticized materials".

The specifications and standards for toys and raw materials used therefor, including these revisions, are shown in the table below.

Kind of toy	Elution Test			
	Test items	Leaching conditions	Leaching solution	Standards
Utsushi-e (decal sticker toy)	Heavy metals Arsenic	At 40 °C for 30 min.	water	1μg/ml or less (as Pb) 0. 1μg/ml or less (As_2O_3)
Origami (folding papers)	Heavy metals Arsenic	At 40 °C for 30 min.	Distilled water	1μg/ml or less (as Pb) 0. 1μg/ml or less (As_2O_3)
Rubber pacifiers	The same as standards of rubber nursing utensils in Section IV "Apparatus and Containers/ Packages" (appended table AP02) of this publication			
Coatings of toys	Cadmium Lead Arsenic	At 37 °C for 2 hrs.	0.07 mol/l hydrochloric acid	75μg/g or less 90μg/g or less 25μg/g or less
Coatings containing polyvinyl chloride	$KMnO_4$ consumption Evaporation residue	At 40 °C for 30 min.		50μg/ ml or less 50μg/ ml or less
Material, made mainly of polyvinyl chloride (excluding the coatings thereon)	$KMnO_4$ consumption Heavy metals Cadmium Evaporation residue Arsenic	At 40 °C for 30 min.		50μg/ ml or less 1μg/ ml or less (as Pb) 0.5μg/ ml or less 50μg/ ml or less 0.1μg/ ml or less
Parts made of mterials, which are made mainly of polyethylene (excluding the coatings thereon)	$KMnO_4$ consumption Heavy metals Evaporation residue Arsenic	At 40 °C for 30 min.		10μg/ ml or less 1μg/ ml or less (as Pb) 30μg/ ml or less 0.1/ ml or less (As_2O_3)
Parts intended to come into direct contact with infant's mouth *1: Parts made from plasticized materials, in which Diisodecyl Phthalate (DIDP), Diisononyl phthalate (DINP) or Di-n-octyl phthalate DNOP) are contained as raw material				DIDP, DINP or DNOP 0.1% or less
All designated toys other than those listed above: Parts made from plasticized materials, in which Benzylbutyl phthalate (BBP), Bis (2-ethylhexyl) phthalate (DEHP) or N-butyl phthalate (DBP) are contained as raw material				BBP, DEHP, or DBP 0.1% or less
Metal jewelry toys small enough for infants to swallow	Lead	At 37 °C for 2 hrs.	0.07 mol/l hydrochloric acid	90μg/ ml or less
Manufacturing Standards				
Colorant: synthetic chemicals, if used, shall be those listed in Appended Table 1 of the Ordinance (except when no migration of the colorant is caused after immersing a sample in 2ml of water per 1 cm^2 for 10 min. at 40 °C.)				

*1) Parts of toys other than those intended to come into direct contact with infant's mouth shall not contain, as raw material, a synthetic resin made from polyvinyl chloride that contains Diisononyl phthalate (DINP) as raw material.

VI. CLEANING AGENTS (DETERGENTS)

With regards to the specifications and standards for detergents, the Food Sanitation Act provides that the same articles in the Act concerning the specifications and standards for foods and food additives shall "apply *mutatis mutandis* to the cleaning agents (detargents) used for cleaning vegetables, fruits, or tableware" (Article 62 Paragraph 2), thereby setting the specifications and standards for foods and additives as well as for detergents.

The specifications and standards for detergents are shown in the table below.

"Specifications and Standards for Food and Food Additives etc."

(Ministry of Health and Welfare Notification No. 370, 1959)

(Latest Revision in 2010, MHLW Notification No. 336)

Specifications of Component *1		
Test items	Sample solution	Specifications
Arsenic *2 Heavy metals *2 Liquid *2	Sample solution: Fatty-acid based detergents to be diluted 30 times with distilled water. Detergents, other than fatty-acid based ones, to be diluted 150 times with distilled water.	0.05ppm or less (as As_2O_3) 1ppm or less (as Pb) fatty-acid based detergents 6.0-10.5 other than the above mentioned 6.0- 8.0
Methanol *2	Isopropyl alcohol 10g/100g sample	1μL/g or less (in a liquid form)
Enzymes or components with bleaching action		Not to be contained.
Artificial aromatic agents		No synthetic chemicals other than those listed in Appended Table 1 of the Ordinance
Colorants		No synthetic chemicals, other than those listed in Appended Table 1 of the Ordinance and the following colorants, i.e.: Indanthrene Blue RS, Wool green BS, Quinoline Yellow, and Patent blue V.
Biodegradability		Not less than 85%: however, only those containing anionic surfactant
Standards for Use		
Concentrations (of the surfactants used) : concentrations of fatty-acid-based detergents shall be 0.5% or less; concentrations of *1 *2 in detergents other than fatty-acid based ones should be 0.1% or less		
Fruits and vegetables are not to be immersed in a *1 detergent solution for more than 5 minutes.		
Fruits, vegetables and tableware, once washed, are to be rinsed with potable water, under the following conditions: Fruits and vegetables should be put under running water for longer than 30 seconds and tableware for longer than 5 seconds. When using collected water, change the water more than twice.		

*1 Detergents solely intended for washing tableware (detergents exclusively for automatic dishwashing machines) are excluded.

*2 Solid soap is excluded.

(Tables)

I. Food

Table F01 Specifications and Standards for Food in General

Ministry of Health and Welfare Notification No. 370, 1959 (latest revision: MHLW Notification No.336, 2010)

A. Specifications of food in general

1. Food shall not contain any antibiotics or chemically synthesized antibacterial substances, except for the following cases:
   (1) When the substance concerned is identical to a food additive designated by the Minister of Health, Labour and Welfare as having no potential to cause damage to human health under Article 10 of the Food Sanitation Act.
   (2) When compositional standards are set forth in 5, 6, 7, 8 or 9 below for the substance concerned.
   (3) When the food product concerned has been manufactured or processed using a food ingredient that meets the compositional standards given in 5, 6, 7, 8 or 9 below (except for foods containing antibiotics or chemically synthesized antibacterial substances for which compositional standards are not set forth in 5, 6, 7, 8 or 9 below).
   * 5,6,7,8 and 9 mentioned above are the regulations concerning agricultural chemicals in foods.

Information on agricultural chemical residues in foods is available on the MHLW website at:
http://www.mhlw.go.jp/english/topics/foodsafety/positivelist060228/index.html

2. Foodstuffs that are composed in whole or part of an organism derived by DNA recombination or that contain all or part of such an organism must be marked to show that the organism has undergone the safety inspection procedures proscribed by MHLW
3. Foodstuffs manufactured using microorganisms derived by DNA recombination or containing such substances must be marked to show that the substances have undergone the safety inspection procedures prescribed by the MHLW
4. Deleted.
5. (1) Substances which are components of agricultural chemicals etc. that should not be detected in foods.

1) 2,4,5-T	6) Coumaphos	10) Dimetridazole	15) Furaltadone
2) Azocyclotin and Cyhexatin	7) Chloramphenicol	11) Daminozide	16) Propham
3) Amitrol,	8) Chlorpromazine	12) Nitrofurans	17) Malachite Green
4) Captafol	9) Diethylstilbestrol	13) Nitrofurantoin	18) Metronidazole
5) Carbadox		14) Furazolidone	19) Ronidazole

B. Standards of manufacture, processing and preparation

1. During manufacturing or processing of any food, the food should not be radiated. (Radiation is defined in Article 3, section 5 of the Atomic Energy Basic Act). However, this does not apply if food is radiated during any processes in the manufacturing or processing of food in order to control those processes, provided that the radiation dosage to the food is not more than 0.10 Gy, or if there are special provisions for any food categories under Section D.
2. When food is to be manufactured using fresh cow's milk or fresh goat's milk, during the manufacturing of that food the fresh cow's milk or fresh goat's milk must either be pasteurized for 30 minutes at 63°C by means of a holding system or pasteurized using a method that achieves an equivalent or better pasteurization effect. The milk added to food or used in preparing food must be cow's milk, special cow's milk, pasteurized goat's milk, homogenized cow's milk, low-fat cow's milk, non-fat cow's milk or processed milk.
3. When food is to be produced, processed, or prepared using blood, blood corpuscles, or blood plasma (limited to those obtained from domesticated animals), during the manufacturing, processing or preparation of that food, the blood, blood corpuscles, or blood plasma must be sterilized for 30 minutes at 63°C or heated and sterilized using a method that achieves an equivalent or better sterilization effect.
4. Poultry eggs in their shells used for the production, processing, or preparation of food may not be eggs unfit for eating. When manufacturing, processing, or preparing food using poultry eggs, during the production, processing or preparation of that food the chicken eggs must be sterilized for at least 1 minute at 70°C or they must be heated and sterilized using a method that achieves an equivalent or better sterilization effect. However, this does not apply when food is prepared promptly after breaking normal eggs whose best-before-date has not passed, and which are fresh enough to be eaten raw.
5. When seafood is to be prepared to be eaten raw, it must be washed thoroughly in potable water. To eliminate substances which are likely to contaminate the products.
6. When food is to be produced using microorganisms obtained using recombinant DNA technology, it must be produced using a method recognized as complying with the standards set forth by the Minister of Health, Labour and Welfare.
7. During manufacturing and processing of foods, additives which do not comply with standards in Part II (Food Additives D or E) should not be used.
8. When the meat of cattle bred in a country or region where bovine spongiform encephalopathy has occurred (specific animal), is to be sold directly to consumers, the vertebral columns of the cattle (with the exception of the transverse processes of thoracic vertebrae, transverse processes of lumbar vertebrae, ala sacralis and caudal vertebrae) must be removed. The removal must be undertaken using a method capable of preventing contamination, by the dorsal root ganglia, of meat of cattle and their internal organs, as well as meat situated in the vicinity of the removal and that is to be supplied for food. When food is to be produced, processed or prepared, the vertebral columns of specific cattle must not be used as the ingredients of that food. However, this does not apply when the fats and oils from the vertebral columns of the specific cattle are to be used as raw material after they have undergone hydrolysis, saponification or intersterification under the high-temperature and high-pressure conditions.

C. Standards of storage
1. When food is to be stored in direct contact with crushed ice other than crushed ice for eating and drinking, crushed ice that tests negative for coliform bacilli must be used. EC test (Faecal coliform test) is carried out as follows; (1) sampling and preparation of test samples, (2) coliform test -1.presumptive test, 2.confirmation test, 3.complete test. 2. When food is to be stored, no antibiotics shall be used. However, this shall not apply to the food additives which the Minister of Health, Labour and Welfare defines as involving no risk to human health in Article 10 of the Act. 3. Food must not be exposed to radiation to increase storage life.

Table F02 Specifications and Standards for Individual Food Categories

Note) This table is an excerpt and is not the full text of the Notification.
Though the following basic points for hygiene are described in the most of the entries in the table below, they are omitted.
(A) Freshness and good quality of materials (fresh fruits, vegetables, meat, fish, etc)
(B) Use of potable water or equivalent clean water
(C) Use of clean and hygienic apparatus and containers / packages
(D) When any fresh seafood or meat is used as a material, the product having been processed or cleaned need to be placed in a clean and hygienic container / packages made of metal, synthietic resins or paper laminated with plastics, and transferred to a cool place in order to prevent bacterial cross contamination.
(E) Full descriptions of bacterial and chemical test method.
All exceptions in many cases are also omitted.

Based on Ministry of Health and Welfare Notification No. 370, 1959 (latest revision: MHLW Notification No.336, 2010)

1. Soft Drinks

Specifications of composition

1. Must not be turbid (with the exception of turbidity arising from normal flavoring, coloring or other ingredients)
2. Must not contain any sediment (with the exception of turbidity arising from normal flavoring, coloring or other ingredients). Must not contain any solid foreign matter (with the exception of solid plant matter used as raw materials whose volume percentage is less than 30%).
3. Arsenic, lead or cadmium: must not be present in detectable amounts. Tin: must not exceed 150.0 ppm. (Test methodology)
4. Tests for coliform bacilli must be negative. (Test methodology)
5. Mineral water (soft drink beverage which only consists of water) with a carbon dioxide pressure inside the container of not more than 98 kPa at 20°C and that has not been sterilized or disinfected must test negative for enterococci or green pus bacilli. (Methods of bacterial tests)
6. For beverages made solely of apple juices and/or juiced fruit,
Patulin content: must not exceed 0.05 ppm. (Test methodology)

Standards of manufacture

(1) For soft drink beverages other than mineral water, frozen fruit juice drinks, and fruit juices used as raw materials therefor:
2. The water used as the raw material must be potable or otherwise conform to the specifications shown below.
4. Soft drink beverages must be either filled in the containers or packages and completely stoppered or sealed and then sterilized, or they must first be sterilized by a pasteurizer or other such unit equipped with a thermograph (or first disinfected by a filter or other such unit) and then, having been filled automatically into the container or packages, must be completely stoppered or sealed. The following method shall be used for sterilization or disinfection. However, sterilization or disinfection is not required for soft drink beverages that have a carbon dioxide pressure inside the container or packages of more than 98 kPa and for those which are sterilized or subjected to bacteria elimination process.
   a. Soft drink beverages with a pH of less than 4.0 must be sterilized by a method that heats the center for 10 minutes at a temperature of 65°C or by a method of equal or better efficacy.
   b. Soft drink beverages with a pH of 4.0 or more (excluding those that fall under "c" below) must be sterilized by a method that heats the center for 30 minutes at 85°C or by a method of equal or better efficacy.
   c. Soft drink beverages with a pH of 4.6 or more and a water activity in excess of 0.94 must be sterilized by a method effective enough to destroy viable microorganisms that originate in the raw materials, etc. or by the method specified in "b" above.
   d. Soft drink beverages must be disinfected by a method effective enough to remove viable microorganisms that originate in the raw materials, etc.

(2) Mineral waters
1. The water used as the raw material must be water supplied by a dedicated water-supply system regulated under the Article 3, Section 2 of the Water Supply Act or a small dedicated water-supply system under Section 6 of the same Article, or water that is found to be compliant with the standards shown in the table below.
3. Mineral waters must be either filled in the containers or packaging and completely stoppered or sealed and then sterilized, or they must first be sterilized by a pasteurizer or other such unit equipped with a thermograph (or first disinfected by a filter or other such unit) and then filled automatically in the container or packaging, and after this must be completely stoppered or sealed. They must be sterilized or disinfected to this end by a method that heats the center for 30 minutes at a temperature of 85°C or by another method effective enough to destroy or remove microorganisms in the raw materials which can grow.
However, sterilization or disinfection is not required for mineral waters that have a carbon dioxide pressure inside the container or packaging of more than 98 kPa or that are produced by a method complying with the following standards.
   a. The water used as the raw material must be mineral water only, and after automatically filling the container with water taken directly from the source spring, it must be completely stoppered or sealed.
   b. The water used as the raw material must not be contaminated with pathogenic microbes or suspected to be contaminated (no existence of living things or matters).
   c. The water used as the raw material must test negative for anaerobic sulfite-reducing spore forming bacilli, enterococci and green pus bacilli and the bacterial count per 1 ml must be 5 or less. (Test methodology)

Standards for water used to manufacture soft drink bevaerages and mineral waters

	Maxim□m allowa□□e □evel	
□□ems	Soft □rink Bev□□ages	Mineral Waters
Standard plate count	100/ml	100/ml
Coliform group	N.D.	N.D.
Cadmium	0.01mg/liter	0.01mg/liter
Mercury	0.0005 mg/liter	0.0005 mg/liter
Selenium	-	0.01 mg/liter
Lead	0.1mg/liter	0.05 mg/liter
Barium	-	1 mg/liter
Arsenic	0.05 mg/liter	0.05 mg/liter
Hexavalent chromium	0.05 mg/liter	0.05 mg/liter
Cyanogen	0.01 mg/liter	0.01 mg/liter
Nitrite& Nitrate nitrogen	10 mg/liter	10 mg/liter
Fluorine	0.8 mg/liter	2 mg/liter
Boron (as H_3BO_3)	-	30 mg/liter
Organic phosphorus	0.1 mg/liter	-
Zinc	1.0 mg/liter	5.0 mg/liter
Iron	0.3 mg/liter	-
Copper	1.0 mg/liter	1.0 mg/liter
Manganese	0.3 mg/liter	2 mg/liter
Sulfide (as H_2S)		0.05 mg/liter
Chlorine ions	200 mg/liter	-
Calcium, Magnesium etc.	300 mg/liter (hardness)	-
Evaporation residues	500 mg/liter	-
Anion surfactants	0.5 mg/liter	-
Phenols (as Phenol)	0.005 mg	-
Organic substance (in terms of consumption of $KMnO_4$)	10 mg/liter	12 mg/liter
pH	5.8 - 8.6	-
Taste	Not abnormal	-
Odor	Not abnormal	-
Color	Less than 5 degrees	-
Turbidity	Less than 2 degrees	-

(3) Frozen fruit juice beverages

6. Sterilazing or elimination of bacteria of fruit juices should be carried out with the following methods.
   a. In sterilizing fruit juices with a pH level below 4.0, the center must be heated for 10 minutes at 65°C or a method that achieves an equivalent or better sterilization effect must be used.
   b. In sterilizing fruit juices with a pH of 4.0 or above, the center must be heated for 30 minutes at 85°C or a method that achieves an equivalent or better sterilization effect must be used.
   c. The fruit juices must be sterilized using a method effective enough to destroy any viable microorganisms in the raw materials, etc.

(4) Fruit juices used as raw materials

2. Squeezing and processing of fruit juices should be hygienically carried out.

Standards of storage

1. Soft drink beverages contained in glass bottles with caps made of paper must be stored at temperatures below 10°C.
2. Those soft drink beverages other than mineral waters, frozen fruit beverages and fruit juices used as raw materials that have a pH level of 4.6 or above and a water activity exceeding 0.94 and that have not been sterilized by a method effective enough to destroy viable microorganisms which originate in the raw materials, etc. must be stored at temperatures below 10°C.
3. Frozen fruit juices used as raw materials must be stored at temperatures below -15°C.

Preparation Standards

Standards for preparing Soft Drink Beverage sold by automatic vendors, either with cups or full-automatic dispensers (omitted here)

2. Powdered Drink Beverages
Specifications of composition
1. The solution in which powder is dissolved with twice the volume of water usually used for drinking conform to items 1 and 2 in the compositional standards for soft drink beverage. 2. Arsenic, lead or cadmium: must not be present in detectable amounts. Tin: must not exceed 150ppm. (Test methods) 3. For the powdered soft drinks to which lactic acid bacteria are not added as a material, Colifiorm group: must test negative. Number of bacterial (plate count): no more than 3,000/g. 4. For the powdered soft drinks to which lactic acid bacteria are added as a material, Colifiorm group: must test negative. Bacterial count (excluding lactic acid bacteria): no more than 3,000/g.
Standards of manufacture
1. Powdered drink beverages should be transferred in cotainaers/packages of glass, metal or synthetic resins, orintightly packed or sealed transportation apparatus of metal or synthetic resins. 2. Conditions of cleaning containers/packages (omitted)
Standards for storage
Standards for storage of powdered drink bevarages supplied to automatic vendors with cupsdispensers. (omitted here)

3. Crushed Ice
Specifications of composition
1. Coliform group: must test negative. Bacterial count in melted ice: no more than 100/ml. 2. (Coliform test methodology)

4. Flavoured Ice
Specifications of composition
1. Bacterial count in melted confection: no more than 10,000/ml. (excluding lactic acid bacteria count when lactic acid bacteria is used as an ingredient.). 2. Coliform group: must test negative.
Standards of manufacture
1. Water used as a raw material must be potable water. 2. Raw materials (excluding fermented milk or lactic acid bacteria beverages) must be heated and sterilized at a temperature of 68°C for 30 minutes (or sterilized using a method that achieves an equivalent or better sterilization effect). 3. Dispensing machine and capping machines should be used when flavoured ices are dispensed and capped. 4. Melted water from flavoured ice should not be used as the material for flavoured ice products

5. Meats and Whale Meat (with the exception of frozen whale meat to be eaten raw)
Standards of storage
1. Products must be stored at temperatures below 10°C. However, thinly-sliced frozen meats or whale meat that has been placed inside containers must be stored at temperatures below -15°C. 2. Product should be placed in a clean and hygienic container/package with a lid or wrapped with plastics, paper laminated with plastics, sulfate paper or paraffin paper before transportation.

6. Poultry Eggs
Specifications of composition
1. Sterilized liquid eggs (poultry eggs) Salmonella: must test negative (25 g test specimen) 2. Non-sterilized liquid eggs (poultry eggs) Bacteria count: no more than 1,000,000/g.
Standards of manufacture
(Standards for the liquid poultry eggs) (1) General standards 1. Ingredient eggs (eggs used for production) in their shells must be fit for consumption. 2. Ingredient eggs shall be handled after having been sorted into the categories of regular eggs, eggs with soiled shells, eggs with soft shells and eggs with broken shells. (2) Individual Standards 1. Production standards for sterilized liquid eggs 2. Production Standards for non-sterilized liquid eggs
Standards of storage
1. Liquid eggs to be stored at temperatures below 8°C (-15°C for frozen liquid eggs) 2. Standards for apparatus for transportation and for tanks
Standards of Use (limited to poultry eggs in their shells)
When supplying poultry eggs in their shells for eating or drinking without first heating and sterilizing them, normal eggs whose best-before-date has not expired must be used.

7. Blood, Blood Corpuscles and Blood Plasma
Standard of processing
1. Blood used as a raw material must be cooled to temperatures below 4°C immediately after collection and after cooling it must be kept at temperatures below 4°C. 2. Material blood should be fresh and of normal properties. 4. Processing should be carried out as a continuous (nonstop) operation. 5. Excluding the heating and sterilization processes, processing must be undertaken without the temperature of the blood corpuscles or blood plasma exceeding 10°C. 6. Freezing must be done in such a way that when frozen, the temperature of the blood corpuscles or blood plasma will promptly drop below -18°C.
Standard of storage
1. Blood, blood corpuscles and blood plasma must be stored at temperatures below 4°C. 2. Those which are frozen must be stored at temperatures below -18°C.

8. Meat Products

Specifications of composition

(1) General standards

1. NO_2^-: no more than 0.07g/kg.

(2) Individual standards

Product group	*E.coli* spp.	Water activity	*Staphylocc. aureus*	*Salmonella*	*Clostridium* spp
Dried meat products	must test negative:	0.87 >		must test negative	
Unheated meat products	100/g >		1,000/g >	must test negative	
Special heated meat	100/g >		1,000/g >	must test negative	1,000/g >
Heated meat products (sterilized after being packed in package)	must test negative			must test negative	1,000/g >
Heated meat products (packed in package after being heat-sterilized)	must test negative		1,000/g >	must test negative	

Standards of manufacture

(1) General standards

Number of spores for spice, sugar or starch used as ingredients in the meat products: no more than 1,000/g

(2) Individual standards

1. Dried meat products

Curing conditions (omitted here)

2. Unheated meat products

Details of salt curing of material meat using sodium nitrite, etc.(omitted here)

3. Special heated meat products

Details of material meat, saltcuring, cooking method, etc.(omitted here)

4. Heated meat products

Products should be heated for 30 minutes at 63°C as measured at their center or by a method that achieves an equivalent or better effect.

Standards of Storage

(1) General standards

1. Frozen meat products must be stored at temperatures below -15°C.
2. Products should be placed in clean and hygienic container/ package, which is then sealed or cased, or be wrapped with hygienic paper laminated with plastics, sulfate paper or paraffinpaper before being transferred.

(2) Individual standards

1. Unheated meat products

Must be stored at temperatures below 10°C.

2. Specified heated meat products

Those with a water activity of more than 0.95 must be stored at temperatures below 4°C.

Those with a water activity of under 0.95 must be stored at temperatures below 10°C.

3. Heated meat products

Must be stored at temperatures below10°C. However, this does not apply to products that, after having been packed in airtight containers, have been sterilized using a method that heats them for 4 minutes at a temperature of 120°C as measured at the center or a method that achieves an equivalent or better effect.

9. Whale Meat Products
Specifications of composition
1. Coliform group: must test negative 2. For whale meat bacon. NO_2^- : not more than 0.07g/kg
Standards of manufacture
1. Material whale meat should be fresh and low in bacterial count. 4. Number of spores for spice, sugar, or starch used as ingredients in the whale meat product: no more than 1,000/g 6. Sterilization: Heating for 30 minutes at a temperature of 63°C as measured at their center or by a method that achieves an equivalent or better effect.
Standards of Storage
1. Whale meat products must be stored at temperatures below 10°C (or below -15°C for frozen whale meat products). However, this does not apply to products that, after having been put into air-tight containers, have been sterilized using a method that heats them for 4 minutes at a temperature of 120°C as measured at their center or a method that achieves an equivalent or better effect. 2.Products should be placed in a clean and hygienic container/ package, which is then sealed or cased, or be wrapped with hygienic paper laminated with plastics, sulfate paper or paraffinpaper before being transferrd.

10. Fish-Paste Products
Specifications of composition
1. Coliform group: must test negative (excluding ground fish). 2. NO_2^- : no more than 0.05g/kg. (For fish sausages and fish ham only)
Standards of manufacture
6. Number of spores for spice, sugar, or flour used as ingredients in fish-paste products: no more than 1,000/g 8. Fish sausages and fish ham must be sterilized using a method that heats them for 45 minutes at a temperature of 80°C as measured at the center, or a method that achieves an equivalent or better effect. Special fish-paste products must be sterilized using a method that heats them for 45 minutes at a temperature of 80°C as measured at the center, or a method that achieves an equivalent or better effect (except fish *surimi*).
Standards of Storage
1. Must be stored at temperatures below 10°C. 2. Frozen fish-paste products must be stored at temperatures below -15°C.

11. Salmon Roe or Cod Roe
Specifications of composition
1. NO_2^- : no more than 0.005g/kg

12. Boiled Octopus
Specifications of composition
1. *Vibrio parahaemolyticus* : must test negative (Test method) 2. Frozen boiled octopus Coliform group: must test negative Bacteria count : no more than 100,000/g.
Standards of processing
2.Water used for processing should be portable water, sterilized sea water, or artificial sea water made of portable water.
Standards of Storage
1. Boiled octopus must be stored at temperatures below 10°C. Frozen boiled octopus must be stored under 15°C..

13. Boiled Crab
Specifications of Composition
1. Boiled Crab *Vibrio parahaemolyticus*： must test negative (Test method) 2. Frozen boiled crab Bacterial count: must not exceed 100,000/g. Coliform group: must test negative
Standard of processing
Processing Standards for Boiled Crab 3. Processing shall be performed by heating the crab for 1 minute to a temperature of 70 °C as measured at the center or by a method that achieves an equivalent or better effect. 4. Products should be rapidly and thoroughly cooled by using portable water, sterilized sea water, or artificial sea water using portable water.
Standards of Storage
1. Products must be stored under 10°C 2. Frozen boiled crabs must be stored under -15 °C.

14. Fresh Fish and Shellfish for Raw Consumption
Specifictaion of Composition
1. *Vibrio parahaemolyticus*：must not exceed 100/g Sampling and test method (omitted here)
Standard of Processing
5.No chemically synthesized food additives should be used except sodium hypochlorite in the processing.
Standards of Storage
1. Fresh fish and shellfish to be consumed raw should be stored inclean and hygienic containers / packages at temperatures below 10 °C.

15. Raw consumption oysters
Specifications of Composition
1. Bacterial count: no more than 50,000/g. 2. The most probable number of E.coli： no more than 230/100g 3. (microbiological test methodology including the most probable number method) 4. For shelled oyster to be consumed raw. The most probable number of *Vibrio parahaemolyticus*： no more than 100/g
Standard of Processing
1. Oysters used as the raw material must be collected either from waters where the most probable number of coliform group bacilli is no more than 70/100ml of seawater, or collected from other waters but cleaned using either seawater where the most probable number of coliform group bacilli is no more than 70/100ml, or artificial salt water with a 3% salinity, while constantly changing or sterilizing the said seawater or artificial salt water. 2. In case oyster as raw material is temporarily stored in water, sea water (the mostprobable number of coliform group which is not more than 70/100ml) or artificial salt water of 3% salt (the most probable number of colliform group being not more than 70/100ml) shall be used, changing the water occasionally or pasteurizing it occasionally. 4.No chemically synthesized food additives should be used except sodium hypochlorite in the processing.
Standards of Storage
1. Oysters to be consumed raw must be stored at temperatures below 10 °C. 2. Frozen Oysters to be consumed raw must be stored under-15°C.

16. Agar-agar
Specifications of Composition
1. Boron compounds: no more than 1g/kg (as H_3BO_3).

17.Grains, Beans and Vegetables

Specifications of composition

crop	Substance	Maximum allowable level
rice (polished rice, brown rice)	Cadmium and its compounds	0.4 ppm (as Cd)
adzuki beans	Cyanide	undetectable.
soybeans	Cyanide	undetectable (but 500ppm as HCN for saltani beans, saltapia beans, butter beans, pequia beans, white beans and lima beans)
peas	Cyanide	undetectable.
kidney beans	Cyanide	undetectable
broad beans	Cyanide	undetectable
peanuts	Cyanide	undetectable
Other types of beans	Cyanide	undetectable
Other types of beans	Cyanide	undetectable

Standards of Manufacture

1. (Beans) Beans showing the presence of cyanide compounds shall not be used, except for bean jam for further processing.
2. (Potato) Conditions for using irradiation on potatoes for the purpose of inhibiting germination:
   Only γ-ray of Cobalt 60 may be used with a dose of less than 150 gray.
   Re-irradiation on already irradiated potatoes is prohibited.

18. Bean Jam for Further Processing

Specifications of Composition

Cyanide: must not be present in detectable levels (Test method of cyanide)

Standards of Manufacture

1. The beans must be soaked for at least 4 hours using warm water.

19. Soybean Curd (*tofu*)

Standards of Manufacture

3. Soy juice or soy milk must be sterilized using a method that boils the juice or milk for 2 minutes or a method that achieves an equivalent or better sterilization effect.
6. The packaged soybean curd must be sterilized using a method that heats it for 40 minutes at 90°C or a method that achieves an equivalent or better sterilization effect.

Standards of Storage

1. *Tofu* must be refrigerated or stored in a water bath containing chilled potable water that is constantly changed.
2. (Conditions for bean curd intended to itinerant sales.)

20. Instant Noodles

Specifications of Composition

1. Fats and oils in noodles: acid value of no more than 3. peroxide value: no more than 30.

Standards of Strage

1. Instant noodle must be stored in a location that is not exposed to direct sunlight.

21. Frozen Foods

Specifications of Composition

	category	bacterial count (plate count)	coliform group / E.coli
1	Frozen food to be consumed without heating	max. 100,000 per gram of a sample	coliform group must test negative
2	Frozen food to be consumed after heating (All frozen food except those of above 1 and is heated immediately before freezing process)	max. 100,000 per gram of a sample	coliform group must test negative
3	Frozen food to be consumed after heating (Other than 2 above)	max. 3,000,000 per gram of a sample	E.coli must test negative

Standard of Processing

Frozen Foods (limited to frozen fishery products for raw consumption)
5.No chemically synthesized food additives should be used except sodium hypochlorite in the processing.
6.Processed fishery products for raw consumption should be rapidly frozen.

Standards of Storage

1. Frozen foods must be stored at temperatures below -15 °C.

22. Food Packed in Containers and Sterilized by Pressurization and Heating

Specifications of Composition

1. Food Packed in Containers and Sterilized by Pressurization and Heating is defined as food (excluding soft drink beverages, meat products, whale meat products, and fish-paste products) that has been packed in air-tight containers, sealed and then subjected to sterilization by pressurization and heating.
Viable bacterial cells: must test negative (Methods of incubation tests and microbiological tests; omitted here)

Standards of Manufacture

3 In the production of food, no additives that are chemical compounds (excluding sodium hypochlorite) used as preservatives or germicidal agents may be used.
4. Food packed in containers and sterilized by pressurization and heating, other than canned or bottled foods, must be sealed by hot-melting or rolling.
5. The sterilizing machine must be equipped with a self-recording thermometer. (The records should be kept for three years.)
6. The sterilizing method must be established to meet the following requirements.
a) That it is satisfactorily effective in destroying any viable microorganisms that exist in the raw materials.
b) For food packed in containers and sterilized by pressurization and heating whose pH exceeds 4.6 and whose water activity exceeds 0.94, either a method that heats the food at a temperature of 120°C as measured at the center for 4 minutes or a method that achieves an equivalent or better effect must be used.

Table F03 Maximum Residue Limits for Agricultural Chemicals (Pesticides), Feed Additives and Veterinary Drugs in Food

MHLW has designated certain substances having similar properties to food additives which are used as ingredients of pesticide products for agriculture and fishery as those which are unlikely to cause damage to human health and outside the positive list system.

The Food Sanitation Act defines food additives as those which are used during food processing of agricultural and fishery produce after the harvest. Therefore, substances used before harvest would fall within the category of Agricultural Chemicals, Feed Additives or Veterinary Drugs without any exception.

The uniform base limit, which is set at 0.01ppm as the amount unlikely to cause damage to human health shall not be applied to these substances. Those substances are listed below.

The English information is available from the Ministry of Health, Labor and Welfare website:
http://www.mhlw.go.jp/english/topics/foodsafety/positivelist060228/index.html

List of the substances designated as having no potential to cause damage to human health

(MHLW Notification No. 498, 2005: Latest Revision Notification No.334, 2009)

1. Zinc	34. Taurine
2. Azadirachtin	35.Thiamine
3. Ascorbic acid	36.Tyrosine
4. Astaxanthin	37.Iron
5. Asparagine	38.Copper
6. beta-apo-8'-carotene acid ethyl ester	39 Paprika coloring
7. Alanine	40 Tocopherol
8. Allicin	41 Niacin
9. Arginine	42 Neem oil
10. Ammonium	43 Lactic acid
11. Sulfur	44.Urea
12. Inositol	45.Paraffin
13. Chlorine	46Barium
14. Oleic acid	47.Valine
15. Potassium	48.Pantothenic acid
16. Calcium	49.Biotin
17. Calciferol	50.Histidine
18. beta-Carotene	51 Hydroxypropyl starch
19. Citric acid	52.Pyridoxine
20. Glycine	53.Propylene glycol
21. Glutamine	54.Magnesium
22. Chlorella extracts	55.Machine oil
23. Silicon	56.Marigold coloring
24. Diatomaceous earth	57 Mineral oil
25. Cinnamic aldehyde	58.Methionine
26. Cobalamin	59 Menadione
27. Choline	60.Folic acid
28. Shiitake mycelia extracts	61 Iodine
29. Sodium bicarbonate	62.Riboflavin
30. Tartaric acid	63.Lecithin
31. Serine	64 Retinol
32. Selenium	65 Leucine
33. Sorbic acid	66.Wax

Table F04 Provisional Regulatory Limitations of Contaminants in Food

(Compiled from various sources as at December, 2010)

Substance / Foods	Max. level
1) Aflatoxin / All foods	Undetectable*
2) PCB / Fish, shell fish, etc.	(ppm)
Fish and shellfish (edible parts) in oceans and the open sea	0.5
Fish and shellfish (edible parts) in inland seas and bays including inland waters	3
Cow's milk (in all of the milk)	0.1
Milk products (in the whole quantity)	1
Powdered milk for babies (in the whole quantity)	0.2
Meat (in the whole quantity)	0.5
Egg (in the whole egg)	0.2
Containers and packaging	5
3) Mercury / Fish, Shellfish, etc.	(ppm)
Total level of mercury	0.4
Methyl mercury (as mercury)	0.3
However, these provisional limits shall not apply to tuna fish (tuna, sword fish, bonito), fish from rivers (not including fish from lakes), and deep sea fish and shellfish(sebastodes marinus, alfonsino, black cod, queen crab, ivory shell, shark).	
4) Shellfish Toxins /	(MU/g) **
a. Paralytic shellfish poisoning toxin: All shellfish (edible parts) and bivalve eater (T.acutidens) (edible part)	4
b. Diarrheal shellfish poisoning toxin: All shellfish (edible parts)	0.05
5) Deoxynivalenol / Wheat	(ppm) 1.1

* The test method for peanut and peanut products (peanut butter, peanut flour etc.) is also applied to pistachios, almonds, Brazilian nuts, cashews, hazelnuts, macadamia nuts, walnuts, and giant corn.

** 1MU (Mouse Unit) represents the amount of toxin that causes death in a mouse of 20g body weight in 15 minutes in case of paralytic shellfish poisoning toxin, while in case of diarrrheal shellfish poisoning toxin 1MU represents the amount of poison that causes death in a mouse of 16-20g body weight in 24 hours.

Handling of food contaminated by radioactivity
Notice No.0317 Article 3 of the Department of Food Safety : MHLW

(March 17, 2011)

Nuclide	Index values relating to ingestion limits in guidelines for coping with disarters at nuclear facilities etc. (Bq/kg)	
Radioactive iodine (Representative radio-nuclides among mixed radio-nuclides : $_{131}$I)	＊Drinking water ＊Milk, dairy products (Provide guidance so that materials exceeding 100 Bq/kg are not used in milk supplied for use in powdered baby formula or for direct drinking to baby.)	300
	＊Vegetables (Except root vegetables and tubers)	2,000
Radioactive cesium	＊Drinking water ＊Milk, dairy products	200
	＊Vegetables ＊Grains ＊Meat, eggs, fish, etc.	500
Uranium	＊Infant foods ＊Drinking water ＊Milk, dairy products	20
	＊Vegetables ＊Grains ＊Meat, eggs, fish, etc.	100
Alpha-emitting nuclides of plutonium and transuranic elements (Total radioactive concentration of $_{238}$Pu, $_{239}$Pu, $_{240}$Pu, $_{242}$Pu, $_{241}$Am, $_{242}$Cm, $_{244}$Cm)	＊Infant foods ＊Drinking water ＊Milk, dairy products	1
	＊Vegetables ＊Grains ＊Meat, eggs, fish, etc.	10

Reference: http://www.mhlw.go.jp/stf/houdou/2r9852000001558e.html

Table F05 Genetically Modified Foods

List of Products that have undergone safety assessment & been announced in the Official Gazette

MHLW (Department of Food Safety,) as of December, 2010

Foods（130 crops）				
Crop	Trait		Developer (country)	
Potato （8）	Insect resistant Insect　resistant/virus resistant	2 6	USA	8
Soybean （7）	Herbicide tolerant High oleic acid	5 2	USA Germany	5 2
Sugar Beet （3）	Herbicide tolerant	3	USA Germany Switzerland	1 1 1
Corn （70）	Insect resistant Insect resistant / Herbicide tolerant Herbicide tolerant High lysine Heat resistant α-amylase production Heat resistant α-amylase production / insect resistant Heat resistant α-amylase production / herbicide resistant Heat resistant α-amylase production / herbicide resistant / insect resistant	8 46 6 1 1 1 1 1	USA Switzerland Germany	37 31 2
Rapeseed （15）	Herbicide resistant Herbicide tolerant / Male sterility Herb. Tolerant / Recovering male sterility	13 1 1	Germany USA	13 2
Cotton （24）	Herbicide resistant Herbicide tolerant／insect resistant Insect resistant	9 11 4	USA Germany	18 6
Alfalfa （3）	Herbicide resistant	3	USA	3
Food Additives　(14 items)				
α-Amylase (6)	High productivity Heat resistant	5 1	Denmark USA	5 1
Rennet (2)	High productivity Chimosin productivity	1 1	Denmark Netherlands	1 1
Pullulanase (2)	High productivity	2	Denmark USA	1 1
Lypase　(2)	High productivity	2	Denmark	1
Riboflavin　(1)	High productivity	1	Switzerland	1
Glucoamylase　(1)	High productivity	1	Denmark	1

Notes: As of December. 2010, the following crops and food additives are being under the safety assessment:
1.Food(11 crops); corn(5), soybean(2), cotton(2), rapeseed(1), papaya(1)
2.Food additive(5 items); invertase, xylanase, sodium L-glutamate, 6-α.glucanotransferase, Isoleucine

List of crops and the processed food thereof

(which might require labeling as GM Foods)

The Ordinance for Enforcement of the Food Sanitation Act Article 21 Table 7

Crop	Processed Food
Soybean (including immature soybeans and bean sprouts)	1) *Tofu* (soybean curd) and *aburaage* (fried soybean curd) 2) *Koori-dofu* (frozen soybean curd), *okara* (dried *tofu* lees) and *yuba* (dried soybean milk membrane) 3) *Natto* (fermented soybeans) 4) Soybean milk 5) *Miso* (fermented soybean paste) 6) Soybean *nimame* (cooked soybean) 7) Canned soybeans and bottled soybeans 8) *Kinako* (roasted soybean flour) 9) Roasted soybeans 10) Food made mainly from ingredients listed in item 1 to item 9 11) Food made mainly from soybean for cooking 12) Food made mainly from soybean flour 13) Food made mainly from soybean protein 14) Food made mainly from immature soybean 15) Food made mainly from soybean sprouts
Corn	1) Corn snack confectionary 2) Corn starch 3) Popcorn 4) Frozen corn 5) Canned corn and bottled corn 6) Food made mainly from corn flour 7) Food made mainly from corn grits 8) Food made mainly from corn for cooking 9) Food made mainly from ingredients listed in item 1 to item 5
Potato	1) Potato snack confectionary 2) Dried potato 3) Frozen potato 4) Potato starch 5) Food made mainly from potato for cooking 6) Food made mainly from ingredients listed in item 1 to item 4
Rapeseed	
Cotton	
Alfalfa	Food made mainly from alfalfa
Sugar beet	Food made mainly from sugar beet for cooking

II. Milk and Milk Products

Ministerial Ordinance on Milk and Milk Products Concerning Compositional Standards, etc. (MHLW Ordinance No.52, 1951: Latest Revision No.132, October 30, 2007)

Table M01 Raw Milk

Compositional specifications for raw milk

(1) Milk shall be free from antibiotics or antimicrobial chemical compounds.*1

(2) Milk shall not be taken from cow, goat or sheep, which are to be classified into any of the following categories, i.e.:

i. Those within 5 days after delivery.

ii. Those, which have been either fed or injected with medicine that has an effect on milk and which are still within the period when medicine remains in milk.

iii. Those, which have been injected with biological products and which are showing a significant reaction thereto.

(3) Compositional standards (specific gravity, acidity, bacterial count)

	Raw cow's milk	Raw goat's milk
Specific gravity (at 15°C)	1.028–1.034[a)] 1.028–1.036[b)]	1.030–1.034
Acidity (as lactic acid %)	Not more than 0.18 [a)] Not more than 0.20 [b)]	Not more than 0.20
Bacteria (count/ml)	Not more than 4 million (Direct microscopic individual count method)	Not more than 4 million (Direct microscopic individual count method)

Notes:

a) Milk taken from cows other than Jersey cows.

b) Milk taken from Jersey cows.

*1 As regards veterinary drug residue standards, see Table F03 (Maximum Residue Limits for Agricultural Chemicals, Feed Additives and Veterinary Drugs in Food)

Table M02 Drinking Liquid Milks and Milk Drinks（chilled）

	Drinking milk*1			
	Cow's milk	Special cow's milk	Pasteurized goat's milk	Composition-controlled cow's milk
Specific gravity (at 15°C)	1.028–1.034a) 1.028–1.036b)	1.028–1.034a) 1.028–1.036b)	1.030–1.034	—
Acidity (as lactic acid %)	Not more than 0.18 a) Not more than 0.20 b)	Not more than 0.17 a) Not more than 0.19 b)	Not more than 0.20	Not more than 0.18
Nonfat milk solids (%)	Not less than 8.0	Not less than 8.5	Not less than 8.0	Not less than 8.0
Milk fat (%)	Not less than 3.0	Not less than 3.3	Not less than 3.6	—
Bacteria (count/ml)	Not more than 50,000 (Standard plate culture method)	Not more than 30,000 (Standard plate culture method)	Not more than 50,000 (Standard plate culture method)	Not more than 50,000 (Standard plate culture method)
Coliform group	Negative *c)	Negative *c)	Negative *c)	Negative *c)
Standards for manufacturing method	Pasteurizing method: To be heated at 63°C for 30 minutes by holder pasteurization or by an equivalent or more effective method	Pasteurizing method: To be heated at 63 to 65°C for 30 minutes by holder pasteurization when necessary	Same as that of cow's milk	Same as that of cow's milk
Standards for storing method	To be cooled down to 10°C or below for storage immediately after pasteurizing (except milk storable at room temperature, which shall be stored at a temperature not exceeding room temperature)	To be cooled down to 10°C or below for storage immediately after processing (after pasteurizing when pasteurized)	To be cooled down to 10°C or below for storage immediately after pasteurizing	
Remarks	Components shall not be removed. Mixing with other materials is prohibited (except steam generated when sterilized by heating directly at ultrahigh temperatures.) As to the residue limits for agricultural emicals, refer to the MHLW Notification No.370,1959(Latest No.336,2010)	Components shall not be removed. Mixing with other materials is prohibited.	Mixing with other materials is prohibited	Same as that of cow's milk

	Drinking milk*1		Milk drink*1	
	Low fat cow's milk	Nonfat cow's milk	Processed milk	Milk drinks
	1.030–1.036	1.032–1.038	—	—
	Not more than 0.18	Not more than 0.18	Not more than 0.18	—
	Not less than 8.0	Not less than 8.0	Not less than 8.0	—
	Not less than 0.5 but not more than 1.5	Less than 0.5	—	—
	Not more than 50,000 (Standard plate culture method)	Not more than 50,000 (Standard plate culture method)	Not more than 50,000 (Standard plate culture method)	Not more than 30,000 (Standard plate culture method)
	Negative *c)	Negative *c)	Negative *c)	Negative *c)
	Same as that of cow's milk	Same as that of cow's milk	Same as that of cow's milk	Raw materials, except those decomposed in the process of pasteurization, shall be pasteurized by heating at 62°C for 30 minutes or another method at least an equal pasteurizing effect.
	Cooled to under 10°C following pasteurizing and stored	Same as that of cow's milk	Same as that of cow's milk	Same as that of cow's milk (except those packed in a container fit for storage and pasteurized by heating at 120°C for 4 minutes or heating otherwise to have at least an equal pasteurizing effect.
	Same as that of cow's milk	Same as that of cow's milk	No materials shall be used except for water, raw milk, cow's milk, special milk, low fat cow's milk, nonfat cow's milk, whole milk powder, skimmed milk powder, concentrated milk, concentrated skimmed milk, evaporated milk, evaporated skimmed milk, cream and butter, butter oil, butter milk and butter milk powder not using additives.	Preservatives shall not be used for pasty or frozen milk products.

Notes:
*a) Those using milk of cows other than Jersey cows only as raw materials.
*b) Those using milk of Jersey cows only as raw materials.
*c) 1.11 mlx2, B.G.L.B. medium
1) As regards containers and package materials, see Table AP05 (Specifications and standards for milk and milk products).

Table M03 Milk Products

	Cream	Butter	Butter oil	Natural cheese	Processed cheese	Concentrated whey
Acidity (as lactic acid %)	Not more than 0.20	—	—	—	—	—
Nonfat milk solids (%)	—	—	—	—	Not less than 40.0	Not less than 25.0
Milk fat (%)	Not less than 18.0	Not less than 80.0	Not less than 99.3	—	—	—
Sugar (%)	—	—	—	—	—	—
Water content (%)	—	Not more than 17.0	Not more than 0.5	—	—	—
Bacteria count (Standard plate culture method)	Not more than 100,000 / ml	—	—	—	—	—
Coliform group	Negative *a)	Negative *b)	Negative *b)	—	Negative *b)	Negative *b)
Listeria monocytogenes	—	—	—	Negative *c)	—	—
Standard for manufacturing method	Same as that of milk	—	—	—	—	—
Standard for storing method	To be cooled down to 10°C or below for storage immediately after pasteurizing except those kept in a container fit for storage and pasteurized.					
Remarks	Mixing with other materials prohibited *2)			*11)		

Notes:

*1) For products using fermented milk or lactic acid bacteria drinks as raw materials, the count of lactic acid bacteria and yeast shall be excluded from the total bacteria count.

*2) Except steam used in ultra high temperature sterilization process.

*3) However, this does not apply to the case when the manufacture is performed continuously so as to prevent the stagnation of raw materials.

*4) Same as that of cow's milk. After pasteurization the raw material shall be kept at a temperature less than 10°C or above 48°C before drying. However, this shall not apply to the cases when all structures of the equipment used are designed so as to prevent contamination by microorganisms from outside, or when raw material is exposed to a temperature exceeding 10°C but not exceeding 48°C for less than 6 hours.

*5) This does not apply to the additives that were approved for their types and mixing ratios by the Minister of Health, Labour and Welfare.

*6) Calcium chloride, calcium citrate, trisodium citrate, sodium bicarbonate, sodium carbonate (crystal), sodium carbonate (anhydrous), tetrasodium pyrophosphate (crystal), tetrasodium pyrophosphate (anhydrous), potassium polyphosphate, sodium polyphosphate, potassium metaphosphate, sodium metaphosphate, disodium hydrogen phosphate (crystal). disodium hydrogen phosphate (anhydrous), sodium dihydrogen phosphate (crystal), sodium dihydrogen phosphate (anhydrous), trisodium phosphate (crystal), and trisodium phosphate (anhydrous): Not more than 2 g/kg for a single use and not more than 3 g/kg for a combined use (The crystal is calculated in terms of the anhydride).

	Ice cream	Ice milk	Lacto ice	Concentrated milk	Concentrated skimmed milk
	—	—	—	—	—
	Not less than 15.0	Not less than 10.0	Not less than 3.0	Not less than 25.5	Not less than 18.5 (no fat content)
	Not less than 8.0	Not less than 3.0	—	Not less than 7.0	—
	—	—	—	—	—
	—	—	—	—	—
	Not more than 100,000/g *1)	Not more than 50,000/g *1)	Not more than 50,000/g *1)	Not more than 100,000/g	Not more than 100,000/g
	Negative *b)	Negative *b)	Negative *b)	—	—
	—	—	—	—	—
	Water used for the manufacture of the products shall be potable water. Raw materials (except fermented milk and fermented milk drinks) shall be pasteurized by heating at 68°C for 30 minutes or by an equivalent or more effective method. When extracting from a freezing tube, the outside of the tube shall be warmed with potable flowing water. The melted liquid shall not be used as ingredients except when pasteurized by heating.			As small as that of milk	As small as that of milk
				To be cooled down to 10°C or below for storage immediately after concentrating.	
				Mixing with other materials is prohibited	Mixing with other materials is prohibited

*7) Calcium citrate, trisodium citrate, sodium bicarbonate, sodium carbonate (crystal), sodium carbonate (anhydrous), tetrasodium pyrophosphate (crystal), tetrasodium pyrophosphate (anhydrous), potassium polyphosphate, sodium polyphosphate, potassium metaphosphate, sodium metaphosphate, dipotassium hydrogen phosphate, disodium hydrogen phosphate (crystal), disodium hydrogen phosphate (anhydrous), sodium dihydrogen phosphate (crystal), and sodium dihydrogen phosphate (anhydrous): Not more than 2 g/kg for a single use and not more than 3 g/kg for a combined use (The crystal is calculated in terms of the anhydride). Lactose: Not more than 2 g/kg.

*8) Trisodium citrate, sodium bicarbonate, sodium carbonate (crystal), sodium carbonate (anhydrous), tetrasodium pyrophosphate (crystal), tetrasodium pyrophosphate (anhydrous), potassium polyphosphate, sodium polyphosphate, potassium metaphosphate, sodium metaphosphate, disodium hydrogen phosphate (crystal), disodium hydrogen phosphate (anhydrous), trisodium phosphate (crystal), and trisodium phosphate (anhydrous): Not more than 5 g/kg for a single or combined use (The crystal is calculated in terms of the anhydride).

*9) Trisodium citrate, sodium bicarbonate, tetrasodium pyrophosphate (crystal), tetrasodium pyrophosphate (anhydrous), potassium polyphosphate, sodium polyphosphate, potassium metaphosphate, sodium metaphosphate, disodium hydrogen phosphate (crystal), disodium hydrogen phosphate (anhydrous), trisodium phosphate (crystal),and trisodium phosphate (anhydrous): Not more than 5 g/kg for a single or combined use (The crystal is calculated in terms of the anhydride).

*10) Milk (goat's milk excluded), milk products or those which may be used by an approval of the Minister of Health, Labour and Welfare for their types and mixing ratios.

*11) Soft and semisoft natural cheese, excluding shredded cheese (shredded and mixed) labeled "for heating," "for pizza," "for toast," or "for gratin."

*12)As to the provisional PCB limitation, see Appended Table F04. As to the containers/ packages for milk and milk products, see Appended Table AP05(Specifications and standards for milk and milk products).

*a) Test method; the same as that for liquid milk

*b) 0.1g×2

*c) 25g (EB medium growth+Oxford or PALCAM agar media)

*d) 0.111g×2, B.G.L.B.medium

	Evaporated milk	Evaporated skimmed milk	Sweetened condensed milk	Sweetened condensed skimmed milk	Whole milk powder	Skimmed milk powder
Milk solids (%)	Not less than 25.0	Not less than 18.5 (No fat content)	Not less than 28.0	Not less than 25.0	Not less than 95.0	Not less than 95.0
Milk protein (%) (in dried condition)	—	—	—	—	—	—
Milk fat (%)	Not less than 7.5	—	Not less than 8.0	—	Not less than 25.0	—
Sugar (%)	—	—	Not more than 58.0 (lactose included)	Not more than 58.0 (lactose included)	—	—
Water content (%)	—	—	Not more than 27.0	Not more than 29.0	Not more than 5.0	Not more than 5.0
Bacteria count (Standard plate culture method)	0/g	0/g	Not more than 50,000/g	Not more than 50,000/g	Not more than 50,000/g	Not more than 50,000/g
Coliform group	—	—	Negative *d)	Negative *d)	Negative *d)	Negative *d)
Standard for manufacturing method	To be heated at 115°C or above for 15 minutes in a container	Same as that of evaporated condensed milk	—	—	—	Pasteurization should be carried out in the same conditions as that for liquid milk. In the process of heat pasteurization raw material shall be kept at a temperature less than 10°C or above 48°C. *3)*4)
Remarks	The following additives can be used: *6) *5)		Mixing of substances other than sucrose shall be as follows: *7) *5)		The following additives can be used: *8) *5)	Lactose and filtrate of raw milk, cow's milk, special cow's milk, low fat milk or nonfat milk can be used for the adjustment of protein content.

Cream powder	Whey powder	Whey powder protein concentrated	Buttermilk powder	Sweetened milk powder	Formulated milk powder
Not less than 95.0	Not less than 95.0	Not less than 95.0	Not less than 95.0	Not less than 70.0	Not less than 50.0
—	—	Not less than 15.0 and not more than 80.0	—	—	—
Not less than 50.0	—	—	—	Not less than 18.0	—
—	—	—	—	Not more than 25.0 (Except lactose)	—
Not more than 5.0	Not more than 5.0	Not more than 5.0	Not more than 5.0	Not more than 5.0	Not more than 5.0
Not more than 50,000/g	Not more than 50,000/g	Not more than 50,000/g	Not more than 50,000/g	Not more than 50,000/g	Not more than 50,000/g
Negative *d)	Negative *d)	Negative *d)	Negative *d)	Negative *d)	Negative *d)
—	—	—	—	—	—
				Mixing of substances other than sucrose shall be as follows: *9)	Nothing shall be used except follows: *10)
				*5)	

Table M04 Fermented Milk and Fermented Milk Drinks

	Fermented milk	Lactic acid bacteria drinks b) (containing not less than 3.0% nonfat milk solids)	Lactic acid bacteria drinks c) (containing less than 3.0% nonfat milk solids)
Nonfat milk solids % Lactic acid bacteria or yeasts count (per ml)	Not less than 8.0 Not less than 10 million	Not less than 10 million Except for those heated at 75°C or above for 15 minutes after being fermented or pasteurized by an equivalent or more effective method.	Not less than a million
Coliform group	Negative	Negative	Negative
Standard for manufacturing method	Water used for the manufacture of the product shall be potable water. Raw materials (excluding lactic acid bacteria, yeast, fermented milk and fermented milk drinks) shall be pasteurized by heating at 62°C for 30 minutes, or by an equivalent or more effective method.	Water used for the manufacture of base liquids shall be potable water. Raw materials (except lactic acid bacteria and yeast) shall be thermally pasteurized at 62°C for 30 minutes or pasteurized by an equivalent or more effective method. Water, etc. to be used for diluting stock solution shall be boiled for 5 minutes immediately before use or pasteurized by an equivalent or more effective method.	
Remarks	Preservatives shall not be used for paste-like or frozen one.	Preservatives shall not be used for pasteurized drinks.	

a) The standard method of preparing lactic acid bacteria drinks prepared with a fully automatic cooker of refreshing drinks has been provided separately.
b) Milk products
c) Food using milk, etc. as a principal ingredient.
d) As to the provisional PCB limitation, see Appended Table F04. As to the containers/ packages for milk and milk products, see Appended Table AP05 (Specifications and standards for milk and milk products).

Table M05 Products Storable at Room Temperature

	Cow's milk & Composition-controlled cow's milk	Low fat milk	Nonfat milk	Processed milk	Milk drink
Alcohol test (before and after storage at 30 ±1°C for 14 days or at 55 ±1°C for 7 days)	Negative	Negative	Negative	Negative	—
Acidity (as lactic acid %) (the difference between before and after storage at 30 ±l °C for 14 days or at 55 ±1°C for 7 days)	Within 0.02 %	Within 0.02 %	Within 0.02 %	Within 0.02 %	—
Bacteria count (after storage at 30 ±l °C for 14 days or at 55 ±l °C for 7 days) (per ml)	0 (Standard plate culture method)	0 (Standard plate culture method)	0 (Standard plate culture method)	0 (Standard plate culture method)	0 (Standard plate culture method)

Note: As to the containers/ packages for milk and milk products, see Table AP05.

These standards in English can found in:
"Ministerial Ordinance on Milk and Milk products Concerning Compositional Standards, etc."
http://www.mhlw.go.jp/english/topics/foodsafety/index.html

III. Food additives

The act prohibits the sale, manufacture, importation, use, etc. of any additive (except natural flavoring agent, and substances which are generally provided as food and used as food additives) or any preparation or food that contains such food additive, except cases where the Minister of Health, Labour and Welfare designates the additive as not injurious to human health ("Designated Food Additives").

Table FA01 Designated Food Additives

The following is the list of designated food additives, arranged in alphabetical order. The original list in Japanese is Table 1 of Enforcement Regulations of the Food Sanitation Act as of 31 December, 2010.
Designated Food Additives are classified into two categories, i.e., those whose conditions of use are strictly defined or limited and those without any limitation. The additives in the former category are marked with * in the list.

Note:

1) A number in parentheses after an additive indicates the number in the original Japanese table.
2) As to the following eighteen classes of substances (all only permitted for as flavorings) marked with "Ref.", refer to the corresponding lists below this list for individual substances:

Isothiocyanates (except those generally recognized as highly toxic) (43); Indoles and its derivatives (53); Esters (57); Ethers (65); Ketones (123); Fatty Acids (166); Aliphatic Higher Alcohols (167); Aliphatic Higher Aldehydes (except those generally recognized as highly toxic) (168); Aliphatic Higher Hydrocarbons (except those generally recognized as highly toxic) (169); Thioethers (except those generally recognized as highly toxic) (227); Thiols (Thioalcohols) (except those generally recognized as highly toxic) (228); Terpene Hydrocarbons (238); Phenol Ethers (except those generally recognized as highly toxic) (309); Phenols (except those generally recognized as highly toxic) (310); Furfurals and its derivatives (except those generally recognized as highly toxic) (318); Aromatic Alcohols (337); Aromatic Aldehydes (except those generally recognized as highly toxic) 338); Lactones (except those generally recognized as highly toxic) (376)

Acesulfame Potassium (14)*
Acetaldehyde (18)*
Acetic Acid, Glacial (294)
Acetone (21)*
Acetophenone (20)*
Acetylated Distarch Adipate (15)
Acetylated Distarch Phosphate (17)
Acetylated Oxidized Starch (16)
Adipic Acid (4)
DL-Alanine (25)
Aliphatic Higher Alcohols (167)* Ref.
Aliphatic Higher Aldehydes (except those generally recognized as highly toxic) (168)* Ref.
Aliphatic Higher Hydrocarbons (except those generally recognized as highly toxic) (169)* Ref.
Allyl Cyclohexylpropionate (155)*
Allyl Hexanoate (Allyl Caproate) (330)*
Allyl Isothiocyanate (Volatile Oil of Mustard) (44)*
Aluminum Ammonium Sulfate (Crystal: Ammonium Alum, Desiccated: Burnt Ammonium Alum) (387)*
Aluminum Potassium Sulfate (Crystal: Alum or Potassium Alum, Desiccated: Burnt Alum) (388)
Ammonia (36)
Ammonium Alginate (28)
Ammonium Bicarbonate (Ammonium Hydrogen Carbonate) (216)
Ammonium Carbonate (213)
Ammonium Chloride (69)
Ammonium Dihydrogen Phosphate (Ammonium Phosphate, Monobasic or Monoammonium Phosphate) (403)
Ammonium Persulfate (84)*
Ammonium Sulfate (389)*
Amylalcohol (23)*
α-Amylcinnamaldehyde (α-Amylcinnamic Aldehyde) (24)*
Anisaldehyde (p-Methoxybenzaldehyde) (22)*
L-Arginine L-Glutamate (27)
Aromatic Alcohols (337)* Ref.
Aromatic Aldehydes (except those generally recognized as highly toxic) (338)* Ref.
L-Ascorbic Acid (Vitamin C) (6)
L-Ascorbic Acid 2-glucoside (8)
L-Ascorbic Palmitate (Vitamim C Palmitate) (11)
L-Ascorbic Stearate (Vitamin C Stearate) (9)
Aspartame (α-L-Aspartyl-L-Phenylalanine Methyl Ester) (13)
Benzaldehyde (335)*
Benzoic Acid (33)*
Benzoyl Peroxide (82)*
Benzyl Acetate (143)*
Benzyl Alcohol (334)*
Benzyl Propionate (326)*
Biotin (280)*
Bisbentiamine (Benzoylthiamine Disulfide) (282)
d-Borneol (350)*
Butanol (312)*
Butyl Acetate (142)*
Butyl Butyrate (375)*
Butyl *p*-Hydroxybenzoate (273)*
Butylated Hydroxyanisole (315)*
Butylated Hydroxytoluene (163)*
Butyraldehyde (314)*
Butylamine(313)*
Butyric Acid (371)*
Calcium Alginate (30)
Calcium L-Ascorbate (7)
Calcium Carbonate (215)*
Calcium Carboxymethylcellulose (Calcium Cellulose Glycolate) (85)*
Calcium Chloride (71)*
Calcium Citrate (96)*
Calcium Dihydrogen Phosphate (Calcium Phosphate, Monobasic) (407)*
Calcium Dihydrogen Pyrophosphate (Acid Calcium Pyrophosphate) (300)*
Calcium Disodium Ethylenediaminetetraacetate (Calcium Disodium EDTA) (63)*

Calcium Gluconate (109)*
Calcium Glycerophosphate (104)*
Calcium Hydroxide (Slaked Lime) (200)*
Calcium Lactate (262)*
Calcium Monohydrogen Phosphate (Calcium Phosphate, Dibasic) (406)*
Calcium Pantothenate (278)*
Calcium Propionate (324)*
Calcium 5'-Ribonucleotide (381)
Calcium Silicate (118)*
Calcium Stearate (204)
Calcium Stearoyl Lactylate (Calcium Stearyl Lactylate) (206)*
Calcium Sorbate(212)*
Calcium Sulfate (390)*
Carbon Dioxide (Carbonic Acid, Gas) (259)
ß-Carotene (87)*
Chlorine Dioxide (257)*
Cholecalciferol (Vitamin D3) (129)
1,8-Cineole (Eucalyptol) (161)*
Cinnamaldehyde (Cinnamic Aldehyde) (198)*
Cinnamic Acid (120)*
Cinnamyl Acetate (136)*
Cinnamyl Alcohol (Cinnamic Alcohols) (197)*
Citral (158)*
Citric Acid (93)*
Citronellal (159)*
Citronellol (160)*
Citronellyl Acetate (135)*
Citronellyl Formate (90)*
Copper Chlorophyll (242)*
Copper Salts (limited to Copper Gluconate and Cupric Sulfate) (240)*
Cyclohexyl Acetate (134)*
Cyclohexyl Butyrate (374)*
L-Cystein Monohydrochloride (156)*
Decanal (Decyl Aldehyde) (230)*
Decanol (Decyl Alcohol) (231)*
Diammonium Hydrogen Phosphate (Diammnonium Phosphate or Ammnonium Phosphate, Dibasic) (402)
Dibenzoyl Thiamine (164)
Dibenzoyl Thiamine Hydrochloride (165)
2,3-Dimethylpirazine(170)*
2,5-Dimethylpirazine(171)*
2,6-Dimethylpirazine(172)*
Diphenyl (Biphenyl) (162)*
Dipotassium Hydrogen Phosphate (Dipotassium Phosphate or Potassium Phosphate, Dibasic) (404)
Disodium 5'-Cytidylate (Sodium 5'-Cytidylate) (157)
Disodium Dihydrogen Pyrophosphate (Acid Disodium Pyrophosphate) (301)
Disodium Ethylenediaminetetraacetate (Disodium EDTA) (64)*
Disodium Glycyrrhizinate (105)*
Disodium 5'-Guanylate (Sodium 5'-Guanylate) (92)
Disodium Hydrogen Phosphate (Disodium Phosphate) (408)
Disodium 5'-Inosinate (Sodium 5'-Inosinate) (51)
Disodium 5'-Ribonucleotide (Sodium 5'-Ribonucleotide) (382)
Disodium Succinate (128)
Disodium DL-Tartrate (Disodium dl-Tartrate) (179)
Disodium L-Tartrate (Disodium *l*-Tartrate) (180)
Disodium 5'-Uridylate (Sodium 5'-Uridylate) (54)
Distarch Phosphate (397)
Ergocalciferol (Calciferol or Vitamin D2) (68)
Erythorbic Acid (Isoascorbic Acid) (66)*
Ester Gum (56)*
Esters (57)* Ref.
Ethers (65)* Ref.
Ethyl Acetate (132)*
Ethyl Acetoacetate (19)*
Ethyl Butyrate (373)*
Ethyl Cinnamate (121)*
Ethyl Decanoate (Ethyl Caprate) (232)*
Mixture of 2-Ethyl-3,5-dimethylpyrazine and 2-Ethyl-3,6-dimethylpyrazine (58)*
Ethyl Heptanoate (Ethyl Enanthate) (332)*
Ethyl Hexanoate (Ethyl Caproate) (331)*
Ethyl *p*-Hydroxybenzoate (272)*

Ethyl Isovalerate (42)*
2-Ethyl-3-methylpyrazine (61)*
2-Ethyl-5-methylpyrazin(62)*
Ethyl Octanoate (Ethyl Caprylate) (77)*
Ethyl Phenylacetate (307)*
Ethyl Propionate (323)*
2-Ethylpyrazin(60)*
Ethylvanillin (59)*
Eugenol (75)*
Fatty Acids (166)* Ref.
Ferric Ammonium Citrate (99)
Ferric Chloride (72)
Ferric Citrate (98)
Ferric Pyrophosphate (302)
Ferrocyanides (Potassium Ferrocyanide (Potassium Hexacyanoferrate(II)), Calcium Ferrocyanide (Calcium Hexacyanoferrate(II)), Sodium Ferrocyanide (Sodium Hexacyanoferrate(II))) (311)
Ferrous Gluconate (Iron Gluconate) (110)*
Ferrous Sulfate (391)
Folic Acid (370)
Food Blue No.1 (Brilliant Blue FCF) and its Aluminum Lake (193)*
Food Blue No.2 (Indigo Carmine) and its Aluminum Lake (194)*
Food Green No.3 (Fast Green FCF) and its Aluminum Lake (192)*
Food Red No.2 (Amaranth) and its Aluminum Lake (183)*
Food Red No.3 (Erythrosine) and its Aluminum Lake (184)*
Food Red No.40 (Allura Red AC) and its Aluminum Lake (185)*
Food Red No.102 (New Coccine) (186)*
Food Red No.104 (Phloxine) (187)*
Food Red No.105 (Rose Bengale) (188)*
Food Red No.106 (Acid Red) (189)*
Food Yellow No.4 (Tartrazine) and its Aluminum Lake (190)*
Food Yellow No.5 (Sunset Yellow FCF) and its Aluminum Lake (191)*
Fumaric Acid (316)
Furfurals and its derivatives (except those generally recognized as highly toxic) (318)* Ref.
Geraniol (124)*
Geranyl Acetate (133)*
Geranyl Formate (89)*
Gluconic Acid (107)
Glucono-delta-Lactone (Gluconolactone) (106)
L-Glutamic Acid (112)
Glycerol (Glycerin) (102)
Glycerol Esters of Fatty Acids (103)
Glycine (101)
Hexanoic Acid (Caproic Acid) (329)*
High Test Hypochlorite (125)
L-Histidine Monohydrochloride (281)
Hydrochloric Acid (74)*
Hydrogen Peroxide (81)*
Hydroxycitronellal (285)*
Hydroxycitronellal Dimethylacetal (286)*
Hydroxypropyl Cellulose (288)*
Hydroxypropyl Distarch Phosphate (287)
Hydroxypropyl Methylcellulose (290)*
Hydroxypropyl Starch (289)
Hypochlorous Acid Water (152)*
Imazalil (52)*
Indoles and its derivatives (53)* Ref.
Ion Exchange Resin (38)*
Ionone (37)*
Iron Lactate (263)
Iron Sesquioxide (Diiron Trioxide or Iron Oxide Red) (151)*
Isoamyl Acetate (131)*
Isoamylalcohol (39)*
Isoamyl Butyrate (372)*
Isoamyl Formate (88)*
Isoamyl Isovalerate (41)*
Isoamyl Phenylacetate (305)*
Isoamyl Propionate (322)*
Isobutanol (46)*

Isobutyl p-Hydroxybenzoate (270)*
Isobutyl Phenylacetate (306)*
Isobutylaldehyde (Isobutanal) (47)*
Isoeugenol (40)*
L-Isoleucine (50)
Isopentylamine(49)*
Isopropanol (48)*
Isopropyl Citrate (94)*
Isopropyl *p*-Hydroxybenzoate (271)*
Isothiocyanates (except those generally recognized as highly toxic) (43) * Ref.
Isovaleraldehyde(45)*
highly toxic) Ref. (43)*
Ketones (123)* Ref.
Lactic Acid (261)
Lactones (except those generally recognized as highly toxic) (376)* Ref.
Linalool (380)*
Linalyl Acetate (145)*
L-Lysine L-Aspartate (377)
L-Lysine L-Glutamate (379)
L-Lysine Monohydrochloride (378)
Magnesium Carbonate (219)
Magnesium Chloride (73)
Magnesium Hydroxide (202)
Magnesium Oxide (150)
Magnesium Silicate(119)*
Magnesium Stearate (205)*
Magnesium Sulfate (393)
DL-Malic Acid (dl-Malic Acid) (394)
Maltol (351)*
D-Mannitol (D-Mannite) (352)*
dl-Menthol (dl-Peppermint Camphor) (367)*
l-Menthol (Peppermint Camphor) (368)*
l-Menthyl Acetate (144)*
DL-Methionine (355)
L-Methionine (356)
Methyl Anthranilate (35)*
2-Methylbutanol (363)*
3-Methyl-2-butanol(364)*
2-Methylbutylaldehide(365)*
Methyl Cellulose (360)*
Methyl Cinnamate (122)*
Methyl Hesperidin (Soluble Vitamin P) (366)
Methyl N-Methylanthranilate (357)*
2-Methylpyrazine(362)*
6-Methylquinoline(359)*
Methyl Salicylate (148)*
Methyl ß-Naphthyl Ketone (361)*
p-Methylacetophenone (275)*
5-Methylquinoxaline (358)*
Monoammonium L- Glutamate(113)
Monocalcium Di-L-Glutamate (115)*
Monomagnesium Di-L-Glutamate (117)
Monopotassium Citrate and Tripotassium Citrate (96)
Monopotassium L-Glutamate (114)
Monosodium L-Aspartate (12)
Monosodium Fumarate (Sodium Fumarate) (317)
Monosodium L-Glutamate (116)
Monosodium Succinate (127)
Monostarch Phosphate (398)
Morpholine Salts of Fatty Acids (369)*
Natamycin (252)*
Neotame (265)
Nicotinamide (Niacinamide) (255)*
Nicotinic Acid (Niacin) (254)*
Nisin (251)*
Nitrous Oxide (3)*
γ-Nonalactone (Nonalactone) (266)*
Octanal (Capryl Aldehyde or Octyl Aldehyde) (76)*
Oxalic Acid (173)*
Oxidized Starch (149)
2-Pentanol(*sec*-Amylalcohol)(336)*
l-Perillaldehyde (333)*
Phenethyl Acetate (Phenylethyl Acetate) (141)*
Phenethylamine (308)*
Phenol Ethers (except those generally recognized as highly toxic) (309)* Ref.
Phenols (except those generally recognized as highly toxic) (310)* Ref.

L-Phenylalanine (304)
o-Phenylphenol and Sodium o-Phenylphenate (79)*
Phosphated Distarch Phosphate (411)
Phosphoric Acid (396)
Piperonal (Heliotropine) (292)*
Piperonyl Butoxide (293)*
Piperidine (291)*
Polybutene (Polybutylene) (347)*
Polyisobutylene (Butyl Rubber) (341)*
Polysorbate 20 (342)*
Polysorbate 60 (343)*
Polysorbate 65 (344)*
Polysorbate 80 (345)*
Polyvinyl Acetate (140)*
Polyvinylpolypyrrolidone (346)*
Potassium Alginate (29)
Potassium DL-Bitartrate (Potassium Hydrogen DL-Tartrate or Potassium Hydrogen *dl*-Tartrate) (177)
Potassium L-Bitartrate (Potassium Hydrogen L-Tartrate or Potassium Hydrogen *d*-Tartrate) (178)
Potassium Bromate (174)*
Potassium Carbonate (anhydrous) (214)
Potassium Chloride (70)
Potassium Dihydrogen Phosphate (Monopotassium Phosphate) (405)
Potassium Gluconate (108)
Potassium Hydroxide (Caustic Potash) (199)*
Potassium Metaphosphate (353)
Potassium Nitrate (181)*
Potassium Norbixin (267)*
Potassium Polyphosphate (348)
Potassium Pyrophosphate (Tetrapotassium Pyrophosphate) (299)
Potassium Pyrosulfite (Potassium Hydrogen Sulfite or Potassium Metabisulfite) (296)*
Potassium Sorbate (211)*
Propanol (319)*
Propionaldehyde (320)*
Propionic Acid (321)*
Propyl Gallate (339)*
Propyl *p*-Hydroxybenzoate (274)*
Propylene Glycol (327)*
Propylene Glycol Alginate (32)*
Propylene Glycol Esters of Fatty Acids (328)
Pyridoxine Hydrochloride (Vitamin B6) (295)
Pyrrolidine (298)*
Riboflavin (Vitamin B2) (383)
Riboflavin 5'-Phosphate Sodium (Riboflavin Phosphate Sodium, Vitamin B2 Phosphate Sodium) (385)
Riboflavin Tetrabutyrate (Vitamin B2 Tetrabutyrate) (384)
Saccharin (146)*
Silicon Dioxide (Silica Gel) (258)*
Silicone Resin (Polydimethylsiloxane) (196)*
Sodium Acetate (139)
Sodium Alginate (31)
Sodium L-Ascorbate (Vitamin C Sodium) (10)
Sodium Benzoate (34)*
Sodium Bicarbonate (Bicarbonate Soda or Sodium Hydrogen Carbonate) (217)
Sodium Carbonate (Crystal: Carbonate Soda, Anhydrous: Soda Ash) (218)
Sodium Carboxymethylcellulose (Sodium Cellulose Glycolate) (86)*
Sodium Carboxymethylstarch (239)*
Sodium Caseinate (83)
Sodium Chlorite (2)*
Sodium Chondroitin Sulfate (130)*
Sodium Copper Chlorophyllin (241)*
Sodium Dehydroacetate (236)*
Sodium Dihydrogen Phosphate (Monosodium Phosphate) (409)
Sodium Erythorbate (Sodium Isoascorbate) (67)*
Sodium Ferrous Citrate (Sodium Iron Citrate) (97)
Sodium Gluconate (111)
Sodium Hydrosulfite (Hydrosulfite) (154)*
Sodium Hydroxide (Caustic Soda) (201)*
Sodium Hypochlorite (Hypochlorite of Soda) (153)*
Sodium Iron Chlorophyllin (233)*

Sodium Lactate (264)
Sodium DL-Malate (Sodium dl-Malate) (395)
Sodium Metaphosphate (354)
Sodium Methoxide (Sodium Methylate) (253)*
Sodium Nitrate (182)*
Sodium Nitrite (5)*
Sodium Norbixin (268)*
Sodium Oleate (80)*
Sodium Pantothenate (279)
Sodium Polyacrylate (340)*
Sodium Polyphosphate (349)
Sodium Propionate (325)*
Sodium Pyrophosphate (Tetrasodium Pyrophosphate) (303)
Sodium Pyrosulfite (Sodium Metabisulfite, Acid Sulfite of Soda) (297)*
Sodium Saccharin (Soluble Saccharin) (147)*
Sodium Sulfate (392)
Sodium Sulfite (26)*
Sorbic Acid (210)*
Sorbitan Esters of Fatty Acids (208)
D-Sorbitol (D-Sorbit) (209)
Sodium Stearoyl Lactylate (207)*
Starch Acetate (138)
Starch Sodium Octenyl Succinate (78)
Succinic Acid (126)
Sucralose (Trichlorogalactosucrose) (203)
Sucrose Esters of Fatty Acids (195)
Sulfur Dioxide (Sulfurous Acid, Anhydride) (256)*
Sulfuric Acid (386)*
DL-Tartaric Acid (dl-Tartaric Acid) (175)
L-Tartaric Acid (d-Tartaric Acid) (176)
Terpene Hydrocarbons (238)* Ref.
Terpineol (237)*
Terpinyl Acetate (137)*
2,3,5,6-Tetramethylpyrazine (235)*
5,6,7,8-Tetrahydroquinoxalin(234)*
L-Theanine (229)
Thiabendazole (220)*
Thiamine Dicetylsufate (Vitamin B1 Dicetylsufate) (223)
Thiamine Dilaurylsulfate (Vitamin B1 Dilaurylsulfate) (226)
Thiamine Hydrochloride (Vitamin B1 Hydrochloride) (221)
Thiamine Mononitrate (Vitamin B1 Mononitrate) (222)
Thiamine Naphthalene-1,5-Disulfonate (Vitamin B1 Naphthalene-1,5-Disulfonate) (225)
Thiamine Thiocyanate (Vitamin B1 Thiocyanate) (224)
Thioethers (except those generally recognized as highly toxic) (227)* Ref.
Thiols (Thioalcohols) (except those generally recognized as highly toxic) (228)* Ref.
DL-Threonine (249)
L-Threonine (250)
Titanium Dioxide (260)*
dl-α-Tocopherol (243)*
all-rac-α-Tocopheryl Acetate (244)*
R,R,R-*α*-Tocopheryl Acetate (245)*
Tricalcium Phosphate (Calcium Phosphate, Tribasic) (400)*
Trimagnesium Phosphate (401)
2,3,5-Trimethylpyrazine (248)*
Tripotassium Phosphate (Potassium Phosphate, Tribasic) (399)
Trisodium Citrate (Sodium Citrate) (100)
Trisodium Phosphate (Sodium Phosphate, Tribasic) (410)
DL-Tryptophan (246)
L-Tryptophan (247)
γ-Undecalactone (Undecalactone) (55)*
Valeraldehyde (277)*
L-Valine (276)
Vanillin (269)*
Vitamin A (Retinol) (283)
Vitamin A Fatty Acids Esters (Retinol Esters of Fatty Acids Esters) (284)
Xylitol (91)
Zinc salts (limited to Zinc Gluconate and Zinc Sulfate) (1)*

As to the following eighteen classes of substances (all only permitted as flavorings) marked with "Ref." in the table above, the Ministry of Health, Labour and Welfare notifies from time to time the examples of flavorings used for food in Japan based on the results of investigation. The following list shows the examples contained in the notifications in 20 May, 14 August, and 1 October, 2003, and 9 February, 2009:

Isothiocyanates, Indoles/its derivatives, Esters, Ethers, Ketones, Fatty Acids, Aliphatic Higher Alcohols, Aliphatic Higher Aldehydes, Aliphatic Higher Hydrocarbons, Thioethers, Thiols (Thioalcohols), Terpene Hydrocarbons, Phenol Ethers, Phenols, Furfurals/its derivatives, Aromatic Alcohols, Aromatic Aldehydes, Lactones.

43*	Isothiocyanates (except those generally recognized as highly toxic)
Name	CAS No.
amyl isothiocyanate	629-12-9
benzyl isothiocyanate	622-78-6
3-butenyl isothiocyanate	3386-97-8
butyl isothiocyanate	592-82-5
sec-butyl isothiocyanate	4426-79-3
5-hexenyl isothiocyanate	49776-81-0
hexyl isothiocyanate	4404-45-9
isoamyl isothiocyanate	628-03-5
isobutyl isothiocyanate	591-82-2
isopropyl isothiocyanate	2253-73-8
6-(methylthio)hexyl isothiocyanate	4430-39-1
3-(methylthio)propyl isothiocyanate	505-79-3
4-pentenyl isothiocyanate	18060-79-2
phenethyl isothiocyanate	2257-09-2
4-(methylthio)butyl isothiocyanate	4430-36-8
5-(methylthio)pentyl isothiocyanate	4430-42-6
ethyl isothiocyanate	542-85-8
methyl isothiocyanate	556-61-6

53*	Indoles/its derivatives
Name	CAS No.
indole	120-72-9
2-methylindole	95-20-5
skatole	83-34-1

57*	Esters
Name	CAS No.
acetoin acetate	4906-24-5
3-acetoxy-2-butyl butyrate	
4-(3-oxobutyl)phenyl acetate	3572-06-3
vanillin acetate	881-68-5
allyl 10-undecenoate	7493-76-7
allyl 2-ethylbutyrate	7493-69-8
allyl 2-furoate	4208-49-5
allyl (2-methylbutoxy)acetate	67634-01-9
allyl 2-methylbutyrate	93963-13-4
allyl acetate	591-87-7
allyl acetoacetate	1118-84-9
allyl anthranilate	7493-63-2
allyl butyrate	2051-78-7

allyl cinnamate	1866-31-5
allyl 2-butenoate	20474-93-5
allyl cyclohexylacetate	4728-82-9
allyl cyclohexyloxypropionate	
allyl decanoate	57856-81-2
allyl formate	1838-59-1
allyl heptanoate	142-19-8
allyl (3-methylbutoxy)acetate	67634-00-8
allyl isobutyrate	15727-77-2
allyl 4-methylpentanoate	
allyl isovalerate	2835-39-4
allyl levulinate	1070-35-5
allyl nonanoate	7493-72-3
allyl octanoate	4230-97-1
allyl phenoxyacetate	7493-74-5
allyl phenylacetate	1797-74-6
allyl pivalate	
allyl propionate	2408-20-0
allyl pyruvate	
allyl sorbate	7493-75-6
S-allyl propanethioate	41820-22-8
allyl tiglate	7493-71-2
allyl valerate	6321-45-5
amyl 2-furoate	1334-82-3
amyl 2-methylbutyrate	68039-26-9
amyl acetate	628-63-7
amyl angelate	7785-63-9
amyl anthranilate	30100-15-3
amyl benzoate	2049-96-9
amyl butyrate	540-18-1
amyl cinnamate	3487-99-8
amyl 2-butenoate	25415-76-3
amyl decanoate	5933-87-9
amyl formate	638-49-3
amyl heptanoate	7493-82-5
amyl hexanoate	540-07-8
amyl isobutyrate	2445-72-9
amyl 4-methylpentanoate	
amyl isovalerate	25415-62-7
amyl lactate	6382-06-5
amyl laurate	5350-03-8
amyl levulinate	20279-49-6
amyl nonanoate	61531-45-1
amyl octanoate	638-25-5
amyl phenylacetate	5137-52-0
amyl propionate	624-54-4
amyl salicylate	2050-08-0
amyl tiglate	7785-65-1
amyl valerate	2173-56-0
alpha-amylcinnamyl acetate	7493-78-9
alpha-amylcinnamyl isovalerate	7493-80-3
anisyl acetate	104-21-2
anisyl butyrate	6963-56-0
anisyl formate	122-91-8
anisyl hexanoate	6624-60-8
anisyl isobutyrate	
anisyl isovalerate	68922-04-3
anisyl phenylacetate	102-17-0
anisyl propionate	7549-33-9

anisyl valerate	
benzyl 2-methylbutyrate	56423-40-6
benzyl acetoacetate	5396-89-4
benzyl benzoate	120-51-4
benzyl butyrate	103-37-7
benzyl cinnamate	103-41-3
benzyl 2-butenoate	65416-24-2
benzyl decanoate	42175-41-7
benzyl formate	104-57-4
benzyl hexanoate	6938-45-0
benzyl isobutyrate	103-28-6
benzyl isovalerate	103-38-8
benzyl lactate	2051-96-9
benzyl laurate	140-25-0
benzyl levulinate	6939-75-9
benzyl nonanoate	6471-66-5
benzyl octanoate	10276-85-4
benzyl phenylacetate	102-16-9
benzyl salicylate	118-58-1
benzyl tiglate	37526-88-8
benzyl valerate	10361-39-4
bornyl acetate	76-49-3
bornyl butyrate	13109-70-1
bornyl formate	7492-41-3
bornyl isovalerate	76-50-6
bornyl propionate	20279-25-8
bornyl valerate	7549-41-9
2,3-butanediol diacetate	1114-92-7
butyl *trans*-2-butenoate	591-63-9
butyl 2-decenoate	7492-45-7
butyl 2-hexenoate	13416-74-5
butyl 2-methylbutyrate	15706-73-7
butyl 3-hexenoate	
S-*sec*-butyl 3-methylbutanethioate	2432-91-9
butyl 3-(methylthio)propionate	
sec-butyl acetate	105-46-4
butyl acetoacetate	591-60-6
butyl angelate	7785-64-0
butyl anthranilate	7756-96-9
butyl benzoate	136-60-7
butyl butyryllactate	7492-70-8
butyl butyrylacetate	
butyl cinnamate	538-65-8
butyl 2-butenoate	7299-91-4
butyl decanoate	30673-36-0
butyl formate	592-84-7
butyl heptanoate	5454-28-4
butyl hexanoate	626-82-4
butyl isobutyrate	97-87-0
butyl isovalerate	109-19-3
butyl lactate	138-22-7
butyl laurate	106-18-3
butyl levulinate	2052-15-5
butyl methacrylate	97-88-1
butyl beta-methyl-beta-phenylglycidate	
butyl myristate	110-36-1
butyl nonanoate	50623-57-9
butyl octanoate	589-75-3
butyl oleate	142-77-8

butyl palmitate	111-06-8
butyl phenylacetate	122-43-0
butyl 4-hydroxybenzoate	94-26-8
butyl pivalate	5129-37-3
butyl propionate	590-01-2
butyl salicylate	2052-14-4
butyl sorbate	7367-78-4
butyl stearate	123-95-5
butyl tiglate	7785-66-2
butyl undecanoate	
butyl 10-undecenoate	109-42-2
butyl valerate	591-68-4
2-butoxyethyl acetate	112-07-2
carvyl 2-methylbutyrate	
cis-carvyl acetate	1205-42-1
carvyl acetate	97-42-7
carvyl butyrate	93919-04-1
carvyl formate	29239-07-4
carvyl hexanoate	
carvyl isobutyrate	
carvyl isovalerate	94386-39-7
carvyl propionate	97-45-0
carvyl valerate	
beta-caryophyllene acetate	57082-24-3
cedryl acetate	77-54-3
hexadecyl acetate	629-70-9
cinnamyl anthranilate	87-29-6
cinnamyl benzoate	5320-75-2
cinnamyl butyrate	103-61-7
cinnamyl cinnamate	122-69-0
cinnamyl formate	104-65-4
cinnamyl hexanoate	
cinnamyl isobutyrate	103-59-3
cinnamyl isovalerate	140-27-2
cinnamyl phenylacetate	7492-65-1
cinnamyl propionate	103-56-0
cinnamyl tiglate	61792-12-9
cinnamyl valerate	10482-65-2
citronellyl propionate	141-14-0
citronellyl butyrate	141-16-2
citronellyl decanoate	
citronellyl hexanoate	10580-25-3
citronellyl isobutyrate	97-89-2
citronellyl isovalerate	68922-10-1
citronellyl octanoate	72934-05-5
citronellyl phenylacetate	139-70-8
citronellyl tiglate	24717-85-9
citronellyl valerate	7540-53-6
4-methylphenyl butyrate	14617-92-6
4-methylphenyl hexanoate	68141-11-7
4-methylphenyl isobutyrate	103-93-5
4-methylphenyl phenylacetate	101-94-0
4-methylphenyl valerate	10415-86-8
cuminyl acetate	59230-57-8
4-*tert*-butylcyclohexyl acetate	32210-23-4
4-*tert*-butylcyclohexyl propionate	68797-70-6
cyclododecyl formate	59052-82-3
cyclohexyl acetoacetate	6947-02-0
cyclohexyl anthranilate	7779-16-0

cyclohexyl benzoate	2412-73-9
cyclohexyl cinnamate	7779-17-1
cyclohexyl formate	4351-54-6
cyclohexyl hexanoate	6243-10-3
cyclohexyl isobutyrate	1129-47-1
cyclohexyl isovalerate	7774-44-9
cyclohexyl phenylacetate	42288-75-5
cyclohexyl propionate	6222-35-1
cyclohexyl salicylate	25485-88-5
cyclohexyl valerate	1551-43-5
2-cyclohexylethyl acetate	21722-83-8
cyclohexylethyl benzoate	
cyclohexylethyl butyrate	63449-88-7
cyclohexylethyl formate	
cyclohexylethyl isobutyrate	
cyclohexylethyl isovalerate	
cyclohexylethyl propionate	
cyclohexylethyl valerate	
cyclotene butyrate	68227-51-0
cyclotene isobutyrate	
cyclotene propionate	87-55-8
9-decenyl acetate	50816-18-7
2-decenyl acetate	19487-61-7
decyl acetate	112-17-4
decyl butyrate	5454-09-1
decyl formate	5451-52-5
decyl hexanoate	52363-43-6
decyl isobutyrate	5454-22-8
decyl isovalerate	72928-48-4
decyl nonanoate	
decyl octanoate	2306-89-0
decyl propionate	5454-19-3
dibutyl malate	1587-18-4
dibutyl sebacate	109-43-3
dibutyl succinate	141-03-7
diethyl adipate	141-28-6
diethyl carbonate	105-58-8
diethyl 1,12-dodecanedioate	10471-28-0
diethyl fumarate	623-91-6
diethyl malate	7554-12-3
diethyl maleate	141-05-9
diethyl malonate	105-53-3
diethyl oxalate	95-92-1
diethyl sebacate	110-40-7
diethyl succinate	123-25-1
diethyl tartrate	87-91-2
dihydrocarvyl acetate	20777-49-5
dihydrocarvyl butyrate	
dihydrocarvyl formate	93892-04-7
dihydrocarvyl hexanoate	
dihydrocarvyl isobutyrate	
dihydrocarvyl isovalerate	93892-05-8
dihydrocarvyl propionate	
dihydrocarvyl valerate	
dihydrolinalyl acetate	50373-60-9
dihydrolinalyl butyrate	
diisoamyl succinate	818-04-2
diisobutyl adipate	141-04-8
diisoamyl mercaptobutanedioate	68084-03-7

2-methyl-1-phenyl-2-propyl butyrate	10094-34-5
2-methyl-1-phenyl-2-propyl 2-butenoate	93762-34-6
2-methyl-1-phenyl-2-propyl formate	10058-43-2
2-methyl-1-phenyl-2-propyl isobutyrate	59354-71-1
2-methyl-1-phenyl-2-propyl propionate	67785-77-7
dimethyl malonate	108-59-8
2-methyl-4-phenyl-2-butyl acetate	103-07-1
2-methyl-4-phenyl-2-butyl isobutyrate	10031-71-7
2-phenyl-2-propyl isobutyrate	7774-60-9
dimethyl sebacate	106-79-6
dimethyl succinate	106-65-0
2,6-dimethyl-4-heptenyl acetate	
2,6-dimethyl-4-heptyl acetate	10250-45-0
1,1-dimethyl-2-propenyl acetate	24509-88-4
2-phenyl-2-propyl acetate	3425-72-7
2,4-dimethylbenzyl acetate	62346-96-7
2-methyl-1-phenyl-2-propyl acetate	151-05-3
2-phenyl-2-propyl formate	
3,7-dimethyloctyl butyrate	67874-80-0
dipropyl adipate	106-19-4
dipropyl malonate	1117-19-7
dipropyl succinate	925-15-5
2-dodecenyl acetate	38363-23-4
dodecyl butyrate	3724-61-6
dodecyl isobutyrate	6624-71-1
dodecyl isovalerate	
dodecyl lactate	6283-92-7
dodecyl propionate	6221-93-8
ethyl 10-undecenoate	692-86-4
ethyl 2-(methyldithio)propionate	23747-43-5
ethyl (methylthio)acetate	4455-13-4
ethyl 2,4-decadienoate	7328-34-9
37549-74-9	
ethyl alpha-acetylcinnamate	620-80-4
ethyl 2-acetyldecanoate	24317-95-1
ethyl 2-acetyldodecanoate	40778-32-3
ethyl 2-acetylhexanoate	1540-29-0
ethyl 2-acetyloctanoate	29214-60-6
ethyl 2-acetylpropionate	609-14-3
ethyl 2-acetyl-3-phenylpropionate	620-79-1
ethyl 2-ethoxybenzoate	
ethyl alpha-ethyl-beta-methyl-beta-phenylglycidate	56630-76-3
ethyl alpha-ethyl-beta-phenylglycidate	
ethyl 2-benzylbutyrate	2983-36-0
ethyl 2-ethylbutyrate	2983-38-2
ethyl 2-ethylhexanoate	2983-37-1
ethyl 2-furfurylpropionate	
ethyl 2-furoate	614-99-3
ethyl 2-hexanoyloxyhexanoate	
ethyl 2-hexenoate	1552-67-6
ethyl 2-hydroxy-3-phenylpropionate	15399-05-0
ethyl 2-hydroxy-4-methylpentanoate	10348-47-7
ethyl mercaptoacetate	623-51-8
ethyl 2-mercaptopropionate	19788-49-9
ethyl 2-methyl-(3or4)-pentenoate	
ethyl 2-methyl-3,4-pentadienoate	60523-21-9
ethyl 2-methyl-3-pentenoate	1617-23-8
ethyl 2-methyl-4-pentenoate	53399-81-8
ethyl 2-methylbutyrate	7452-79-1

ethyl 2-methylpentanoate	39255-32-8
28959-02-6	
ethyl 2-(methylthio)propionate	40800-76-8
ethyl 2-nonenoate	17463-01-3
ethyl 2-octenoate	2351-90-8
7367-82-0	
ethyl 2-oxo-3-phenylbutyrate	
ethyl 2-phenyl-3-furoate	50626-02-3
ethyl 3-(methylthio)propionate	13327-56-5
ethyl 3,5,5-trimethylhexanoate	67707-75-9
ethyl 3-acetoxy-2-methylbutyrate	139564-43-5
ethyl 3-acetoxybutyrate	27846-49-7
ethyl 3-acetoxyhexanoate	21188-61-4
ethyl 3-acetoxyoctanoate	85554-66-1
ethyl 3-(furfurylthio)propionate	94278-27-0
ethyl 3-hexenoate	2396-83-0
26553-46-8	
64187-83-3	
ethyl 3-hydroxybutyrate	5405-41-4
ethyl 3-hydroxyhexanoate	2305-25-1
ethyl 3-hydroxyoctanoate	7367-90-0
ethyl 3-mercaptopropionate	5466-06-8
ethyl 3-methylpentanoate	5870-68-8
ethyl 3-nonenoate	
ethyl 3-octenoate	1117-65-3
69668-87-7	
ethyl 3-oxohexanoate	3249-68-1
ethyl 3-oxooctanoate	10488-95-6
ethyl 3-phenylpropionate	2021-28-5
ethyl 4-hydroxybenzoate	120-47-8
ethyl 4-octenoate	34495-71-1
ethyl 4-(4-methylphenoxy)benzoate	
ethyl 5-acetoxydecanoate	
ethyl 5-acetoxyoctanoate	35234-25-4
ethyl 5-hexenoate	54653-25-7
ethyl 5-hydroxydecanoate	6071-25-6
75587-06-3	
ethyl 5-hydroxynonanoate	
ethyl 5-hydroxyoctanoate	75587-05-2
ethyl 5-oxodecanoate	93919-00-7
ethyl 5-oxooctanoate	
ethyl 9-decenoate	67233-91-4
ethyl 9-hexadecenoate	54546-22-4
ethyl acetoacetate ethyleneglycol acetal	6413-10-1
ethyl acetoacetate propyleneglycol acetal	6290-17-1
ethyl acetyllactate	2985-28-6
ethyl acrylate	140-88-5
ethyl 2-ethyl-3-hydroxy-3-phenylpropionate	24744-97-6
ethyl 2-methyl-1-oxaspiro[2.5]octane-2-carboxylate	
ethyl 4-methoxybenzoate	94-30-4
ethyl anthranilate	87-25-2
ethyl benzoate	93-89-0
ethyl benzoylacetate	94-02-0
ethyl 3-(methylthio)-2-propenoate	77105-51-2
136115-65-6	
136115-66-7	
ethyl beta-phenylglycidate	121-39-1
ethyl butyryllactate	71662-27-6
ethyl *cis*-4-decenoate	7367-84-2

ethyl 2-butenoate	623-70-1
10544-63-5	
ethyl 3-cyclohexylpropionate	10094-36-7
ethyl formate	109-94-4
ethyl 3-(2-furyl)propionate	10031-90-0
ethyl geranate	13058-12-3
ethyl heptadecanoate	14010-23-2
ethyl isobutyrate	97-62-1
ethyl 4-methylpentanoate	25415-67-2
ethyl lactate	97-64-3
ethyl laurate	106-33-2
ethyl levulinate	539-88-8
ethyl levulinate diethyl acetal	
ethyl levulinate propyleneglycol acetal	
ethyl linoleate	544-35-4
ethyl linolenate	1191-41-9
ethyl methoxyacetate	3938-96-3
ethyl beta-methyl-beta-phenylglycidate	77-83-8
ethyl beta-methyl-beta-(4-methylphenyl)glycidate	74367-97-8
ethyl myristate	124-06-1
ethyl nicotinate	614-18-6
ethyl nonadecanoate	18281-04-0
ethyl nonanoate	123-29-5
ethyl 2-methoxybenzoate	7335-26-4
ethyl oleate	111-62-6
ethyl palmitate	628-97-7
ethyl pentadecanoate	41114-00-5
1-phenylpropyl butyrate	10031-86-4
ethyl pivalate	3938-95-2
ethyl beta-(4-methylphenyl)glycidate	52788-71-3
ethyl propionyllactate	
ethyl pyruvate	617-35-6
ethyl ricinoleate	55066-53-0
ethyl safranate	35044-57-6
35044-59-8	
ethyl salicylate	118-61-6
ethyl sorbate	2396-84-1
ethyl stearate	111-61-5
S-ethyl ethanethioate	625-60-5
ethyl tiglate	5837-78-5
ethyl *trans,cis*-2,4-decadienoate	3025-30-7
ethyl *trans*-2-decenoate	7367-88-6
ethyl *trans*-2-hexenoate	27829-72-7
ethyl *trans*-3-decenoate	
ethyl 3-ethoxy-*trans*-2-butenoate	57592-45-7
ethyl *trans*-3-octenoate	26553-47-9
ethyl *trans*-4-decenoate	76649-16-6
ethyl *trans*-4-octenoate	78989-37-4
ethyl undecanoate	627-90-7
ethyl valerate	539-82-2
ethyl vanillate	617-05-0
3-methyl-1-phenyl-3-pentyl acetate	72007-81-9
2-ethylbutyl acetate	10031-87-5
ethyleneglycol diacetate	111-55-7
2-ethoxyethyl acetate	111-15-9
2-ethylhexyl 3-mercaptopropionate	50448-95-8
2-ethylhexyl acetate	103-09-3
2-ethylhexyl benzoate	5444-75-7
2-ethylhexyl formate	5460-45-7

2-ethylhexyl hexanoate	16397-75-4
2-ethylhexyl propionate	6293-37-4
ethyl maltol propionate	
ethyl maltol butyrate	93805-72-2
ethyl maltol isobutyrate	852997-28-5
ethylvanillin isobutyrate	188417-26-7
eugenyl acetate	93-28-7
eugenyl benzoate	531-26-0
eugenyl formate	10031-96-6
eugenyl phenylacetate	10402-33-2
methyl 2,4-dihydroxy-3,6-dimethylbenzoate	4707-47-5
farnesyl acetate	29548-30-9
fenchyl acetate	13851-11-1
fenchyl butyrate	
2,5-dimethyl-4-oxo-3(5*H*)-furyl acetate	4166-20-5
furfuryl isobutyrate	6270-55-9
furfuryl acetate	623-17-6
furfuryl butyrate	623-21-2
furfuryl decanoate	
furfuryl formate	13493-97-5
furfuryl heptanoate	39481-28-2
furfuryl hexanoate	39252-02-3
furfuryl isovalerate	13678-60-9
furfuryl octanoate	39252-03-4
furfuryl propionate	623-19-8
S-furfuryl ethanethioate	13678-68-7
S-furfuryl propanethioate	59020-85-8
furfuryl valerate	36701-01-6
S-furfuryl methanethioate	59020-90-5
geranyl 2-methylbutyrate	68705-63-5
geranyl acetoacetate	10032-00-5
geranyl anthranilate	67874-69-5
geranyl benzoate	94-48-4
geranyl butyrate	106-29-6
geranyl 2-butenoate	56172-46-4
geranyl hexanoate	10032-02-7
geranyl isobutyrate	2345-26-8
geranyl isovalerate	109-20-6
geranyl phenylacetate	102-22-7
geranyl propionate	105-90-8
geranyl tiglate	7785-33-3
geranyl valerate	10402-47-8
glyceryl (mono or di or tri)-5-hydroxydecanoate	26446-31-1
glyceryl (mono or di or tri)-5-hydroxydodecanoate	26446-32-2
2-methoxyphenyl acetate	613-70-7
2-methoxyphenyl phenylacetate	4112-89-4
guaiyl acetate	134-28-1
2-heptenyl acetate	16939-73-4
heptyl 2-methylbutyrate	50862-12-9
2-heptyl acetate	5921-82-4
heptyl acetate	112-06-1
heptyl butyrate	5870-93-9
heptyl butyryllactate	
heptyl cinnamate	10032-08-3
heptyl decanoate	60160-17-0
heptyl formate	112-23-2
heptyl heptanoate	624-09-9
heptyl hexanoate	6976-72-3
heptyl isobutyrate	2349-13-5

heptyl 4-methylpentanoate	
heptyl isovalerate	56423-43-9
heptyl nonanoate	71605-85-1
heptyl octanoate	4265-97-8
heptyl propionate	2216-81-1
2,4-hexadienyl acetate	1516-17-2
3-hexenyl 2-ethylbutyrate	94071-12-2
cis-3-hexenyl 2-furoate	
3-hexenyl 2-hexenoate	53398-87-1
cis-3-hexenyl 2-methylbutyrate	53398-85-9
3-hexenyl 2-methylbutyrate	10094-41-4
trans-2-hexenyl 2-methylbutyrate	94089-01-7
cis-3-hexenyl 2-methylpentanoate	
3-hexenyl 3-hexenoate	61444-38-0
3-hexenyl 4-methylpentanoate	
2-hexenyl acetate	10094-40-3
cis-2-hexenyl acetate	56922-75-9
cis-3-hexenyl acetate	3681-71-8
trans-2-hexenyl acetate	2497-18-9
1-hexenyl acetate	32797-50-5
trans-3-hexenyl acetate	3681-82-1
5-hexenyl acetate	5048-26-0
cis-3-hexenyl acetoacetate	84434-20-8
cis-3-hexenyl 4-methoxybenzoate	121432-33-5
cis-3-hexenyl anthranilate	65405-76-7
cis-3-hexenyl benzoate	25152-85-6
trans-2-hexenyl benzoate	
cis-3-hexenyl butyrate	16491-36-4
trans-2-hexenyl butyrate	53398-83-7
cis-4-hexenyl butyrate	
cis-3-hexenyl cinnamate	68133-75-5
trans-2-hexenyl cinnamate	
cis-3-hexenyl 2-butenoate	65405-80-3
cis-3-hexenyl decanoate	85554-69-4
trans-2-hexenyl decanoate	
cis-3-hexenyl formate	33467-73-1
trans-2-hexenyl formate	53398-78-0
cis-3-hexenyl heptanoate	61444-39-1
cis-3-hexenyl hexanoate	31501-11-8
trans-3-hexenyl hexanoate	56922-82-8
trans-2-hexenyl hexanoate	53398-86-0
cis-2-hexenyl hexanoate	56922-79-3
trans-2-hexenyl isobutyrate	
cis-3-hexenyl isobutyrate	41519-23-7
3-hexenyl isovalerate	10032-11-8
cis-3-hexenyl isovalerate	35154-45-1
trans-2-hexenyl isovalerate	68698-59-9
cis-3-hexenyl lactate	61931-81-5
trans-2-hexenyl lactate	85554-71-8
cis-3-hexenyl levulinate	85554-70-7
cis-3-hexenyl methyl carbonate	67633-96-9
cis-3-hexenyl nonanoate	88191-46-2
cis-3-hexenyl octanoate	61444-41-5
trans-2-hexenyl octanoate	85554-72-9
cis-3-hexenyl phenylacetate	42436-07-7
trans-2-hexenyl phenylacetate	68133-78-8
cis-3-hexenyl propionate	33467-74-2
trans-2-hexenyl propionate	53398-80-4
cis-3-hexenyl pyruvate	68133-76-6

cis-3-hexenyl salicylate	65405-77-8
trans-2-hexenyl salicylate	68133-77-7
cis-3-hexenyl tiglate	67883-79-8
cis-3-hexenyl valerate	35852-46-1
trans-2-hexenyl valerate	56922-74-8
hexyl 2-ethylbutyrate	
hexyl 2-furoate	39251-86-0
hexyl 2-methylbutyrate	10032-15-2
hexyl 2-methylpentanoate	
2-hexyl acetate	5953-49-1
hexyl acetate	142-92-7
hexyl benzoate	6789-88-4
hexyl butyrate	2639-63-6
hexyl cinnamate	3488-00-4
hexyl 2-butenoate	1617-25-0
19089-92-0	
hexyl decanoate	10448-26-7
hexyl formate	629-33-4
hexyl heptanoate	1119-06-8
hexyl hexanoate	6378-65-0
hexyl isobutyrate	2349-07-7
hexyl 4-methylpentanoate	
hexyl isovalerate	10032-13-0
hexyl lactate	20279-51-0
hexyl levulinate	
hexyl nonanoate	6561-39-3
hexyl octanoate	1117-55-1
hexyl phenylacetate	5421-17-0
hexyl pivalate	5434-57-1
hexyl propionate	2445-76-3
hexyl salicylate	6259-76-3
hexyl sorbate	
hexyl tiglate	16930-96-4
hexyl *trans*-2-hexenoate	33855-57-1
hexyl valerate	1117-59-5
2-phenylpropyl butyrate	80866-83-7
2,2-dimethyl-1,3-dioxan-5-yl 5-hydroxydecanoate	
3-hydroxy-2-butyl 2-methylbutyrate	
3-hydroxy-2-butyl butyrate	59517-17-8
4-hydroxybenzyl acetate	
hydroxycitronellyl acetate	
isoamyl acetoacetate	2308-18-1
isoamyl 2-butenoate	25415-77-4
isoamyl 2-furoate	615-12-3
isoamyl 2-methylbutyrate	27625-35-0
isoamyl 2-methylpentanoate	
isoamyl 3-methylpentanoate	
isoamyl anthranilate	
isoamyl benzoate	94-46-2
isoamyl cinnamate	7779-65-9
isoamyl decanoate	2306-91-4
isoamyl heptanoate	109-25-1
isoamyl hexanoate	2198-61-0
isoamyl isobutyrate	2050-01-3
isoamyl lactate	19329-89-6
isoamyl laurate	6309-51-9
isoamyl levulinate	71172-75-3
isoamyl myristate	62488-24-8
isoamyl nonanoate	7779-70-6

isoamyl octanoate	2035-99-6
isoamyl palmitate	81974-61-0
isoamyl pyruvate	7779-72-8
isoamyl salicylate	87-20-7
isoamyl sorbate	
isoamyl tiglate	41519-18-0
isoamyl undecanoate	
isoamyl undecenoate	12262-03-2
isoamyl valerate	2050-09-1
isobornyl acetate	125-12-2
isobornyl butyrate	58479-55-3
isobornyl formate	1200-67-5
isobornyl isovalerate	7779-73-9
isobornyl propionate	2756-56-1
isobutyl 2-methylbutyrate	2445-67-2
isobutyl 2-methylpentanoate	
isobutyl 3-(methylthio)butyrate	127931-21-9
isobutyl 4-decenoate	106450-11-7
isobutyl acetate	110-19-0
isobutyl acetoacetate	7779-75-1
isobutyl angelate	7779-81-9
isobutyl anthranilate	7779-77-3
isobutyl benzoate	120-50-3
isobutyl butyrate	539-90-2
isobutyl cinnamate	122-67-8
isobutyl 2-butenoate	589-66-2
isobutyl decanoate	30673-38-2
isobutyl formate	542-55-2
isobutyl 3-(2-furyl)propionate	105-01-1
isobutyl heptanoate	7779-80-8
isobutyl hexanoate	105-79-3
isobutyl isobutyrate	97-85-8
isobutyl isovalerate	589-59-3
isobutyl lactate	585-24-0
isobutyl laurate	37811-72-6
isobutyl levulinate	3757-32-2
isobutyl myristate	25263-97-2
isobutyl *N*-methylanthranilate	65505-24-0
isobutyl nonanoate	30982-03-7
isobutyl octanoate	5461-06-3
isobutyl palmitate	110-34-9
isobutyl phenoxyacetate	5432-66-6
isobutyl pivalate	5129-38-4
isobutyl propionate	540-42-1
isobutyl pyruvate	13051-48-4
isobutyl salicylate	87-19-4
isobutyl stearate	646-13-9
isobutyl tiglate	61692-84-0
isobutyl *trans*-3-hexenoate	
isobutyl 10-undecenoate	5421-27-2
isobutyl valerate	10588-10-0
isodecyl acetate	69103-24-8 68478-36-4
isoeugenyl acetate	93-29-8
isoeugenyl formate	7774-96-1
isoeugenyl phenylacetate	120-24-1
isoheptyl butyrate	
4-methylpentyl benzoate	
4-methylpentyl 4-methylpentanoate	

3,3,5-trimethylhexyl acetate	61836-75-7
isoamyl 3-(methylthio)propionate	93762-35-7
isopropyl 2-methylbutyrate	66576-71-4
isopropyl acetate	108-21-4
isopropyl acetoacetate	542-08-5
isopropyl benzoate	939-48-0
isopropyl butyrate	638-11-9
isopropyl cinnamate	7780-06-5
isopropyl 2-butenoate	6284-46-4 18060-77-0
isopropyl decanoate	2311-59-3
isopropyl formate	625-55-8
isopropyl heptanoate	34997-46-1
isopropyl hexanoate	2311-46-8
isopropyl isobutyrate	617-50-5
isopropyl isovalerate	32665-23-9
isopropyl lactate	617-51-6
isopropyl laurate	10233-13-3
isopropyl levulinate	21884-26-4
isopropyl *N*-methylanthranilate	
isopropyl myristate	110-27-0
isopropyl nonanoate	28267-32-5
isopropyl octanoate	5458-59-3
isopropyl palmitate	142-91-6
isopropyl phenylacetate	4861-85-2
isopropyl propionate	637-78-5
isopropyl sorbate	44987-75-9
isopropyl tiglate	1733-25-1
isopropyl valerate	18362-97-5
4-isopropylcyclohexyl acetate	15876-32-1
isopulegyl acetate	89-49-6 57576-09-7
3-oxobutane-2,2-diyl dibutyrate	71808-61-2
dodecyl acetate	112-66-3
lavandulyl acetate	25905-14-0
1,8(10)-*p*-menthadien-9-yl acetate	15111-97-4
linalool oxide acetate (furanoid)	56469-39-7
linalyl acetate epoxide	
linalyl anthranilate	7149-26-0
linalyl benzoate	126-64-7
linalyl butyrate	78-36-4
linalyl cinnamate	78-37-5
linalyl formate	115-99-1
linalyl hexanoate	7779-23-9
linalyl isobutyrate	78-35-3
linalyl isovalerate	1118-27-0
linalyl octanoate	10024-64-3
linalyl phenylacetate	7143-69-3
linalyl propionate	144-39-8
maltol butyrate	67860-01-9
maltol isobutyrate	65416-14-0
maltol propionate	68555-63-5
p-menthan-8-yl acetate	58985-18-5 80-25-1
l-menthyl 2-methylbutyrate	53004-93-6
menthyl 3-hydroxybutyrate	108766-16-1
menthyl acetate	89-48-5 29066-34-0 16409-45-3

	2623-23-6
l-menthyl butyrate	6070-14-0
l-menthyl 2-butenoate	
l-menthyl ethoxyacetate	579-94-2
menthyl formate	2230-90-2 61949-23-3
menthyl hexanoate	6070-16-2
l-menthyl isobutyrate	68366-65-4
menthyl isovalerate	16409-46-4
l-menthyl lactate	59259-38-0
l-menthyl phenylacetate	26171-78-8
l-menthyl propionate	4951-48-8
menthyl salicylate	89-46-3
l-menthyl tiglate	
menthyl valerate	64129-94-8
3-mercapto-3-methylbutyl formate	50746-10-6
3-mercaptohexyl acetate	136954-20-6
S-methyl ethanethioate	1534-08-3
3-(methylthio)propyl phenylacetate	
3-(methylthio)propyl mercaptoacetate	
2-methoxyethyl acetoacetate	22502-03-0
S-methyl 2-acetoxypropanethioate	74586-09-7
methyl (methylthio)acetate	16630-66-3
methyl 10-undecenoate	111-81-9
methyl 2-(methylthio)butyrate	51534-66-8
S-methyl 2-(propionyloxy)propanethioate	
methyl 2,4-decadienoate	4493-42-9 7328-33-8
methyl 2-decenoate	2482-39-5 7367-85-3
methyl 2-ethylbutyrate	816-11-5
methyl 2-furoate	611-13-2
methyl 2-hexenoate	2396-77-2
methyl 2-hydroxy-4-methylpentanoate	40348-72-9
methyl 2-methoxybenzoate	606-45-1
methyl 2-methylbutyrate	868-57-5
methyl 2-methylpentanoate	2177-77-7
methyl 2-octenoate	2396-85-2
methyl pyruvate	600-22-6
S-methyl 2-thiofuroate	13679-61-3
methyl 3-(furfurylthio)propionate	94278-26-9
methyl 3-(methylthio)propionate	13532-18-8
methyl 3-acetoxy-2-methylbutyrate	139564-42-4
methyl 3-acetoxybutyrate	89422-42-4
methyl 3-acetoxyhexanoate	77118-93-5 21188-60-3
methyl 3-acetoxyoctanoate	35234-21-0
methyl 3-hexenoate	2396-78-3 13894-61-6
methyl 3-hydroxybutyrate	1487-49-6
methyl 3-hydroxyhexanoate	21188-58-9
methyl 3-mercapto-2-methylpropionate	4131-76-4
methyl beta-methyl-beta-phenylglycidate	
methyl 3-nonenoate	13481-87-3
methyl 3-octenoate	74023-04-4 35234-16-3
methyl 3-oxohexanoate	30414-54-1
methyl 3-phenylpropionate	103-25-3
methyl 4-(methylthio)butyrate	53053-51-3

methyl 4-decenoate	7367-83-1
methyl 4-hydroxybenzoate	99-76-3
methyl 4-methylpentanoate	2412-80-8
methyl 5-acetoxydecanoate	
methyl 5-acetoxydodecanoate	
methyl 5-acetoxyhexanoate	35234-22-1
methyl 5-formyloxydodecanoate	
methyl 5-hydroxydecanoate	101853-47-8
methyl 5-oxododecanoate	
methyl acetate	79-20-9
methyl acetoacetate	105-45-3
methyl acrylate	96-33-3
methyl 4-methoxybenzoate	121-98-2
methyl benzoate	93-58-3
methyl beta-(4-methylphenyl)glycidate	99334-18-6
methyl beta-phenylglycidate	37161-74-3
S-methyl butanethioate	2432-51-1
methyl butyrate	623-42-7
methyl *cis*-4-octenoate	21063-71-8
methyl citronellate	2270-60-2
methyl 2-butenoate	623-43-8 18707-60-3
methyl cyclohexylcarboxylate	4630-82-4
methyl decanoate	110-42-9
methyl 5-acetoxyoctanoate	
methyl (3-oxo-2-pentylcyclopentyl)acetate	24851-98-7 2630-39-9
methyl formate	107-31-3
methyl geranate	1189-09-9
methyl hydroxyacetate	96-35-5
methyl heptanoate	106-73-0
methyl hexanoate	106-70-7
methyl isobutyrate	547-63-7
6-methyl-2-heptyl acetate	67952-57-2
methyl isovalerate	556-24-1
methyl [3-oxo-2-(2-pentenyl)cyclopentyl]acetate	1211-29-6 42536-97-0 39924-52-2
methyl lactate	547-64-8
methyl laurate	111-82-0
methyl levulinate	624-45-3
methyl linoleate oxide	90459-45-3
methyl linoleate	112-63-0
methyl linolenate	301-00-8
methyl methacrylate	80-62-6
methyl methanethiosulfonate	2949-92-0
methyl beta-methyl-beta-(4-methylphenyl)glycidate	
methyl myristate	124-10-7
methyl *N,N*-dimethylanthranilate	10072-05-6
methyl *N*-acetylanthranilate	2719-08-6
methyl *N*-ethylanthranilate	17318-49-9
methyl *N*-formylanthranilate	41270-80-8
methyl nicotinate	93-60-7
methyl nonanoate	1731-84-6
methyl 2-nonenoate	111-79-5
methyl *N*-phenylacetylanthranilate	
methyl octanoate	111-11-5
methyl 2-nonynoate	111-80-8
methyl oleate	112-62-9

methyl palmitate	112-39-0
methyl pentadecanoate	7132-64-1
methyl phenylacetate	101-41-7
methyl pivalate	598-98-1
methyl 4-methylbenzoate	99-75-2
methyl propionate	554-12-1
methyl *N*-propionylanthranilate	25628-84-6
methyl 4-*tert*-butylphenylacetate	3549-23-3
methyl sorbate	689-89-4
methyl stearate	112-61-8
methyl 2-mercaptoacetate	2365-48-2
S-methyl hexanethioate	2432-77-1
S-methyl isobutanethioate	42075-42-3
S-methyl 3-methylbutanethioate	23747-45-7
methyl tiglate	6622-76-0
methyl *trans*-2-octenoate	7367-81-9
methyl tridecanoate	1731-88-0
methyl undecanoate	1731-86-8
methyl 9-undecenoate	5760-50-9
methyl valerate	624-24-8
methyl vanillate	3943-74-6
2-methyl-2-butenyl acetate	19248-94-3
33425-30-8	
3-methyl-2-butyl butyrate	
3-methyl-3-butenyl acetate	5205-07-2
3-methyl-3-butenyl butyrate	
5-methyl-3-butyltetrahydropyran-4-yl acetate	38285-49-3
2-methyl-2-propenyl 2-methylpentanoate	
2-methyl-2-propenyl butyrate	7149-29-3
2-methyl-2-propenyl hexanoate	
2-methyl-2-propenyl isobutyrate	816-73-9
2-methyl-2-propenyl propionate	20720-12-1
2-methylbenzyl acetate	17373-93-2
4-methylbenzyl acetate	2216-45-7
4-methylbenzyl butyrate	
2-methylbutyl 2-methylbutyrate	2445-78-5
2-methylbutyl acetate	624-41-9
2-methylbutyl benzoate	52513-03-8
2-methylbutyl butyrate	51115-64-1
2-methylbutyl cinnamate	4654-29-9
2-methylbutyl formate	35073-27-9
2-methylbutyl heptanoate	
2-methylbutyl hexanoate	2601-13-0
2-methylbutyl isobutyrate	2445-69-4
2-methylbutyl isovalerate	2445-77-4
2-methylbutyl lactate	638-33-5
2-methylbutyl phenylacetate	61889-11-0
2-methylbutyl propionate	2438-20-2
2-methylbutyl salicylate	51115-63-0
2-methylbutyl valerate	55590-83-5
3-methylcyclohexyl acetate	
methyl 2-octynoate	111-12-6
5-methylhexyl acetate	
2-methylpentyl 2-methylpentanoate	90397-38-9
2-methylpentyl butyrate	
4-methylpentyl isovalerate	850309-45-4
2-(methylthio)ethyl acetate	5862-47-5
3-(methylthio)hexyl acetate	51755-85-2
3-(methylthio)propyl acetate	16630-55-0

3-(methylthio)propyl butyrate	16630-60-7
mono-menthyl succinate	77341-67-4
myrcenyl acetate	1118-39-4
myrcenyl propionate	
myrtenyl acetate	1079-01-2
myrtenyl formate	72928-52-0
neodihydrocarvyl acetate	56422-50-5
neomenthyl acetate	2230-87-7
nerolidyl acetate	2306-78-7 56001-43-5
nerolidyl isobutyrate	2639-68-1
neryl acetate	141-12-8
neryl butyrate	999-40-6
neryl 2-butenoate	
neryl formate	2142-94-1
neryl isobutyrate	2345-24-6
neryl isovalerate	3915-83-1
neryl phenylacetate	
neryl propionate	105-91-9
neryl tiglate	
trans,cis-2,6-nonadienyl acetate	68555-65-7
1,3-nonanediol acetate	1322-17-4
cis-6-nonenyl acetate	76238-22-7
6-nonenyl butyrate	
6-nonenyl isovalerate	
6-nonenyl propionate	
nonyl acetate	143-13-5
nonyl butyrate	2639-64-7
nonyl formate	94247-15-1
nonyl hexanoate	
nonyl isobutyrate	
nonyl isovalerate	7786-47-2
nonyl octanoate	7786-48-3
nonyl pivalate	
nonyl propionate	53184-67-1
nopyl acetate	128-51-8
octadecyl acetate	822-23-1
trans,trans-3,5-octadienyl acetate	85722-81-2
1-octen-3-yl acetate	2442-10-6
1-octen-3-yl butyrate	16491-54-6
1-octen-3-yl isobutyrate	93940-61-5
trans-2-octenyl butyrate	84642-60-4
octyl 2-furoate	39251-88-2
octyl 2-methylbutyrate	29811-50-5
3-octyl 2-methylbutyrate	
2-octyl acetate	2051-50-5
3-octyl acetate	4864-61-3
octyl acetate	112-14-1
octyl acetoacetate	16436-00-3
octyl butyrate	110-39-4
3-octyl butyrate	20286-45-7
octyl 2-butenoate	22874-79-9
octyl decanoate	2306-92-5
octyl formate	112-32-3
3-octyl formate	84434-65-1
octyl heptanoate	5132-75-2
octyl hexanoate	4887-30-3
octyl isobutyrate	109-15-9
octyl isovalerate	7786-58-5

octyl nonanoate	5303-26-4
octyl octanoate	2306-88-9
octyl phenylacetate	122-45-2
octyl pivalate	27751-88-8
octyl propionate	142-60-9
cis-9-octadecenyl acetate	693-80-1
acetoin butyrate	84642-61-5
2-oxopropyl acetate	592-20-1
2-pentyl acetate	626-38-0
2-pentyl butyrate	60415-61-4
perillyl acetate	15111-96-3
phenethyl 2-ethylhexanoate	
phenethyl 2-furoate	7149-32-8
phenethyl 2-methylbutyrate	24817-51-4
phenethyl anthranilate	133-18-6
phenethyl benzoate	94-47-3
phenethyl butyrate	103-52-6
phenethyl cinnamate	103-53-7
phenethyl 2-butenoate	68141-20-8
phenethyl decanoate	61810-55-7
phenethyl formate	104-62-1
phenethyl heptanoate	5454-11-5
phenethyl hexanoate	6290-37-5
phenethyl isobutyrate	103-48-0
phenethyl isovalerate	140-26-1
phenethyl lactate	10138-63-3
phenethyl nonanoate	57943-67-6
phenethyl octanoate	5457-70-5
phenethyl phenylacetate	102-20-5
phenethyl pivalate	67662-96-8
phenethyl propionate	122-70-3
phenethyl salicylate	87-22-9
phenethyl 3-methyl-2-butenoate	42078-65-9
phenethyl tiglate	55719-85-2
phenethyl valerate	7460-74-4
2-phenoxyethyl acetate	6192-44-5
2-phenoxyethyl butyrate	23511-70-8
2-phenoxyethyl isobutyrate	103-60-6
2-phenoxyethyl propionate	23495-12-7
phenyl acetate	122-79-2
phenyl butyrate	4346-18-3
phenyl isobutyrate	20279-29-2
phenyl propionate	637-27-4
phenyl salicylate	118-55-8
2-phenylphenyl acetate	
3-phenylpropyl acetate	122-72-5
3-phenylpropyl benzoate	60045-26-3
3-phenylpropyl butyrate	7402-29-1
3-phenylpropyl cinnamate	122-68-9
phenylpropyl decanoate	
3-phenylpropyl formate	104-64-3
3-phenylpropyl hexanoate	6281-40-9
2-phenylpropyl isobutyrate	65813-53-8
3-phenylpropyl isobutyrate	103-58-2
3-phenylpropyl isovalerate	5452-07-3
3-phenylpropyl propionate	122-74-7
3-phenylpropyl salicylate	24781-13-3
3-phenylpropyl valerate	5451-88-7
phytyl acetate	10236-16-5

2(10)-pinen-3-yl isobutyrate	
piperonyl acetate	326-61-4
piperonyl isobutyrate	5461-08-5
3-methyl-2-butenyl acetate	1191-16-8
3-methyl-2-butenyl benzoate	5205-11-8
propyl 2-(2-cyclopentenyl)-4-pentenoate	172450-04-3
propyl 2,4-decadienoate	28316-62-3 84788-08-9
propyl 2-cyclopentenylacetate	
propyl 2-furoate	615-10-1
propyl 2-methylbutyrate	37064-20-3
propyl acetate	109-60-4
propyl acetoacetate	1779-60-8
propyl benzoate	2315-68-6
propyl butyrate	105-66-8
propyl cinnamate	7778-83-8
propyl 2-butenoate	10352-87-1
propyl cyclohexylpropionate	
propyl decanoate	30673-60-0
propyl laurate	3681-78-5
propyl formate	110-74-7
propyl heptanoate	7778-87-2
propyl palmitate	2239-78-3
propyl hexanoate	626-77-7
propyl isobutyrate	644-49-5
propyl 4-methylpentanoate	25415-68-3
propyl isovalerate	557-00-6
propyl lactate	616-09-1
propyl levulinate	645-67-0
propyl nonanoate	6513-03-7
propyl octanoate	624-13-5
propyl phenylacetate	4606-15-9
propyl 4-hydroxybenzoate	94-13-3
propyl pivalate	
propyl propionate	106-36-5
propyl pyruvate	
propyl sorbate	10297-72-0
S-propyl ethanethioate	2307-10-0
propyl tiglate	61692-83-9
propyl valerate	141-06-0
propyleneglycol diacetate	623-84-7
propyleneglycol dibutyrate	50980-84-2
propyleneglycol dihexanoate	
propyleneglycol dioctanoate	7384-98-7
propyleneglycol dipropionate	10108-80-2
propyleneglycol mono and dilactate	
propyleneglycol mono-2-methylbutyrate	
propyleneglycol monobutyrate	29592-95-8
propyleneglycol monohexanoate	29592-92-5
propyleneglycol monopropionate	25496-75-7
rhodinyl acetate	141-11-7
rhodinyl butyrate	141-15-1
rhodinyl formate	141-09-3
rhodinyl isobutyrate	138-23-8
rhodinyl isovalerate	7778-96-3
rhodinyl phenylacetate	10486-14-3
rhodinyl propionate	105-89-5
S-(2-methylphenyl) ethanethioate	
sabinene hydrate acetate	

santalyl acetate	1323-00-8
santalyl phenylacetate	1323-75-7
S-methyl benzenethioate	5925-68-8
styralyl acetate	93-92-5
styralyl butyrate	3460-44-4
styralyl formate	7775-38-4
styralyl hexanoate	
styralyl isobutyrate	7775-39-5
styralyl isovalerate	56961-73-0
styralyl propionate	120-45-6
2-(4-methyl-5-thiazolyl)ethyl acetate	656-53-1
2-(4-methyl-5-thiazolyl)ethyl butyrate	94159-31-6
2-(4-methyl-5-thiazolyl)ethyl decanoate	101426-31-7
2-(4-methyl-5-thiazolyl)ethyl formate	90731-56-9
2-(4-methyl-5-thiazolyl)ethyl heptanoate	
2-(4-methyl-5-thiazolyl)ethyl hexanoate	94159-32-7
2-(4-methyl-5-thiazolyl)ethyl isobutyrate	324742-95-2
2-(4-methyl-5-thiazolyl)ethyl isovalerate	
2-(4-methyl-5-thiazolyl)ethyl octanoate	163266-17-9
2-(4-methyl-5-thiazolyl)ethyl propionate	324742-96-3
alpha-terpinyl acetate	80-26-2
terpinyl butyrate	2153-28-8
terpinyl cinnamate	10024-56-3
alpha-terpinyl formate	2153-26-6
4-terpinyl formate	
terpinyl isobutyrate	7774-65-4
terpinyl isovalerate	1142-85-4
terpinyl propionate	80-27-3
tert-amyl acetate	
tert-butyl propionate	20487-40-5
tetradecyl butyrate	
tetrahydrocuminyl acetate	
tetrahydrofurfuryl 2-mercaptopropionate	99253-91-5
tetrahydrofurfuryl acetate	637-64-9
tetrahydrofurfuryl butyrate	2217-33-6
tetrahydrofurfuryl cinnamate	65505-25-1
tetrahydrofurfuryl propionate	637-65-0
tetrahydrofurfuryl phenylacetate	5421-00-1
3,7-dimethyloctyl acetate	20780-49-8
3,7-dimethyloctyl formate	68214-06-2
4-methylphenyl acetate	140-39-6
4-methylphenyl isovalerate	55066-56-3
4-methylphenyl octanoate	59558-23-5
tributyl citrate	77-94-1
hexahydro-4,7-methanoinden-(5or6)-yl acetate	2500-83-6
5413-60-5	
hexahydro-4,7-methanoinden-(5or6)-yl propionate	17511-60-3
triethyl citrate	77-93-0
3,3,5-trimethylcyclohexyl acetate	67859-96-5
3,3,5-trimethylcyclohexyl butyrate	94200-12-1
3,3,5-trimethylcyclohexyl levulinate	
3,3,5-trimethylcyclohexyl propionate	
3,3,5-trimethylcyclohexyl salicylate	118-56-9
3,5,5-trimethylhexyl acetate	58430-94-7
3,5,5-trimethylhexyl formate	67355-38-8
3,5,5-trimethylhexyl isovalerate	
3,5,5-trimethylhexyl propionate	
10-undecenyl acetate	112-19-6
10-undecenyl butyrate	

undecyl acetate	1731-81-3
undecyl butyrate	5461-02-9
vanillin isobutyrate	20665-85-4
verbenyl acetate	33522-69-9
vetiveryl acetate	117-98-6 62563-80-8
isopropylideneglyceryl 5-hydroxydecanoate	172201-58-0
1(7),8-*p*-menthadien-2-yl acetate	71660-03-2
1,6-epoxycarvyl acetate	
3,7-dimethyl-1,6-nonadien-3-yl acetate	61931-80-4
1,8-*p*-menthadien-4-yl acetate	
2-methyl-1-phenyl-2-butyl acetate	
1-hexen-3-yl acetate	35926-04-6
1-hexen-3-yl butyrate	
1-hexen-3-yl hexanoate	
1-hexen-3-yl isobutyrate	
1-hexen-3-yl propionate	358366-27-5
2,4-hexadienyl butyrate	16930-93-1
2,4-hexadienyl isobutyrate	16491-24-0
2-ethylbutyl 2-cyclopentenylacetate	94278-39-4
2-ethylhexyl salicylate	118-60-5
2-hydroxypropyl phenylacetate	80550-09-0
2-hydroxypropyl valerate	59569-67-4
cyclotene acetate	1196-22-1
2-pentyl benzoate	
2-phenoxyethyl benzoate	
2-*tert*-butylcyclohexyl acetate	88-41-5
3-mercaptohexyl butyrate	136954-21-7
3-mercaptohexyl hexanoate	136954-22-8
5-hexenyl butyrate	108058-75-9
5-hexenyl hexanoate	108058-81-7
5-hexenyl isobutyrate	155514-56-0
5-hexenyl propionate	
5-methyl-2-furfuryl acetate	18091-24-2
5-methylhexyl isobutyrate	
dihydroperillyl acetate	
8-ocimenyl acetate	
8-*p*-menthen-7-yl acetate	56345-05-2
8-*p*-menthen-7-yl butyrate	
allyl cyclohexyloxyacetate	68901-15-5
allyl 3-(methylthio)propionate	
allyl benzoate	583-04-0
allyl 4-*tert*-butylphenylacetate	
alpha-campholene acetate	36789-59-0
ethyl 2-pentylacetoacetate	24317-94-0
benzyl anthranilate	82185-41-9
beta-ionyl acetate	22030-19-9
butyl 2-(acetylthio)propionate	
butyl 2-(butyrylthio)propionate	
butyl 2-(isobutyrylthio)propionate	
butyl 2-(propionylthio)propionate	
butyl 2-mercaptopropionate	7529-07-9
butyl 2-methylpentanoate	6297-41-2
butyl 3-ethylheptanoate	
butyl 5-decenoate	111044-74-7
butyl 5-octenoate	108058-79-3
butyl 4-*tert*-butylphenylacetate	
butyl vanillate	5348-74-3
carvyl octanoate	

cinnamyl myristate	
cis-3-hexenyl 4-pentenoate	
cis-3-hexenyl 4-*tert*-butylphenylacetate	
cis-4-hexenyl acetate	42125-17-7
cyclododecyl acetate	6221-92-7
cyclododecyl propionate	
cyclopentyl acetate	933-05-1
decyl 4-methylpentanoate	
diethyl diethylmalonate	77-25-8
2,6-dimethyl-7-octen-2-yl acetate	53767-93-4
2-methyl-1-phenyl-2-propyl hexanoate	891781-90-1
2-methyl-1-phenyl-2-propyl valerate	
dodecyl formate	28303-42-6
ethyl 2-(acetylthio)propionate	129975-20-8
ethyl 2-(butyrylthio)propionate	
ethyl 2-(hexanoylthio)propionate	
ethyl 2-(isobutyrylthio)propionate	
ethyl 2-(propionylthio)propionate	
ethyl 2,5-dimethyl-3-oxo-4(2*H*)-furyl carbonate	39156-54-2
ethyl 3-ethylheptanoate	
ethyl 4-pentenoate	1968-40-7
ethyl acetoacetate diethyl acetal	
ethyl *cis*-4,7-octadienoate	69925-33-3
ethyl cyclohexylacetate	5452-75-5
ethyl 3-(2-furyl)acrylate	623-20-1
ethyl isonicotinate	1570-45-2
ethyl methacrylate	97-63-2
ethyl *N*-acetylanthranilate	
ethyl 4-*tert*-butylphenylacetate	14062-22-7
5,9-dimethyl-*trans*-4,8-decadien-2-yl acetate	
hexadecyl lactate	35274-05-6
isobutyl *trans*-2-hexenoate	
isopropyl 4-pentenoate	
isopropyl 4-methylpentanoate	25415-69-4
isopropyl salicylate	607-85-2
l-menthyl (1or2)-propyleneglycoyl carbonate	30304-82-6
l-menthyl 2-hydroxyethyl carbonate	156324-78-6
l-menthyl valerate	89-47-4
menthyl decanoate	94020-93-6
menthyl octanoate	93940-59-1
menthyl palmitate	96097-19-7
menthyl stearate	93919-01-8
methyl 2-(acetylthio)propionate	
methyl 2-(butyrylthio)propionate	
methyl 2-(hexanoylthio)propionate	
methyl 2-(isobutyrylthio)propionate	
methyl 2-(propionylthio)propionate	
methyl 2-ethylhexanoate	816-19-3
methyl 2-ethyloctanoate	16493-48-4
methyl 2-mercaptopropionate	53907-46-3
methyl 3-ethylheptanoate	64226-53-5
methyl 3-oxooctanoate	22348-95-4
methyl beta-(4-methylphenethyl)glycidate	
methyl 4-pentenoate	818-57-5
hydroxycitronellal methyl anthranilate	89-43-0
methyl *N*-butylanthranilate	
methyl *trans*-4-decenoate	
monomenthyl glutarate	220621-22-7
octyl benzoate	94-50-8

octyl 4-methylpentanoate	29289-91-6
octyl salicylate	6969-49-9
2-methylphenyl isobutyrate	36438-54-7
4-methylphenyl benzoate	614-34-6
4-methylphenyl heptanoate	71662-19-6
perillyl butyrate	
perillyl isobutyrate	
phenethyl *N*-methylanthranilate	
phenyl benzoate	93-99-2
phenyl valerate	20115-23-5
styralyl anthranilate	
propyl 2-(acetylthio)propionate	
propyl 2-(butyrylthio)propionate	
propyl 2-(isobutyrylthio)propionate	
propyl 2-(propionylthio)propionate	
propyl 2-mercaptopropionate	19788-50-2
propyl 3-(2-furyl)acrylate	623-22-3
propyl 3-ethylheptanoate	
propyl myristate	14303-70-9
propyl 4-*tert*-butylphenylacetate	
propyl *trans*-2-hexenoate	10380-79-7
propyleneglycol diisobutyrate	
propyleneglycol monoacetate	1331-12-0
S-(2,5-dimethyl-3-furyl) 2-thiofuroate	
S-ethyl butanethioate	20807-99-2
S-ethyl pentanethioate	2432-92-0
S-ethyl propanethioate	2432-42-0
methyl 2-(furfurylthio)acetate	108499-33-8
S-methyl 2-methylbutanethioate	42075-45-6
S-methyl cinnamthioate	15081-18-2
S-methyl decanethioate	1680-29-1
S-methyl octanethioate	2432-83-9
S-methyl pentanethioate	42075-43-4
S-methyl propanethioate	5925-75-7
S-[2-(4-methyl-5-thiazolyl)ethyl] propanethioate	
tert-butyl acetoacetate	1694-31-1
beta-caryophyllene butyrate	
beta-caryophyllene isobutyrate	
dibutyl adipate	105-99-7
dioctyl adipate	123-79-5
elemyl acetate	60031-93-8
ethyl 1-oxaspiro[2.5]octane-2-carboxylate	
methyl 3-furfuryl-2-mercaptopropionate	
pinocarvyl isobutyrate	929116-08-5
1-hydroxy-8-*p*-menthen-2-yl acetate	

65*	**Ethers**
Name	CAS No.
acetaldehyde 2,3-butanediol acetal	3299-32-9
acetaldehyde amyl butyl acetal	
acetaldehyde amyl hexyl acetal	
acetaldehyde amyl methyl acetal	73142-32-2
acetaldehyde benzyl ethyl acetal	66222-24-0
acetaldehyde benzyl hexyl acetal	
acetaldehyde benzyl 2-methoxyethyl acetal	7492-39-9
acetaldehyde butyl ethyl acetal	57006-87-8
acetaldehyde butyl hexyl acetal	

acetaldehyde butyl methyl acetal	75677-94-0
acetaldehyde butyl phenethyl acetal	64577-91-9
acetaldehyde bis(2-methylbutyl) acetal	13535-43-8
acetaldehyde diamyl acetal	13002-08-9
acetaldehyde dibenzyl acetal	23556-90-3
acetaldehyde dibutyl acetal	871-22-7
acetaldehyde di-*cis*-3-hexenyl acetal	63449-64-9
acetaldehyde diethyl acetal	105-57-7
acetaldehyde dihexyl acetal	5405-58-3
acetaldehyde diisoamyl acetal	13002-09-0
acetaldehyde diisobutyl acetal	5669-09-0
acetaldehyde diisopropyl acetal	4285-59-0
acetaldehyde dimethyl acetal	534-15-6
acetaldehyde dipropyl acetal	105-82-8
acetaldehyde ethyl 3-hexenyl acetal	28069-74-1
acetaldehyde amyl ethyl acetal	13442-89-2
acetaldehyde ethyl hexyl acetal	54484-73-0
acetaldehyde ethyl isoamyl acetal	13442-90-5
acetaldehyde ethyl linalyl acetal	40910-49-4
acetaldehyde ethyl phenethyl acetal	2556-10-7
acetaldehyde ethyl *trans*-2-hexenyl acetal	
acetaldehyde ethyl vanillin acetal	
acetaldehyde glyceryl acetal	3674-21-3
acetaldehyde hexyl isoamyl acetal	233665-90-2
acetaldehyde isoamyl isobutyl acetal	75048-15-6
acetaldehyde phenethyl propyl acetal	7493-57-4
acetaldehyde propyleneglycol acetal	3390-12-3
acetoin dimethyl acetal	
acetoin propyleneglycol acetal	94089-23-3
acetone propyleneglycol acetal	1193-11-9
acetophenone diethyl acetal	
acetophenone propyleneglycol acetal	
4-acetoxy-3-pentyltetrahydropyran	18871-14-2
2-propenal diethyl acetal	3054-95-3
dodecahydro-3a,6,6,9a-tetramethylnaphtho[2,1-*b*]furan	6790-58-5 3738-00-9
amyl benzyl ether	6382-14-5
alpha-amylcinnamaldehyde diethyl acetal	60763-41-9
alpha-amylcinnamaldehyde dimethyl acetal	91-87-2
anisaldehyde diethyl acetal	2403-58-9
anisaldehyde dimethyl acetal	2186-92-7
anisaldehyde hexyleneglycol acetal	
anisaldehyde propyleneglycol acetal	6414-32-0
benzaldehyde dibutyl acetal	
benzaldehyde diethyl acetal	774-48-1
benzaldehyde diisoamyl acetal	94231-95-5
benzaldehyde dimethyl acetal	1125-88-8
benzaldehyde glyceryl acetal	1319-88-6
benzaldehyde propyleneglycol acetal	2568-25-4
benzyl butyl ether	588-67-0
benzyl ethyl ether	539-30-0
benzyl methyl ether	538-86-3
di-2-furylmethane	1197-40-6
butanal diethyl acetal	3658-95-5
sec-butyl ethyl ether	2679-87-0
2-hexanone propyleneglycol acetal	
2-*sec*-butyl-3-methoxypyrazine	24168-70-5
2-butylfuran	4466-24-4
butanal dimethyl acetal	

beta-caryophyllene oxide	1139-30-6
1,4-cineole	470-67-7
cinnamaldehyde diethyl acetal	25226-98-6 7148-78-9
cinnamaldehyde dimethyl acetal	4364-06-1
cinnamaldehyde propyleneglycol acetal	4353-01-9
citral diethyl acetal	7492-66-2
citral dimethyl acetal	7549-37-3
citral hexyleneglycol acetal	68258-94-6
citral propyleneglycol acetal	10444-50-5
citronellal diethyl acetal	71662-17-4
citronellal dimethyl acetal	923-69-3
citronellal ethyleneglycol acetal	66512-92-3
citronellal propyleneglycol acetal	74094-64-7
ethyl 4-methylphenyl ether	622-60-6
cyclohexanone diethyl acetal	1670-47-9
decanal diethyl acetal	34764-02-8
decanal dimethyl acetal	7779-41-1
decanal propyleneglycol acetal	5421-12-5
dibenzyl ether	103-50-4
2,5-diethyltetrahydrofuran	41239-48-9
difurfuryl ether	4437-22-3
diisoamyl ether	544-01-4
2-ethyl-4,5-dimethyloxazole	53833-30-0
2-isopropyl-4,5-dimethyloxazole	19519-45-0
4,5-dimethyl-2-propyloxazole	53833-32-2
2,2-dimethyl-5-(1-methyl-1-propenyl)tetrahydrofuran	7416-35-5
2,6-dimethyl-5-heptenal propyleneglycol acetal	74094-63-6
2,5-dimethylfuran	625-86-5
2,5-dimethyltetrahydrofuran	1003-38-9
dodecanal diethyl acetal	53405-98-4
dodecanal dihexyl acetal	
dodecanal dimethyl acetal	14620-52-1
7,15-epoxy-3-caryophyllene	
2-ethoxy-(3or5or6)-methylpyrazine	32737-14-7 65504-94-1 67845-34-5 53163-97-6
2-ethoxy-3-ethylpyrazine	35243-43-7
2-ethoxy-3-isopropylpyrazine	72797-16-1
2-ethylfuran	3208-16-0
ethyl geranyl ether	22882-91-3 40267-72-9
2-butanone propyleneglycol acetal	2916-28-1
2-ethyl-3-methoxypyrazine	25680-58-4
propanal propyleneglycol acetal	4359-46-0
2-ethylhexanal diethyl acetal	
formadehyde diethyl acetal	462-95-3
furfuryl methyl ether	13679-46-4
piperonal propyleneglycol acetal	61683-99-6
heptanal propyleneglycol acetal	4351-10-4
heptanal dibutyl acetal	
heptanal diethyl acetal	688-82-4
heptanal dimethyl acetal	10032-05-0
2-heptanone propyleneglycol acetal	
4-heptenal diethyl acetal	18492-65-4
2-nonanone propyleneglycol acetal	
hexanal diamyl acetal	
hexanal dibutyl acetal	93892-07-0

hexanal diethyl acetal	3658-93-3
hexanal dihexyl acetal	33673-65-3
hexanal diisoamyl acetal	93892-09-2
hexanal dimethyl acetal	1599-47-9
hexanal ethyl isoamyl acetal	
hexanal hexyl isoamyl acetal	896447-13-5
hexanal propyleneglycol acetal	1599-49-1 26563-74-6
cis-3-hexenal diethyl acetal	73545-18-3
trans-2-hexenal diethyl acetal	67746-30-9
hexenal dihexyl acetal	
trans-2-hexenal dimethyl acetal	18318-83-7
trans-2-hexenal propyleneglycol acetal	94089-21-1
hexyl methyl ether	4747-07-3
2-hexyl-3-methoxypyrazine	
2-phenylpropanal diethyl acetal	15295-60-0
2-phenylpropanal ethyleneglycol acetal	4362-22-5
2-phenylpropanal glyceryl acetal	
2-phenylpropanal dimethyl acetal	90-87-9
2-phenylpropyl methyl ether	
hydroxycitronellal dibutyl acetal	
hydroxycitronellal ethyleneglycol acetal	
hydroxycitronellal propyleneglycol acetal	
isoamyl phenethyl ether	56011-02-0
isobutanal diethyl acetal	1741-41-9
isobutanal propyleneglycol acetal	67879-60-1
2-isobutyl-3-methoxypyrazine	24683-00-9
isobutanal dimethyl acetal	
2-isopropoxy-3-methylpyrazine	94089-22-2
3-methyl-2-butanone propyleneglycol acetal	
2-isopropyl-(3or5or6)-methoxypyrazine	93905-03-4
isobutanal 2,3-butanediol acetal	
isovaleraldehyde dibutyl acetal	
isovaleraldehyde diethyl acetal	3842-03-3
isovaleraldehyde dimethyl acetal	
isovaleraldehyde dipropyl acetal	
isovaleraldehyde propyleneglycol acetal	18433-93-7
2-ethenyl-2,6,6-trimethyltetrahydropyran	7392-19-0
d-8-*p*-menthene-1,2-epoxide	
ethyl linalyl ether	72845-33-1
menthofuran	494-90-6
2-methoxy-(3or5or6)-methylpyrazine	2847-30-5 2882-21-5 68378-13-2 63450-30-6
2-methoxy-2-methylpropane	1634-04-4
2-methoxy-3,5-dimethylpyrazine	
2-isopropyl-3-methoxypyrazine	25773-40-4
methoxypyrazine	3149-28-8
methylphenyl phenyl ether	1706-12-3 3991-61-5 3586-14-9
6-methyl-5-hepten-2-one propyleneglycol acetal	68258-95-7
methyl phenethyl ether	3558-60-9
butanal propyleneglycol acetal	4352-99-2
2-methyl-6-propoxypyrazine	67845-28-7
2-methylbutanal diethyl acetal	3658-94-4
2-methylbutanal propyleneglycol acetal	
2-methylfuran	534-22-5

(4-methylphenyl)acetaldehyde propyleneglycol acetal	
2-methyltetrahydrofuran	96-47-9
2-methylundecanal diethyl acetal	
2-methylundecanal dimethyl acetal	68141-17-3
nerol oxide	1786-08-9
1-furfurylpyrrole	1438-94-4
2,6-nonadienal diethyl acetal	67674-36-6
nonanal diethyl acetal	54815-13-3
nonanal dimethyl acetal	18824-63-0
nonanal propyleneglycol acetal	68391-39-9
ocimene oxide	69103-20-4
octanal diethyl acetal	54889-48-4
octanal dimethyl acetal	10022-28-3
octanal ethyleneglycol acetal	4359-57-3
octanal propyleneglycol acetal	74094-61-4
1,3,5-trimethyl-2,4,6-trioxane	123-63-7
2-pentylfuran	3777-69-3
perillaldehyde propyleneglycol acetal	121199-28-8
phenylacetaldehyde diethyl acetal	6314-97-2
phenylacetaldehyde diisobutyl acetal	68345-22-2
phenylacetaldehyde dimethyl acetal	101-48-4
phenylacetaldehyde glyceryl acetal	29895-73-6
phenylacetaldehyde propyleneglycol acetal	5468-05-3
3-phenylpropanal dimethyl acetal	30076-98-3
2-phenylpropanal propyleneglycol acetal	67634-23-5
piperonal dimethyl acetal	59259-90-4
ethyl 3-methyl-2-butenyl ether	22094-00-4
propanal diethyl acetal	4744-08-5
propanal diisobutyl acetal	
2-propylfuran	4229-91-8
4-methyl-2-(2-methyl-1-propenyl)tetrahydropyran	16409-43-1
terpineol ethyl ether	
tetrahydrofurfuryl alcohol	97-99-4
theaspirane	36431-72-8
4-methylbenzaldehyde glyceryl acetal	1333-09-1
4-methylbenzaldehyde propyleneglycol acetal	58244-29-4
tridecanal diethyl acetal	72934-16-8
triethoxymethane	122-51-0
2,4,5-trimethyl-3-oxazoline	22694-96-8
2,2,5-trimethyl-4-hexenal dimethyl acetal	
3,5,5-trimethylhexanal diethyl acetal	
2,4,5-trimethyloxazole	20662-84-4
undecanal diethyl acetal	53405-97-3
undecanal dimethyl acetal	52517-67-6
undecanal propyleneglycol acetal	74094-62-5
10-undecenal diethyl acetal	
10-undecenal dimethyl acetal	65405-66-5
valeraldehyde dibutyl acetal	13112-65-7
valeraldehyde diethyl acetal	3658-79-5
valeraldehyde dihexyl acetal	
valeraldehyde dimethyl acetal	26450-58-8
valeraldehyde propyleneglycol acetal	74094-60-3
vitispirane	65416-59-3
(2*S*,4a*R*,8a*S*)-3,4,4a,5,6,8a-hexahydro-2,5,5,8a-tetramethyl-	
2*H*-1-benzopyran	41678-32-4
1,2-di[(1'-ethoxy)ethoxy]propane	67715-79-1
1,2-dimethoxyethane	110-71-4
1-methoxy-2-propanol	107-98-2
2-(3-phenylpropyl)tetrahydrofuran	3208-40-0

2,3-dihydrobenzofuran	496-16-2
2,4,6-trimethyl-4-phenyl-1,3-dioxane	5182-36-5
2,4-dimethyl-4-phenyltetrahydrofuran	82461-14-1
2,4-hexadienal diethyl acetal	27310-22-1
2,7-dimethyl-10-(1-methylethyl)-1-oxaspiro[4,5]deca-3,6-diene	89079-92-5
2-furfuyl-5-methylfuran	13678-51-8
2-heptylfuran	3777-71-7
2-methoxypyrrole	
2-methoxypyridine	1628-89-3
2-methylbenzofuran	4265-25-2
3-(5-methyl-2-furyl)butanal propyleneglycol acetal	
4-ethyl-2,5-dimethyloxazole	30408-61-8
4-methoxypyridine	620-08-6
4-methylbenzaldehyde diethyl acetal	2403-59-0
6-methoxyquinoline	5263-87-6
acetophenone neopentylglycol acetal	5406-58-6
2-butenal diethyl acetal	10602-34-3
cyclamen aldehyde diethyl acetal	
cyclamen aldehyde propyleneglycol acetal	
cycloionone	5552-30-7
dodecanal propyleneglycol acetal	
furan	110-00-9
hexanal 1,3-octanediol acetal	202188-46-3
hexanal 2,3-butanediol acetal	155639-75-1
hexanal diisobutyl acetal	
hexanal ethyl hexyl acetal	
hexanal butyl hexyl acetal	
hexanal butyl isoamyl acetal	
4-methyl-2-pentanone propyleneglycol acetal	
methyl myrcenyl ether	
phenylacetaldehyde ethyleneglycol acetal	101-49-5
phenylacetaldehyde hexyleneglycol acetal	67633-94-7
piperonal diethyl acetal	40527-42-2
trans-2-hexenal dibutyl acetal	
isovaleraldehyde dihexyl acetal	
alpha-pinene oxide	1686-14-2
beta-pinene oxide	6931-54-0
2-ethenyl-5-isopropenyl-2-methyltetrahydrofuran	13679-86-2

123*	Ketones
Name	CAS No.
4-methoxyacetophenone	100-06-1
acetoin	513-86-0
acetol	116-09-6
acetone	67-64-1
acetovanillone	498-02-2
2,3-hexanedione	3848-24-6
4-methyl-2,3-pentanedione	7493-58-5
5-methyl-2,3-hexanedione	13706-86-0
2,3-pentanedione	600-14-6
2-acetyl-1-methylpyrrole	932-16-1
2-acetyl-1-pyrroline	
5-acetyl-2,4-dimethylthiazole	38205-60-6
3-acetyl-2,5-dimethylfuran	10599-70-9
3-acetyl-2,5-dimethylthiophene	2530-10-1
2-acetyl-2-thiazoline	29926-41-8
2-acetyl-3,4,5,6-tetrahydropyridine	27300-27-2

2-acetyl-3,(5or6)-dimethylpyrazine	72797-17-2
2-acetyl-3,5-dimethylpyrazine	54300-08-2
2-acetyl-3-ethylpyrazine	32974-92-8
2-acetyl-3-methylpyrazine	23787-80-6
2-acetyl-4-methylthiazole	7533-07-5
2-acetyl-5-methylfuran	1193-79-9
2-acetyl-5-methylthiophene	13679-74-8
4-acetyl-6-*tert*-butyl-1,1-dimethylindane	13171-00-1
2,4-pentanedione	123-54-6
acetylcedrene	32388-55-9
2-acetylfuran	1192-62-7
acetylpyrazine	22047-25-2
2-acetylpyridine	1122-62-9
3-acetylpyridine	350-03-8
4-acetylpyridine	1122-54-9
2-acetylpyrrole	1072-83-9
2-acetylthiazole	24295-03-2
2-acetylthiophene	88-15-3
8-acetylthio-*p*-menthan-3-one	57074-34-7 94293-57-9
alpha-allylionone	79-78-7
2-aminoacetophenone	551-93-9
2-amyl-2-cyclopentenone	25564-22-1
anisylacetone	104-20-1
1-(4-methoxyphenyl)-2-propanone	122-84-9
2-hydroxy-1,2-diphenylethanone	119-53-9
benzophenone	119-61-9
1-phenyl-1,3-butanedione	93-91-4
4-methyl-1-phenyl-2-pentanone	5349-62-2
4-phenyl-3-buten-2-one	122-57-6
2-hexanone	591-78-6
2-*sec*-butylcyclohexanone	14765-30-1
3-hepten-2-one	1119-44-4
1-phenyl-1-butanone	495-40-9
d-camphor	464-49-3
camphor	76-22-2 21368-68-3 464-49-3
d-carvone	2244-16-8
l-carvone	6485-40-1
carvone	99-49-0
1,6-epoxycarvone	33204-74-9 18383-49-8
3-methyl-5-propyl-2-cyclohexenone	3720-16-9
9-cycloheptadecenone	542-46-1
cycloheptanone	502-42-1
cyclohexanone	108-94-1
cyclopentanone	120-92-3
2-cyclopentylcyclopentanone	4884-24-6
cyclotene	80-71-7
	765-70-8
alpha-damascenone	
beta-damascenone	23696-85-7
alpha-damascone	43052-87-5
beta-damascone	35044-68-9 23726-92-3 23726-91-2
delta-damascone	57378-68-4
3-decanone	928-80-3

3-decen-2-one	10519-33-2
2-dodecanone	6175-49-1
dehydronootkatone	5090-63-1
4-hydroxy-4-methyl-2-pentanone	123-42-2
diacetyl	431-03-8
1,3-diphenyl-2-propanone	102-04-5
4,5-dihydro-3(2*H*)-thiophenone	1003-04-9
2,3-dihydro-3,5-dihydroxy-6-methyl-4*H*-pyran-4-one	28564-83-2
3,4-dihydro-alpha-ionone	31499-72-6
dihydro-beta-ionone	17283-81-7
dihydrocarvone	5948-04-9 7764-50-3 5524-05-0
3-methyl-2-pentyl-2-cyclopentenone	1128-08-1
1,10-dihydronootkatone	20489-53-6
1,3-dihydroxyacetone (monomer and dimer)	96-26-4 62147-49-3
2,4-dimethyl-3-pentanone	565-80-0
3,4-dimethoxyacetophenone	1131-62-0
4-methoxy-2,5-dimethyl-3(2*H*)-furanone	4077-47-8
3,4-dimethyl-1,2-cyclopentanedione	13494-06-9 21835-00-7
3,5-dimethyl-1,2-cyclopentanedione	13494-07-0 21834-98-0
2,5-dimethyl-3(2*H*)-furanone	14400-67-0
2,4-dimethylacetophenone	89-74-7
2,6-dimethyl-4-heptanone	108-83-8
2-hydroxy-6-isopropyl-3-methyl-2-cyclohexenone	490-03-9
4-heptanone	123-19-3
2-propionylfuran	3194-15-8
3-octanone	106-68-3
3-heptanone	106-35-4
3-ethyl-2-hydroxy-2-cyclopentenone	21835-01-8
3-nonanone	925-78-0
ethyl maltol	4940-11-8
3-hexanone	589-38-8
1-penten-3-one	1629-58-9
5-ethyl-4-hydroxy-2-methyl-3(2*H*)-furanone	27538-09-6
2-ethyl-5-methyl-1,3-dioxolan-4-one	
farnesylacetone	762-29-8 1117-52-8
d-fenchone	4695-62-9
fenchone	1195-79-5 7787-20-4
4-hydroxy-2,5-dimethyl-3(2*H*)-furanone	3658-77-3
(2-furyl)-2-propanone	6975-60-6
4-(2-furyl)-3-buten-2-one	623-15-4
1-(2-furfurylthio)-2-propanone	58066-86-7
4-(furfurylthio)-4-methyl-2-pentanone	
geranyl acetone	3796-70-1
2-geranylcyclopentanone	68133-79-9
2-heptadecanone	2922-51-2
2,3-heptanedione	96-04-8
3,4-hexanedione	4437-51-8
6,10,14-trimethyl-2-pentadecanone	502-69-2
5-hexen-2-one	109-49-9
4-hexen-3-one	2497-21-4 50396-87-7
1-hexen-3-one	1629-60-3

2-hexylcyclopentanone	13074-65-2
hinokitiol	499-44-5
1-hydroxy-2-butanone	5077-67-8
4-hydroxy-2-butanone	590-90-9
2-hydroxy-2-cyclohexenone	10316-66-2
1-hydroxy-2-heptanone	17046-01-4
3-hydroxy-2-octanone	37160-77-3
2-hydroxy-3,4-dimethyl-2-cyclopentenone	21835-00-7
2-hydroxy-3-pentanone	5704-20-1
1-hydroxy-4-methyl-2-pentanone	
5-hydroxy-4-octanone	496-77-5
1-hydroxy-5-methyl-2-hexanone	
2-hydroxyacetophenone	118-93-4
3-hydroxy-2-pentanone	3142-66-3
alpha-ionone	127-41-3
beta-ionone	79-77-6 14901-07-6
alpha-irone	79-69-6
6-methyl-3-heptanone	624-42-0
2-methyl-3-(2-pentenyl)-2-cyclopentenone	11050-62-7
dl-isomenthone	491-07-6
alpha-isomethylionone	127-51-5
isophorone	78-59-1
4-isopropyl-2-cyclohexenone	500-02-7
5-isopropyl-3-nonene-2,8-dione	
5-isopropyl-8-methyl-6,8-nonadien-2-one	1937-54-8
4-isopropylacetophenone	645-13-6
isopulegone	29606-79-9
3-methyl-2-(*cis*-2-pentenyl)-2-cyclopentenone	488-10-8
3-methyl-2-(*trans*-2-pentenyl)-2-cyclopentenone	6261-18-3
4-(2-butenylidene)-3,5,5-trimethyl-2-cyclohexenone	13215-88-8
p-menthan-2-one	499-70-7 59471-80-6
menthone	89-80-5 14073-97-3 10458-14-7
3-mercapto-2-butanone	40789-98-8
3-mercapto-2-pentanone	67633-97-0
4-mercapto-4-methyl-2-pentanone	19872-52-7
4-methyl-3-penten-2-one	141-79-7
4-(4-methoxyphenyl)-3-buten-2-one	943-88-4
methyl 2-oxopropyl disulfide	122861-78-3
2-heptanone	110-43-0
1-(4-methoxyphenyl)-1-penten-3-one	104-27-8
2-butanone	78-93-3
2-nonanone	821-55-6
2-octanone	111-13-7
methylionone	1335-46-2
5-methyl-2-hexanone	110-12-3
4-methyl-2-pentanone	108-10-1
3-methyl-2-butanone	563-80-4
1-acetylnaphthalene	941-98-0
2-undecanone	112-12-9
2-decanone	693-54-9
2-pentanone	107-87-9
2-tridecanone	593-08-8
3-buten-2-one	78-94-4
3-methyl-2-cyclopentenone	2758-18-1
1-(5-methyl-2-furyl)-1,2-propanedione	1197-20-2

1-(5-methyl-2-furyl)-2-propanone	13678-74-5
6-methyl-2-heptanone	928-68-7
5-methyl-2-hepten-4-one	81925-81-7
3-methyl-2-hexanone	2550-21-2
3-methyl-2-pentanone	565-61-7
2-acetyl-(3or4)-methylthiophene	
7-methyl-3,4-dihydro-2*H*-1,5-benzodioxepin-3-one	28940-11-6
3-methyl-3-buten-2-one	814-78-8
5-methyl-3-heptanone	541-85-5
5-methyl-3-hexen-2-one	5166-53-0
alpha-methylionone	127-42-4 7779-30-8
3-methyl-1,2-cyclohexanedione	3008-43-3
3-methylcyclohexanone	591-24-2
3-methylcyclopentadecanone	541-91-3
6-methyl-3,5-heptadien-2-one	1604-28-0
6-methyl-5-hepten-2-one	110-93-0
3-methyl-2,4-nonanedione	113486-29-6
2-methyltetrahydrothiophen-3-one	13679-85-1
2-methyltetrahydrofuran-3-one	3188-00-9
2,6,6-trimethyl-1-[3-(methylthio)butyryl]cyclohexene	
4-(methylthio)-4-methyl-2-pentanone	23550-40-5
4-(methylthio)-2-butanone	34047-39-7
3-methylthio-1-(2,6,6-trimethyl-1,3-cyclohexadienyl)-	
2-buten-1-one	
8-(methylthio)-*p*-menthan-3-one	32637-94-8
3-acetylpyrrole	1072-82-8
4-nonanone	4485-09-0
3-nonen-2-one	14309-57-0
nootkatone	4674-50-4
3,5-octadien-2-one	30086-02-3
1,5-octadien-3-one	65213-86-7
3-octen-2-one	1669-44-9
1-octen-3-one	4312-99-6
2-octen-4-one	4643-27-0
4-oxoisophorone	1125-21-9
2-pentadecanone	2345-28-0
3-pentanone	96-22-0
3-penten-2-one	625-33-2
2-hexanoylfuran	14360-50-0
1-phenyl-1,2-propanedione	579-07-7
pinocamphone	547-60-4 18358-53-7
piperitenone	491-09-8
d-piperitone	6091-50-5
piperitone	89-81-6
piperonyl acetone	55418-52-5
4-hydroxyhexan-3-one	4984-85-4
1-(1-*p*-menthen-6-yl)-1-propanone	31375-17-4
2-propionylpyrrole	1073-26-3
2-propionylthiophene	13679-75-9
1-phenyl-1-propanone	93-55-0
3-(propylthio)-4-heptanone	
pulegone	89-82-7 15932-80-6
2-oxopropanal	78-98-8
raspberry ketone	5471-51-2
4-*tert*-butylcyclohexanone	98-53-3
4-*tert*-butylacetophenone	943-27-1

4-*tert*-amylcyclohexanone	16587-71-6
2-tetradecanone	2345-27-9
cis-7-tetradecen-2-one	
6,10-dimethyl-9-undecen-2-one	4433-36-7
tetramethyl ethylcyclohexenone	17369-60-7
theaspirone	19377-59-4 77841-36-2
8-mercapto-*p*-menthan-3-one	38462-22-5
12-tridecen-2-one	60437-21-0
3,5,5-trimethyl-1,2-cyclohexanedione	57696-89-6
1-(2,4,4-trimethyl-2-cyclohexenyl)-*trans*-2-buten-1-one	39872-57-6
2-hydroxy-2,6,6-trimethylcyclohexanone	7500-42-7
2,2,6-trimethylcyclohexanone	2408-37-9
3,3,5-trimethylcyclohexanone	873-94-9
2,3-undecanedione	7493-59-6
6-hydroxy-5-decanone	6540-98-3
verbenone	80-57-9
zingerone	122-48-5
1-(2-thienyl)-1,2-propanedione	13678-69-8
10-undecen-2-one	36219-73-5
2,2,6-trimethyl-1,4-cyclohexanedione	20547-99-3
2,3-octanedione	585-25-1
2,5-dimethyl-4-(1-pyrrolidinyl)-3(2*H*)-furanone	
2,5-hexanedione	110-13-4
6-ethenyl-2,2,6-trimethyltetrahydropyran-3-one	33933-72-1
2,6-dihydroxyacetophenone	699-83-2
2-acetyl-1,4,5,6-tetrahydropyridine	25343-57-1
2-acetyl-4-isopropenylpyridine	
2-cyclohexenone	930-68-7
2-hepten-4-one	4643-25-8
2-hexylidenecyclopentanone	17373-89-6
2-hydroxy-5-methylacetophenone	1450-72-2
2-methyl-3-pentanone	565-69-5
2-methyl-5-propionylfuran	10599-69-6
2-methylacetophenone	577-16-2
2-propionylthiazole	43039-98-1
3,5,5-trimethyl-1-(2-oxopropylidene)-2-cyclohexene	16695-72-0 16995-73-1
3,5,5-trimethyl-4-methylene-2-cyclohexenone	20548-00-9
4-(2,3,6-trimethylphenyl)-3-buten-2-one	56681-06-2
4,4a,5,6-tetrahydro-7-methylnaphthalen-2(3*H*)-one	34545-88-5
4,5-octanedione	5455-24-3
4,7-dimethyl-6-octen-3-one	2550-11-0
4-acetyl-2-isopropenylpyridine	
4-ethylacetophenone	937-30-4
4-hydroxy-2,5-dimethylthiophen-3-one	26494-10-0
5,6-decanedione	5579-73-7
5,6-epoxy-beta-ionone	23267-57-4
5-methyl-5-hexen-2-one	3240-09-3
6-methyl-4,5-heptadien-2-one	
6-hydroxycarvone	51200-86-3
7-octen-2-one	3664-60-6
8,9-dehydrotheaspirone	85248-56-2
8-nonen-2-one	5009-32-5
3-ethyl-2-hydroxy-4-methyl-2-cyclopentenone	42348-12-9
2-hexyl-2-cyclopentenone	95-41-0
4-ethoxyacetophenone	1676-63-7
4-hydroxyacetophenone	99-93-4
piperitone oxide	5286-38-4

1-(3-furyl)-4-methylpentan-1-one	553-84-4
8-hydroxy-4-*p*-menthen-3-one	
5-nonanone	502-56-7
pinocarvone	16812-40-1 30460-92-5
neohesperidine dihydrochalcone	20702-77-6
naringin dihydrochalcone	18916-17-1

166*	Fatty Acids
Name	CAS No.
acetic acid	64-19-7
aconitic acid	499-12-7
adipic acid	124-04-9
(5or6)-decenoic acid	85392-04-7 85392-03-6
angelic acid	565-63-9
citronellic acid	502-47-6
4-methylphenoxyacetic acid	
2-butenoic acid	3724-65-0 107-93-7
cyclohexylacetic acid	5292-21-7
cyclohexylcarboxylic acid	98-89-5
3-cyclohexylpropionic acid	701-97-3
(2-cyclopentenyl)acetic acid	13668-61-6
decanoic acid	334-48-5
2-decenoic acid	3913-85-7 334-49-6
4-decenoic acid	26303-90-2 505-90-8
9-decenoic acid	14436-32-9
2-dodecenoic acid	32466-54-9 4412-16-2
ethoxyacetic acid	627-03-2
4-ethyl-2-octenoic acid	60308-75-0 60308-76-1 90464-78-1
2-ethylbutyric acid	88-09-5
2-ethylhexanoic acid	149-57-5
4-ethyloctanoic acid	16493-80-4
formic acid	64-18-6
2-furoic acid	88-14-2
geranic acid	459-80-3
heptadecanoic acid	506-12-7
heptanoic acid	111-14-8
2-heptenoic acid	18999-28-5
2-hexadecenoic acid	629-56-1
2-hexenoic acid	1191-04-4
3-hexenoic acid	4219-24-3 1577-18-0 1775-43-5
trans-2-hexenoic acid	13419-69-7
hexyloxyacetic acid	57931-25-6
4'-hydroxy-3'-methoxycinnamic acid	1135-24-6
2-hydroxy-3-methylpentanoic acid	488-15-3
2-hydroxy-4-methylpentanoic acid	498-36-2
3-hydroxybutyric acid	300-85-6
3-hydroxyhexanoic acid	10191-24-9

isobutyric acid	79-31-2
isovaleric acid	503-74-2
lactic acid	50-21-5 598-82-3 79-33-4 10326-41-7
lauric acid	143-07-7
levulinic acid	123-76-2
linoleic acid	60-33-3
linolenic acid	463-40-1
malonic acid	141-82-2
2-mercaptopropionic acid	79-42-5
3-mercaptopropionic acid	107-96-0
3-methylpentanoic acid	105-43-1
3-methyl-2-oxopentanoic acid	39748-49-7 1460-34-0
2-methyl-2-pentenoic acid	3142-72-1
2-methyl-4-pentenoic acid	1575-74-2
2-methylbutyric acid	116-53-0
3-methyl-2-butenoic acid	541-47-9
2-methylheptanoic acid	1188-02-9
2-methylhexanoic acid	4536-23-6
5-methylhexanoic acid	628-46-6
8-methylnonanoic acid	5963-14-4
4-methyloctanoic acid	54947-74-9
4-(methylthio)butyric acid	
3-(methylthio)propionic acid	646-01-5
2-methylpentanoic acid	97-61-0
4-methylpentanoic acid	646-07-1
myristic acid	544-63-8
nonanoic acid	112-05-0
2-nonenoic acid	3760-11-0 14812-03-4
3-nonenoic acid	4124-88-3
octanoic acid	124-07-2
2-octenoic acid	1470-50-4 1871-67-6
3-octenoic acid	1577-19-1
trans-3-octenoic acid	5163-67-7
oleic acid	112-80-1
2-oxobutyric acid	600-18-0
2-oxopentanedioic acid	328-50-7
palmitic acid	57-10-3
pentadecanoic acid	1002-84-2
2-pentenoic acid	13991-37-2 626-98-2
4-pentenoic acid	591-80-0
perillic acid	7694-45-3
phenoxyacetic acid	122-59-8
phenylacetic acid	103-82-2
2-phenylpropionic acid	492-37-5
3-phenylpropionic acid	501-52-0
pivalic acid	75-98-9
pyruvic acid	127-17-3
sorbic acid	110-44-1
stearic acid	57-11-4
ethanethioic *S*-acid	507-09-5
2-mercaptoacetic acid	68-11-1
2-mercaptobutanedioic acid	70-49-5

propanethioic *S*-acid	1892-31-5
tiglic acid	80-59-1
tridecanoic acid	638-53-9
3,5,5-trimethylhexanoic acid	3302-10-1
undecanoic acid	112-37-8
10-undecenoic acid	112-38-9
valeric acid	109-52-4
11-dodecenoic acid	65423-25-8
12-tridecenoic acid	6006-06-0
2,4-dimethyl-2-pentenoic acid	66634-97-7
2-ethyloctanoic acid	25234-25-7
2-pentylcyclopropylcarboxylic acid	5075-48-9
3-decenoic acid	15469-77-9
3-ethylheptanoic acid	14272-47-0
3-isopropenyl-6-oxoheptanoic acid	4436-82-2
3-isopropenyl-1,5-pentanedioic acid	6839-75-4
3-ethyl-4-methyl-4-pentenoic acid	
4-methylnonanoic acid	45019-28-1
4-octenoic acid	18294-89-8 18776-92-6
4-phenylbutyric acid	1821-12-1
5-oxodecanoic acid	624-01-1
5-oxododecanoic acid	3637-16-9
5-oxooctanoic acid	3637-14-7
6-[(5or6)-decenoyloxy]decanoic acid	85392-06-9 85392-05-8
6-phenylhexanoic acid	5581-75-9
cis-4-heptenoic acid	41653-95-6
cis-4-nonenoic acid	49580-58-7
cis-5-decenoic acid	84168-28-5
cis-5-octenoic acid	41653-97-8
cis-5-undecenoic acid	62472-76-8
hydroxyacetic acid	79-14-1
2'-methoxycinnamic acid	6099-03-2
trans-4-dodecenoic acid	55928-67-1
trans-5-undecenoic acid	67270-85-3
trans-6-dodecenoic acid	52957-04-7
3-mercapto-2-methylpropionic acid	26473-47-2

167*	Aliphatic Higher Alcohols
Name	CAS No.
acetone glyceryl acetal	100-79-8
ambrinol	41199-19-3
alpha-bisabolol	515-69-5
borneol	507-70-0
2-butoxyethanol	111-76-2
alpha-campholenol	1901-38-8
l-carveol	2102-59-2
carveol	99-48-9
beta-caryophyllene alcohol	472-97-9
cedrenol	28231-03-0
cedrol	77-53-2
l-citronellol	7540-51-4
cyclohexanol	108-93-0
2-cyclohexylethanol	4442-79-9
2,4-decadienol	18409-21-7
14507-02-9	

3-decanol	1565-81-7
2-decenol	22104-80-9 18409-18-2
9-decenol	13019-22-2
4-decenol	57074-37-0
dihydrocarveol	619-01-2
7,8-dihydro-beta-ionol	3293-47-8
3,7-dimethyl-6-octen-3-ol	2270-57-7
18479-51-1	
dihydromyrcenol	18479-58-8 53219-21-9 18479-59-9
dihydroperillyl alcohol	18479-64-6
2,5-dihydroxy-2,5-dimethyl-1,4-dithiane	55704-78-4
2,6-dimethyl-4-heptanol	108-82-7
3,7-dimethyl-1,5,7-octatrien-3-ol	20053-88-7 29957-43-5 54831-37-7 53834-70-1
2,6-dimethyl-2-heptanol	13254-34-7
3,6-dimethyl-3-octanol	151-19-9
2,4-dimethyl-3-pentanol	600-36-2
2,4-dimethyl-4-nonanol	74356-31-3
2-dodecanol	10203-28-8
dodecanol	112-53-8
2-dodecenol	22104-81-0
elemol	639-99-6
2-ethylbutanol	97-95-0
2-ethylfenchol	18368-91-7
2-ethylhexanol	104-76-7
farnesol	4602-84-0
fenchyl alcohol	14575-74-7 1632-73-1 512-13-0
geranyllinalool	1113-21-9
heptadecanol	1454-85-9
heptanal glyceryl acetal	72854-42-3 1708-35-6
2-heptanol	543-49-7
3-heptanol	589-82-2
4-heptanol	589-55-9
heptanol	111-70-6
1-hepten-3-ol	4938-52-7
2-heptenol	33467-76-4 22104-77-4
3-heptenol	10606-47-0
cis-4-heptenol	6191-71-5
hexadecanol	36653-82-4
2,4-hexadienol	111-28-4
hexanal glyceryl acetal	4379-20-8
2-hexanol	626-93-7
3-hexanol	623-37-0
hexanol	111-27-3
4-hexenol	6126-50-7
1-hexen-3-ol	4798-44-1
trans-2-hexenal glyceryl acetal	214220-85-6 897630-96-5 897672-50-3 897672-51-4

2-hexenol	2305-21-7
3-hexenol	544-12-7
cis-2-hexenol	928-94-9
cis-3-hexenol	928-96-1
cis-4-hexenol	928-91-6
trans-2-hexenol	928-95-0
trans-3-hexenol	928-97-2
trans-4-hexenol	928-92-7
hydroxycitronellal diethyl acetal	7779-94-4
hydroxycitronellol	107-74-4
alpha-ionol	25312-34-9
beta-ionol	22029-76-1
isoborneol	124-76-5
isodihydrocarveol	18675-35-9
isogeraniol	
isophytol	505-32-8
isopulegol	89-79-2 50373-36-9
isovaleraldehyde glyceryl acetal	54355-74-7
lavandulol	498-16-8
8-*p*-menthene-1,2-diol	1946-00-5
linalool oxide	1365-19-1
2-*p*-menthen-1-ol	619-62-5
2,8-*p*-menthadien-1-ol	22771-44-4
1,8-*p*-menthadien-4-ol	3419-02-1 28342-82-7
menthadienol	3269-90-7
p-menthan-2-ol	499-69-4 60320-28-7
p-menthan-7-ol	5502-75-0
p-menthan-8-ol	498-81-7
8-*p*-menthen-7-ol	18479-64-6
3-(menthoxy)-1,2-propanediol	87061-04-9
3-methyl-2-pentanol	565-60-6
4-methyl-2-pentanol	108-11-2
6-methyl-3-heptanol	18720-66-6
5-methyl-3-heptanol	18720-65-5
2-methyl-3-hexanol	617-29-8
3-methyl-3-pentanol	77-74-7
6-methyl-5-hepten-2-ol	1569-60-4
2-methyl-5-hepten-2-ol	
5-methylhexanol	627-98-5
2-methylpentanol	105-30-6
3-methylpentanol	589-35-5
4-methylpentanol	626-89-1
3-(methylthio)hexanol	51755-66-9
myrcenol	543-39-5
myrtenol	515-00-4
neodihydrocarveol	18675-34-8
d-neomenthol	2216-52-6
neomenthol	491-01-0
nerol	106-25-2
cis-nerolidol	142-50-7 3790-78-1
trans-nerolidol	40716-66-3
nerolidol	7212-44-4
2,4-nonadienol	62488-56-6
3,6-nonadienol	76649-25-7
trans,cis-2,6-nonadienol	28069-72-9

nonadienol	7786-44-9 63450-36-2
nonanol	143-08-8
2-nonanol	628-99-9
3-nonanol	624-51-1
1-nonen-3-ol	21964-44-3
3-nonenol	10340-23-5
6-nonenol	35854-86-5
cis-2-nonenol	41453-56-9
trans-2-nonenol	31502-14-4
2,6-dimethyl-5,7-octadien-2-ol	5986-38-9
1,5-octadien-3-ol	83861-74-9
octadecanol	112-92-5
3,5-octadienol	70664-96-9
1,3-octanediol	23433-05-8
2-octanol	123-96-6
3-octanol	589-98-0
octanol	111-87-5
1-octen-3-ol	3391-86-4
2-octen-4-ol	4798-61-2
2-octenol	22104-78-5
3-octenol	20125-84-2 18185-81-4
cis-5-octenol	64275-73-6
cis-9-octadecenol	143-28-2
pentadecanol	629-76-5
perilla alcohol	536-59-4
phytol	150-86-7
pinocarveol	5947-36-4
piperitol	491-04-3
rhodinol	6812-78-8
alpha-santalol	115-71-9
sclareol	515-03-7
1-terpineol	586-82-3
4-terpineol	562-74-3
alpha-terpineol	98-55-5
beta-terpineol	138-87-4
4-*tert*-butylcyclohexanol	98-52-2
tetradecanol	112-72-1
tetrahydrocuminol	5502-72-7
3,7-dimethyloctanol	106-21-8
3,7-dimethyl-3-octanol	78-69-3
2,6-dimethyl-2-octanol	18479-57-7
3-thujanol	21653-20-3 35732-37-7 3284-85-3
sabinene hydrate	546-79-2
tridecanol	112-70-9
2-tridecenol	68480-25-1
3,3,5-trimethylcyclohexanol	116-02-9
3,5,5-trimethylhexanol	3452-97-9
2,4-undecadienol	59376-58-8
2-undecanol	1653-30-1
undecanol	112-42-5
cis,cis-1,5,8-undecatrien-3-ol	35389-48-1
10-undecenol	112-43-6
2-undecenol	37617-03-1
verbenol	473-67-6
vetiverol	68129-81-7

	89-88-3
viridiflorol	552-02-3
3-(*l*-menthoxy)-2-methylpropane-1,2-diol	195863-84-4
citral glyceryl acetal	5694-82-6
menthone 1,2-glyceryl acetal	63187-91-7
1-*p*-menthen-9-ol	18479-68-0
1,2-dihydrolimonen-10-ol	5502-99-8
2,3,4-trimethyl-3-pentanol	3054-92-0
2,4-dimethylcyclohexylmethanol	68480-15-9
2-methyl-1-hepten-3-ol	
2-*tert*-butylcyclohexanol	13491-79-7
3-ethyl-3-octanol	2051-32-3
4-isopropylcyclohexanol	4621-04-9
5-hexenol	821-41-0
5-octene-1,3-diol	
6-hydroxydihydrotheaspirane	57967-68-7 65620-50-0
8-ethyl-1,5-dimethylbicyclo[3.2.1]octan-8-ol	84681-92-5
cis-3-heptenol	1708-81-2
cis-4-octenol	54393-36-1
cyclododecanol	1724-39-6
d-limonen-10-ol	38142-45-9
d-*trans*,*cis*-1(7),8-*p*-menthadien-2-ol	
3,7-dimethyl-1,6-nonadien-3-ol	10339-55-6
linalool oxide (pyranoid)	14049-11-7
l-*trans*-2-*p*-menthenol	53399-74-9
nerolidol oxide	
nootkatol	
p-menthane-3,8-diol	42822-86-6
santalol	11031-45-1
tetrahydronootkatol	

168*	Aliphatic Higher Aldehydes (except those generally recognized as highly toxic)
Name	CAS No.
campholenic aldehyde	4501-58-0 91819-58-8
citronellyloxyacetaldehyde	7492-67-3
cyclocitral	52844-21-0 432-25-7
2,4-decadienal	2363-88-4
trans,*trans*-2,4-decadienal	25152-84-5
2-decenal	3913-71-1
4-decenal	30390-50-2
9-decenal	39770-05-3
cis-4-decenal	21662-09-9
trans-2-decenal	3913-81-3
trans-4-decenal	65405-70-1
cis-7-decenal	21661-97-2
2,6-dimethyloctanal	7779-07-9
dimethylcyclohexenylcarbaldehyde	68737-61-1
2,4-dodecadienal	13162-47-5 21662-16-8 21662-15-7
2,6-dodecadienal	21662-13-5
dodecanal	112-54-9
2-dodecenal	4826-62-4
trans-2-dodecenal	20407-84-5

2-ethyl-2-hexenal	645-62-5
2-ethylbutanal	97-96-1
3,7-dimethyl-2,6-nonadienal	41448-29-7
2-ethyl-2-butenal	19780-25-7
2-ethylhexanal	123-05-7
geranial	141-27-5
geranoxyacetaldehyde	65405-73-4
trans,trans-2,4-heptadienal	4313-03-5
2,4-heptadienal	5910-85-0
heptanal	111-71-7
2-heptenal	2463-63-0
cis-4-heptenal	6728-31-0
trans-2-heptenal	18829-55-5
trans-4-heptenal	929-22-6
hexadecanal	629-80-1
trans,trans-2,4-hexadienal	142-83-6
hexanal	66-25-1
2-hexenal	505-57-7
3-hexenal	4440-65-7
cis-3-hexenal	6789-80-6
trans-2-hexenal	6728-26-3
trans-3-hexenal	69112-21-6
2-butyl-2-octenal	13019-16-4
2,6,6-trimethyl-1-cyclohexene-1-acetaldehyde	472-66-2
4-(4-hydroxy-4-methylpentyl)-3-cyclohexenylcarbaldehyde	31906-04-4
isocyclocitral	1335-66-6
1-(4-methyl-3-pentenyl)-1-cyclohexenyl-4-carbaldehyde	37677-14-8
2-isopropyl-5-methyl-2-hexenal	35158-25-9
2,6-dimethyl-5-heptenal	106-72-9
1,3-*p*-menthadien-7-al	
7-methoxy-3,7-dimethyloctanal	3613-30-7
alpha-methyl ional	58102-02-6
4-methyl-2-[(methylthio)methyl]-2-hexenal	99910-84-6
5-methyl-2-[(methylthio)methyl]-2-hexenal	85407-25-6
4-methyl-2-[(methylthio)methyl]-2-pentenal	40878-73-7
2-methyl-2-pentenal	623-36-9
4-methyl-2-pentenal	5362-56-1
2-methyldecanal	19009-56-4
2-methyloctanal	7786-29-0
2-methylpentanal	123-15-9
2-[(methylthio)methyl]-2-butenal	40878-72-6
12-methyltridecanal	75853-49-5
2-methylundecanal	110-41-8
myrtenal	564-94-3
neral	106-26-3
2,4-nonadienal	6750-03-4
2,6-nonadienal	557-48-2 26370-28-5
trans,trans-2,4-nonadienal	5910-87-2
trans,trans-2,6-nonadienal	17587-33-6
3,6-nonadienal	
nonanal	124-19-6
2-nonenal	2463-53-8
cis-6-nonenal	2277-19-2
trans-2-nonenal	18829-56-6
cis-3-nonenal	31823-43-5
2,4-octadienal	5577-44-6
2,6-octadienal	56767-18-1
trans,trans-2,4-octadienal	30361-28-5

2-octenal	2363-89-5
trans-2-octenal	2548-87-0
cis-3-octenal	78693-34-2
octyloxyacetaldehyde	53488-14-5
perillaldehyde	2111-75-3
1-*p*-menthen-9-al	29548-14-9
safranal	116-26-7
alpha-sinensal	17909-77-2
beta-sinensal	60066-88-8
tetradecanal	124-25-4
tridecanal	10486-19-8
2-tridecenal	7774-82-5
trans-2-tridecenal	7069-41-2
2,6,10-trimethyl-5,9-undecadienal	
3,5,5-trimethylhexanal	5435-64-3
2,4-undecadienal	13162-46-4
trans,trans-2,4-undecadienal	30361-29-6
undecanal	112-44-7
10-undecenal	112-45-8
2-undecenal	2463-77-6
trans-2-undecenal	53448-07-0
1,2-dihydroperillaldehyde	137886-38-5
2-(5-ethenyl-5-methyltetrahydrofuran-2-yl)propanal	67920-63-2 51685-39-3
2,3-epoxyoctanal	51007-38-6
2,4-dimethyl-3-cyclohexenylcarbaldehyde	68039-49-6
2,6,10-trimethyl-9-undecenal	141-13-9
5-(methylthio)-2-[(methylthio)methyl]-2-pentenal	59902-01-1
2-ethylidenehexanal	25409-08-9
3,6-dimethyl-3-cyclohexenylcarbaldehyde	67801-65-4
3,7-dimethyloctanal	5988-91-0
3-(methylthio)hexanal	38433-74-8
dihydroperillaldehyde	
cis-4-hexenal	4634-89-3
dimethyl-3-cyclohexenylcarbaldehyde	27939-60-2
trans-2-methyl-6-methylene-2,7-octadienal	17015-30-4

169*	**Aliphatic Higher Hydrocarbons (except those generally recognized as highly toxic)**
Name	CAS No.
campholenic aldehyde	4501-58-0 91819-58-8
citronellyloxyacetaldehyde	7492-67-3
cyclocitral	52844-21-0 432-25-7
2,4-decadienal	2363-88-4
trans,trans-2,4-decadienal	25152-84-5
2-decenal	3913-71-1
4-decenal	30390-50-2
9-decenal	39770-05-3
cis-4-decenal	21662-09-9
trans-2-decenal	3913-81-3
trans-4-decenal	65405-70-1
cis-7-decenal	21661-97-2
2,6-dimethyloctanal	7779-07-9
dimethylcyclohexenylcarbaldehyde	68737-61-1
2,4-dodecadienal	13162-47-5 21662-16-8

	21662-15-7
2,6-dodecadienal	21662-13-5
dodecanal	112-54-9
2-dodecenal	4826-62-4
trans-2-dodecenal	20407-84-5
2-ethyl-2-hexenal	645-62-5
2-ethylbutanal	97-96-1
3,7-dimethyl-2,6-nonadienal	41448-29-7
2-ethyl-2-butenal	19780-25-7
2-ethylhexanal	123-05-7
geranial	141-27-5
geranoxyacetaldehyde	65405-73-4
trans,trans-2,4-heptadienal	4313-03-5
2,4-heptadienal	5910-85-0
heptanal	111-71-7
2-heptenal	2463-63-0
cis-4-heptenal	6728-31-0
trans-2-heptenal	18829-55-5
trans-4-heptenal	929-22-6
hexadecanal	629-80-1
trans,trans-2,4-hexadienal	142-83-6
hexanal	66-25-1
2-hexenal	505-57-7
3-hexenal	4440-65-7
cis-3-hexenal	6789-80-6
trans-2-hexenal	6728-26-3
trans-3-hexenal	69112-21-6
2-butyl-2-octenal	13019-16-4
2,6,6-trimethyl-1-cyclohexene-1-acetaldehyde	472-66-2
4-(4-hydroxy-4-methylpentyl)-3-cyclohexenylcarbaldehyde	31906-04-4
isocyclocitral	1335-66-6
1-(4-methyl-3-pentenyl)-1-cyclohexenyl-4-carbaldehyde	37677-14-8
2-isopropyl-5-methyl-2-hexenal	35158-25-9
2,6-dimethyl-5-heptenal	106-72-9
1,3-*p*-menthadien-7-al	
7-methoxy-3,7-dimethyloctanal	3613-30-7
alpha-methyl ional	58102-02-6
4-methyl-2-[(methylthio)methyl]-2-hexenal	99910-84-6
5-methyl-2-[(methylthio)methyl]-2-hexenal	85407-25-6
4-methyl-2-[(methylthio)methyl]-2-pentenal	40878-73-7
2-methyl-2-pentenal	623-36-9
4-methyl-2-pentenal	5362-56-1
2-methyldecanal	19009-56-4
2-methyloctanal	7786-29-0
2-methylpentanal	123-15-9
2-[(methylthio)methyl]-2-butenal	40878-72-6
12-methyltridecanal	75853-49-5
2-methylundecanal	110-41-8
myrtenal	564-94-3
neral	106-26-3
2,4-nonadienal	6750-03-4
2,6-nonadienal	557-48-2 26370-28-5
trans,trans-2,4-nonadienal	5910-87-2
trans,trans-2,6-nonadienal	17587-33-6
3,6-nonadienal	
nonanal	124-19-6
2-nonenal	2463-53-8
cis-6-nonenal	2277-19-2

trans-2-nonenal	18829-56-6
cis-3-nonenal	31823-43-5
2,4-octadienal	5577-44-6
2,6-octadienal	56767-18-1
trans,trans-2,4-octadienal	30361-28-5
2-octenal	2363-89-5
trans-2-octenal	2548-87-0
cis-3-octenal	78693-34-2
octyloxyacetaldehyde	53488-14-5
perillaldehyde	2111-75-3
1-*p*-menthen-9-al	29548-14-9
safranal	116-26-7
alpha-sinensal	17909-77-2
beta-sinensal	60066-88-8
tetradecanal	124-25-4
tridecanal	10486-19-8
2-tridecenal	7774-82-5
trans-2-tridecenal	7069-41-2
2,6,10-trimethyl-5,9-undecadienal	
3,5,5-trimethylhexanal	5435-64-3
2,4-undecadienal	13162-46-4
trans,trans-2,4-undecadienal	30361-29-6
undecanal	112-44-7
10-undecenal	112-45-8
2-undecenal	2463-77-6
trans-2-undecenal	53448-07-0
1,2-dihydroperillaldehyde	137886-38-5
2-(5-ethenyl-5-methyltetrahydrofuran-2-yl)propanal	67920-63-2 51685-39-3
2,3-epoxyoctanal	51007-38-6
2,4-dimethyl-3-cyclohexenylcarbaldehyde	68039-49-6
2,6,10-trimethyl-9-undecenal	141-13-9
5-(methylthio)-2-[(methylthio)methyl]-2-pentenal	59902-01-1
2-ethylidenehexanal	25409-08-9
3,6-dimethyl-3-cyclohexenylcarbaldehyde	67801-65-4
3,7-dimethyloctanal	5988-91-0
3-(methylthio)hexanal	38433-74-8
dihydroperillaldehyde	
cis-4-hexenal	4634-89-3
dimethyl-3-cyclohexenylcarbaldehyde	27939-60-2
trans-2-methyl-6-methylene-2,7-octadienal	17015-30-4

227*	**Thioethers (except those generally recognized as highly toxic)**
Name	CAS No.
acetaldehyde difurfuryl thioacetal	
allyl methyl disulfide	2179-58-0
allyl methyl sulfide	10152-76-8
allyl methyl trisulfide	34135-85-8
allyl propyl disulfide	2179-59-1
allyl propyl sulfide	27817-67-0
allyl propyl trisulfide	33922-73-5
benzothiazole	95-16-9
benzyl methyl disulfide	699-10-5
benzyl methyl sulfide	766-92-7
bis(2-methyl-3-furyl) disulfide	28588-75-2
3,5-bis(2-methyltetrahydrofuryl-3)spiro-1,2,4-trithiolane	
butyl propyl disulfide	72437-64-0

2-butyl-4,5-dimethylthiazole	76572-48-0
2-*sec*-butylthiazole	18277-27-5
2-butylthiophene	1455-20-5
butanal dibenzyl thioacetal	101780-73-8
diallyl disulfide	2179-57-9
diallyl polysulfides	72869-75-1
diallyl sulfide	592-88-1
dibenzyl disulfide	150-60-7
dibutyl sulfide	544-40-1
dicyclohexyl disulfide	2550-40-5
diethyl disulfide	110-81-6
diethyl sulfide	352-93-2
difurfuryl disulfide	4437-20-1
difurfuryl sulfide	13678-67-6
diisoamyl disulfide	2051-04-9
diisopropyl disulfide	4253-89-8
diisopropyl sulfide	625-80-9
dimethyl sulfide	75-18-3
dimethyl tetrasulfide	5756-24-1
dimethyl trisulfide	3658-80-8
3,5-dimethyl-1,2,4-trithiolane	23654-92-4
2,5-epoxy-2,5-dimethyl-1,4-dithiane	
2-ethyl-4,5-dimethylthiazole	873-64-3
2-isobutyl-4,5-dimethyl-3-thiazoline	65894-83-9
4,5-dimethyl-2-propylthiazole	41981-72-0
2,4-dimethylthiazole	541-58-2
2,5-dimethylthiazole	4175-66-0
4,5-dimethylthiazole	3581-91-7
2,5-dimethylthiophene	638-02-8
3,4-dimethylthiophene	632-15-5
dinonyl sulfide	929-98-6
bis(2-methylphenyl) disulfide	4032-80-8
dipropyl polysulfides	
dipropyl sulfide	111-47-7
dipropyl trisulfide	6028-61-1
di-*tert*-amyl disulfide	34965-30-5
di-2-thienyl disulfide	6911-51-9
2-ethoxythiazole	15679-19-3
ethyl 2-hydroxyethyl sulfide	110-77-0
2-ethyl-4-methylthiazole	15679-12-6
ethyl 1-propenyl sulfide	36784-55-1
5-ethyl-4-methylthiazole	31883-01-9
4-ethyl-5-methylthiazole	52414-91-2
2-ethylthiazole	15679-09-1
2-ethylthiophene	872-55-9
2,4-dithiapentane	1618-26-4
furfuryl isopropyl sulfide	1883-78-9
furfuryl methyl sulfide	1438-91-1
2-hexylthiophene	18794-77-9
2-isobutyl-4,5-dimethylthiazole	53498-32-1
2-isobutyl-4-methylthiazole	61323-24-8
2-isobutyl-5-methylthiazole	72611-71-3
2-isobutylthiazole	18640-74-9
2-isopropyl-4-methylthiazole	15679-13-7
lenthionine	292-46-6
methional	3268-49-3
methional diethyl acetal	16630-61-8
methional glyceryl acetal	
methional propyleneglycol acetal	59007-89-5

methionol	505-10-2
methyl 1-propenyl sulfide	10152-77-9
methyl 2-methyl-3-furyl disulfide	65505-17-1
methyl 5-methyl-2-furyl sulfide	13678-59-6
methyl 5-methylfurfuryl disulfide	78818-78-7
butyl methyl sulfide	628-29-5
dimethyl disulfide	624-92-0
ethyl methyl disulfide	20333-39-5
ethyl methyl sulfide	624-89-5
furfuryl methyl disulfide	57500-00-2
methyl octyl sulfide	3698-95-1
methyl 2-methylphenyl disulfide	35379-09-0
methyl phenyl disulfide	14173-25-2
methyl propyl disulfide	2179-60-4
methyl propyl sulfide	3877-15-4
methyl propyl trisulfide	17619-36-2
2-methyl-2-thiazoline	2346-00-1
2-(furfurylthio)-(3or5or6)-methylpyrazine	65530-53-2
2-methyl-(3or5or6)-(methylthio)pyrazine	2882-20-4 67952-65-2 68378-12-1
2-methyl-3-furyl 2-methyl-3-tetrahydrofuryl disulfide	252736-40-6
methyl 2-methyl-3-furyl sulfide	63012-97-5
2-methyl-4-propyl-1,3-oxathiane	67715-80-4
5,7-dihydro-2-methylthieno[3,4-*d*]pyrimidine	36267-71-7
5-ethenyl-4-methylthiazole	1759-28-0
2-methylthiazole	3581-87-1
4-methylthiazole	693-95-8
5-methylthiazole	3581-89-3
2-methylthiazolidine	24050-16-6
2-ethyl-3-(methylthio)pyrazine	72987-62-3
3-(methylthio)butanal	16630-52-7
4-(methylthio)butanol	20582-85-8
2-(methylthio)ethanol	5271-38-5
2-methylthiophene	554-14-3
3-methylthiophene	616-44-4
3-(methylthio)propylamine	4104-45-4
(methylthio)pyrazine	21948-70-9
2-pentylthiophene	4861-58-9
diphenyl disulfide	882-33-7
1-propenyl propyl disulfide	5905-46-4
1-propenyl propyl sulfide	
dipropyl disulfide	629-19-6
2-propylthiazole	17626-75-4
2-propylthiazolidine	24050-10-0
spiro[2,4-dithia-1-methyl-8-oxa-bicyclo[3.3.0]octane-3,3'-(1'-oxa-2'-methyl)cyclopentane] and spiro[dithia-6-methyl-7-oxa-bicyclo[3.3.0]octane-3,3'-(1'-oxa-2'-methyl)cyclopentane]	38325-25-6 38325-26-7
thiolane	110-01-0
thiazole	288-47-1
thiazolidine-2,4-dione	2295-31-0
methyl phenyl sulfide	100-68-5
thiophene	110-02-1
5,6-dihydro-2,4,6-trimethyl-1,3,5-dithiazine	638-17-5
2,8-epithio-*p*-menthane	68398-18-5
2,4,5-trimethylthiazole	13623-11-5
2,2,4,4,6,6-hexamethyl-1,3,5-trithiane	828-26-2
2,3,5-trithiahexane	42474-44-2
1,2,4-trithiolane	289-16-7

2-*sec*-butyl-4,5-dimethyl-3-thiazoline	65894-82-8
2-(furfurylthio)-3-methylpyrazine	59303-07-0
2-(methylthio)benzothiazole	615-22-5
2,4,6-triethyldihydro-1,3,5-dithiazine	
2-isopropyl-3-(methylthio)pyrazine	67952-59-4
2-methyl-1,3-dithiolane	5616-51-3
2-(methylthio)acetaldehyde	23328-62-3
2-methylthiolane	1795-09-1
2-(methylthio)thiazole	5053-24-7
4-methyl-2-pentylthiazole	96693-92-4
2-pentylthiazole	37645-62-8
4-methyl-2-propylthiazole	52414-87-6
3,4,5,6-tetrahydro-2,4,6-trimethyl-(2*H*)-1,3,5-thiadiazine	
3,5-diethyl-1,2,4-trithiolane	54644-28-9
3-methyl-1,2,4-trithiane	43040-01-3
3-thienylcarboxylic acid	88-13-1
2-ethyl-4,5-dimethyl-3-thiazoline	76788-46-0
benzothiophene	95-15-8
bis(2-methylbutyl) disulfide	
diallyl trisulfide	2050-87-5
dibutyl disulfide	629-45-8
dihydro-2-methylthiazole	
diisobutyl disulfide	1518-72-5
dipentyl disulfide	112-51-6
di-*sec*-butyl disulfide	5943-30-6
isobutyl methyl disulfide	67421-83-4
mintsulfide	72445-42-2

228*	**Thiols (Thioalcohols) (except those generally recognized as highly toxic)**
Name	CAS No.
2-propenethiol	870-23-5
benzenethiol	108-98-5
benzenemethanethiol	100-53-8
2,3-butanedithiol	4532-64-3
butanethiol	109-79-5
2-butanethiol	513-53-1
cyclohexanethiol	1569-69-3
cyclopentanethiol	1679-07-8
1,2-ethanedithiol	540-63-6
2,3-dimercaptopropanol	59-52-9
2,5-dimethyl-3-furanthiol	55764-23-3
3,3-dimethylbutanethiol	
dodecanethiol	112-55-0
ethanethiol	75-08-1
2-(ethylthio)phenol	29549-60-8
2-furanmethanethiol	98-02-2
heptanethiol	1639-09-4
hexadecanethiol	2917-26-2
1,6-hexanedithiol	1191-43-1
3-methylbutanethiol	541-31-1
2-propanethiol	75-33-2
3-[(2-mercapto-1-methylpropyl)thio]-2-butanol	54957-02-7
3-hydroxy-2-butanethiol	37887-04-0 54812-86-1
2-methoxybenzenethiol	7217-59-6
2-hydroxyethanethiol	60-24-2
3-mercaptohexanol	51755-83-0

pyrazinylmethanethiol	59021-02-2
(2or3or10)-mercaptopinane	23832-18-0
4-methoxy-2-methyl-2-butanethiol	94087-83-9
methanethiol	74-93-1
2-methyl-3-furanthiol	28588-74-1
2-methyl-3-tetrahydrofuranthiol	57124-87-5
2-methyl-4,5-dihydro-3-furanthiol	26486-13-5
(4-methylphenyl)methanethiol	4498-99-1
3-methyl-2-butanethiol	2084-18-6
2-methylbutanethiol	1878-18-8
2-methyl-2-propanethiol	75-66-1
2-naphthalenethiol	91-60-1
1,9-nonanedithiol	3489-28-9
1,8-octanedithiol	1191-62-4
octanethiol	111-88-6
2,4,4,6,6-pentamethyl-2-heptanethiol	
2-pentanethiol	2084-19-7
pentanethiol	110-66-7
2-phenylethanethiol	4410-99-5
1-*p*-menthen-8-thiol	71159-90-5
1,2-propanedithiol	814-67-5
propanethiol	107-03-9
2-pyrazinylethanethiol	35250-53-4
2-pyridinylmethanethiol	2044-73-7
thioterpineol	
2-thienylmethanethiol	6258-63-5
2-thiophenethiol	7774-74-5
1-(2-thienyl)ethanethiol	94089-02-8
thiogeraniol	39067-80-6
thiolinalool	39707-47-6
2-methylbenzenethiol	137-06-4
1,4-butanedithiol	1191-08-8
2-mercaptobenzothiazole	149-30-4
3-{[(2or4),5-dihydro-2-methyl-3-furyl]thio}-2-methyltetrahydrofuran-3-thiol	38325-24-5
2-thiazoline-2-thiol	96-53-7
3-mercapto-2-methylbutanol	227456-33-9
3-mercapto-2-methylpentanol	227456-27-1
3-mercapto-3-methylbutanol	34300-94-2
4-ethoxy-2-methyl-2-butanethiol	
ethanedithiol	26914-40-9
hexanethiol	111-31-9
2-methylpropanethiol	513-44-0
mercaptoacetaldehyde diethyl acetal	
3-methyl-2-butenethiol	5287-45-6
1,1-dimethylheptanethiol	25360-10-5
2,6-dimethylbenzenethiol	118-72-9
(*S*)-1-methoxy-3-heptanethiol	400052-49-5

238*	**Terpene Hydrocarbons**
Name	CAS No.
allo-ocimene	673-84-7
alpha-bisabolene	17627-44-0
bisabolene	495-62-5
beta-bourbonene	5208-59-3
delta-cadinene	483-76-1
camphene	79-92-5
3-carene	13466-78-9

alpha-humulene	6753-98-6
beta-caryophyllene	87-44-5
alpha-cedrene	469-61-4
p-cymene	99-87-6
1-isopropenyl-4-methylbenzene	1195-32-0
cis-3,7-dimethyl-1,3,6-octatriene	3338-55-4
delta-elemene	20307-84-0
beta-elemene	33880-83-0 515-13-9
alpha-farnesene	125037-13-0 502-61-4
beta-farnesene	18794-84-8 77129-48-7
farnesene	
germacrene D	23986-74-5
beta-guaiene	88-84-6
d-limonene	5989-27-5
l-limonene	5989-54-8
limonene	138-86-3
longifolene	475-20-7
myrcene	123-35-3
beta-ocimene	13877-91-3
alpha-phellandrene	99-83-2
alpha-pinene	80-56-8
beta-pinene	127-91-3
sabinene	3387-41-5
alpha-terpinene	99-86-5
gamma-terpinene	99-85-4
terpinolene	586-62-9
thujopsene	470-40-6
valencene	4630-07-3
alpha-copaene	3856-25-5
isocaryophyllene	118-65-0
pinene dimer	6993-66-4

309*	**Phenol Ethers (except those generally recognized as highly toxic)**
Name	CAS No.
trans-anethole	4180-23-8
anethole	104-46-1
anisic acid	100-09-4
anisole	100-66-3
anisyl ethyl ether	5076-72-2
benzyl eugenyl ether	57371-42-3
1,2-diethoxybenzene	2050-46-6
1,3-dimethoxybenzene	151-10-0
1,4-dimethoxybenzene	150-78-7
4-ethenyl-1,2-dimethoxybenzene	6380-23-0
1,2-dimethoxy-4-methylbenzene	494-99-5
2,3-dimethylbenzofuran	3782-00-1
diphenyl ether	101-84-8
estragole	140-67-0
1-ethoxy-2-methoxybenzene	17600-72-5
ethyl 2-methoxybenzyl ether	64988-06-3
ethyl isoeugenyl ether	7784-67-0
isobutyl 2-naphthyl ether	2173-57-1
amyl isoeugenyl ether	10484-36-3
benzyl isoeugenyl ether	120-11-6

1-methoxy-3-methylbenzene	100-84-5
methyl 2-naphthyl ether	93-04-9
isoeugenyl methyl ether	93-16-3
1-methoxy-2-methylbenzene	578-58-5
1-methoxy-4-methylbenzene	104-93-8
eugenyl methyl ether	93-15-2
butyl 2-naphthyl ether	10484-56-7
ethyl 2-naphthyl ether	93-18-5
1-methoxy-4-propylbenzene	104-45-0
methyl thymol ether	1076-56-8
1,2,3-trimethoxybenzene	634-36-6
1,2-dimethoxybenzene	91-16-7
3,4-dimethoxybenzoic acid	93-07-2
1-ethenyl-4-methoxybenzene	637-69-4
4-*tert*-butyl-1-methoxy-3-methylbenzene	31268-79-8
4-isopropyl-2-methoxy-1-methylbenzene	6379-73-3
ethyl phenyl ether	103-73-1

310*	**Phenols (except those generally recognized as highly toxic)**
Name	CAS No.
4-allyl-2,6-dimethoxyphenol	6627-88-9
4-allylphenol	501-92-8
carvacrol	499-75-2
2-hydroxyphenol	120-80-9
creosol	93-51-6
3-methylphenol	108-39-4
2-methylphenol	95-48-7
4-methylphenol	106-44-5
2-methoxy-4-propylphenol	2785-87-7
2,6-dimethoxyphenol	91-10-1
2,3-dimethylphenol	526-75-0
2,6-dimethylphenol	576-26-1
3,5-dimethylphenol	108-68-9
4-ethoxyphenol	622-62-8
ethyl eugenyl ether	1755-54-0
4-ethyl-2-methoxyphenol	2785-89-9
2-ethylphenol	90-00-6
3-ethylphenol	620-17-7
4-ethylphenol	123-07-9
ethylvanillin propyleneglycol acetal	68527-76-4
guaiacol	90-05-1
4-hydroxybenzoic acid	99-96-7
4-hydroxybenzyl alcohol	623-05-2
4-(ethoxymethyl)phenol	57726-26-8
4-(methoxymethyl)phenol	5355-17-9
4-hydroxyphenethyl alcohol	501-94-0
2-isopropylphenol	88-69-7
4-isopropylphenol	99-89-8
3-methoxy-5-methylphenol	3209-13-0
3-methoxyphenol	150-19-6
4-methoxyphenol	150-76-5
4-(1-hydroxyethyl)phenol	2380-91-8
2,6-dimethoxy-4-methylphenol	6638-05-7
3,4-methylenedioxyphenol	533-31-3
2-methoxy-5-methylphenol	1195-09-1
4-(methylthio)phenol	1073-72-9
phenol	108-95-2

4-propylphenol	645-56-7
3,4-dihydroxybenzoic acid	99-50-3
3-hydroxyphenol	108-46-3
salicylic acid	69-72-7
4-hydroxy-3,5-dimethoxybenzoic acid	530-57-4
thymol	89-83-8
2-(methylthio)phenol	1073-29-6
vanillic acid	121-34-6
vanillin propyleneglycol acetal	68527-74-2
4-hydroxy-3-methoxybenzyl alcohol	498-00-0
4-(butoxymethyl)-2-methoxyphenol	82654-98-6
4-(ethoxymethyl)-2-methoxyphenol	13184-86-6
2-ethoxy-5-(1-propenyl)phenol	94-86-0
4-ethenyl-2-methoxyphenol	7786-61-0
4-ethenylphenol	2628-17-3
2,4-dimethylphenol	105-67-9
2,5-dimethylphenol	95-87-4
3,4-dimethylphenol	95-65-8
4-*tert*-butylphenol	98-54-4
2,3,6-trimethylphenol	2416-94-6
2-propylphenol	644-35-9
3-*tert*-butylphenol	585-34-2

318*	Furfurals/its derivatives (except those generally recognized as highly toxic)
Name	CAS No.
furfural	98-01-1
furfural diethyl acetal	13529-27-6
furfural diisoamyl acetal	18091-14-0
furfural glyceryl acetal	
furfural propyleneglycol acetal	4359-54-0
5-(hydroxymethyl)-2-furfural	67-47-0
5-methylfurfural	620-02-0

337*	Aromatic Alcohols
Name	CAS No.
alpha-amylcinnamyl alcohol	101-85-9
anisyl alcohol	105-13-5
cuminyl alcohol	536-60-7
p-cymen-8-ol	1197-01-9
4-isopropenylbenzyl alcohol	
3-phenylpropanol	122-97-4
2,4-dimethylbenzyl alcohol	16308-92-2
2-methyl-1-phenyl-2-propanol	100-86-7
1-(4-methylphenyl)ethanol	536-50-5
2-ethoxybenzyl alcohol	71672-75-8
4-ethoxybenzyl alcohol	6214-44-4
furfuryl alcohol	98-00-0
2-phenylpropanol	1123-85-9
4-methyl-1-phenyl-2-pentanol	7779-78-4
2-methoxybenzyl alcohol	612-16-8
3-(4-methoxyphenyl)propanol	5406-18-8
4-methyl-2-phenylpentanol	
2-methyl-4-phenyl-2-butanol	103-05-9
2-(hydroxymethyl)-5-methylpyrazine	61892-95-3
4-methylbenzyl alcohol	589-18-4

5-methylfurfuryl alcohol	3857-25-8
phenethyl alcohol	60-12-8
3-methyl-1-phenyl-3-pentanol	10415-87-9
2-phenoxyethanol	122-99-6
1-phenylpropanol	93-54-9
2-phenyl-2-propanol	617-94-7
4-phenylbutan-2-ol	2344-70-9
piperonyl alcohol	495-76-1
styralyl alcohol	98-85-1
2-(4-methyl-5-thiazolyl)ethanol	137-00-8
2-thienylmethanol	636-72-6
3,4-dimethoxybenzyl alcohol	93-03-8
2,3-dimethoxybenzyl alcohol	5653-67-8

338*	**Aromatic Aldehydes (except those generally recognized as highly toxic)**
Name	CAS No.
2-methoxybenzaldehyde	135-02-4
4-butoxybenzaldehyde	5736-88-9
alpha-butylcinnamaldehyde	7492-44-6
cuminaldehyde	122-03-2
cyclamen aldehyde	103-95-7
3-phenylpropanal	104-53-0
3,4-dihydroxybenzaldehyde	139-85-5
2,4-dimethylbenzaldehyde	15764-16-6
2-ethoxybenzaldehyde	613-69-4
4-ethoxybenzaldehyde	10031-82-0
1-ethyl-2-pyrrolylcarbaldehyde	
4-ethylbenzaldehyde	4748-78-1
3-(2-furyl)-2-propenal	623-30-3
5-(2-furyl)-2,4-pentadienal	5916-94-9
alpha-hexylcinnamaldehyde	101-86-0
2-phenylpropanal	93-53-8
2-hydroxy-4-methylbenzaldehyde	698-27-1
4-hydroxybenzaldehyde	123-08-0
3-(2-furyl)-2-isopropyl-2-propenal	
2-(4-isopropylphenyl)propanal	34291-99-1
4'-methoxy-alpha-methylcinnamaldehyde	65405-67-6
3-methoxybenzaldehyde	591-31-1
2'-methoxycinnamaldehyde	1504-74-1
4'-methoxycinnamaldehyde	1963-36-6
4-methoxyphenylacetaldehyde	5703-26-4
3-(5-methyl-2-furyl)butanal	31704-80-0
5-methyl-2-phenyl-2-hexenal	21834-92-4
4-methyl-2-phenyl-2-hexenal	26643-92-5
4-methyl-2-phenyl-2-pentenal	26643-91-4
5-methyl-2-thienylcarbaldehyde	13679-70-4
3-(3,4-methylenedioxyphenyl)-2-methylpropanal	1205-17-0
2-methyl-3-(4-*tert*-butylphenyl)propanal	80-54-6
2-methyl-3-(4-methylphenyl)propanal	41496-43-9
alpha-methylcinnamaldehyde	101-39-3
2-(4-methylphenyl)propanal	99-72-9
(4-methylphenyl)acetaldehyde	104-09-6
3-methylbenzaldehyde	620-23-5
1-methyl-2-pyrrolylcarbaldehyde	1192-58-1
1-phenethyl-2-pyrrolylcarbaldehyde	49795-42-8
2-phenyl-2-butenal	4411-89-6
2-phenyl-4-pentenal	24401-36-3

3-phenyl-4-pentenal	939-21-9
phenylacetaldehyde	122-78-1
2-pyrrolylcarbaldehyde	1003-29-8
salicylaldehyde	90-02-8
3-thienylcarbaldehyde	498-62-4
2-thienylcarbaldehyde	98-03-3
2-methylbenzaldehyde	529-20-4
4-methylbenzaldehyde	104-87-0
methylbenzaldehyde	1334-78-7
4-ethoxy-3-methoxybenzaldehyde	120-25-2
3,4-dimethoxybenzaldehyde	120-14-9
2,3-dimethoxybenzaldehyde	86-51-1
alpha-ethylcinnamaldehyde	28467-92-7
5-methyl-2-pyrrolylcarbaldehyde	1192-79-6
2-hydroxy-3-methoxybenzaldehyde	148-53-8
2-methyl-4-phenylbutanal	40654-82-8
3-hydroxy-4-methoxybenzaldehyde	621-59-0
3-methyl-2-thienylcarbaldehyde	5834-16-2
3-(4-ethylphenyl)-2,2-dimethylpropanal	67634-15-5
4-*tert*-butylbenzaldehyde	939-97-9
3-(2-furyl)-2-methyl-2-propenal	874-66-8

376*	**Lactones (except those generally recognized as highly toxic)**
Name	CAS No.
ambrettolide	123-69-3 7779-50-2
alpha-angelicalactone	591-12-8
3-butylidenephthalide	551-08-6
gamma-butyrolactone	96-48-0
15-pentadecanolide	106-02-5
delta-decalactone	705-86-2
gamma-decalactone	706-14-9
7-decen-4-olide	67114-38-9
9-decen-5-olide	74585-00-5
2-decen-5-olide	54814-64-1
7-decen-5-olide	25524-95-2 34686-71-0
dihydroactinidiolide	15356-74-8 17092-92-1 19432-05-4 81800-41-1
16-hexadecanolide	109-29-5
dihydrocoumarin	119-84-6
2-hydroxy-3,3-dimethyl-4-butanolide	79-50-5
2,3-dimethyl-2-nonen-4-olide	10547-84-9
delta-dodecalactone	713-95-1
gamma-dodecalactone	2305-05-7
6-dodecen-4-olide	18679-18-0
epsilon-decalactone	5579-78-2
epsilon-dodecalactone	16429-21-3
2-hydroxy-3-methyl-2-hexen-4-olide	698-10-2
1,4-dioxacycloheptadecane-5,17-dione	105-95-3
delta-heptalactone	3301-90-4
gamma-heptalactone	105-21-5
2-heptyl-4-pentanolide	40923-64-6
gamma-hexadecalactone	730-46-1
delta-hexadecalactone	7370-44-7

delta-hexalactone	823-22-3
gamma-hexalactone	695-06-7
4-methyl-*cis*-7-decen-4-olide	70851-61-5
2-hydroxy-3-methyl-2-penten-4-olide	28664-35-9
8-undecen-5-olide	68959-28-4
8-decen-5-olide	32764-98-0
(*R*)-2-decen-5-olide	51154-96-2
menthone lactone	499-54-7
4-methyl-4-decanolide	7011-83-8
2-methyl-4-butanolide	1679-47-6
3-methyl-4-octanolide	39212-23-2
3,6-dimethyl-5,6,7,7a-tetrahydro-2(4*H*)-benzofuranone	38049-04-6 13341-72-5
delta-nonalactone	3301-94-8
2-nonen-4-olide	21963-26-8
delta-octadecalactone	1227-51-6
octahydro-2*H*-1-benzopyran-2-one	4430-31-3
delta-octalactone	698-76-0
gamma-octalactone	104-50-7
2,4-decadien-5-olide	27593-23-3
3-propylidenephthalide	17369-59-4
sclareolide	564-20-5
delta-tetradecalactone	2721-22-4
delta-tridecalactone	7370-92-5
delta-undecalactone	710-04-3
delta-valerolactone	542-28-9
gamma-valerolactone	108-29-2
4-methyl-5-hexen-4-olide	1073-11-6
2,3-dimethyl-2,4-nonadien-4-olide	774-64-1
2-buten-4-olide	497-23-4
3-decen-4-olide	81715-81-3
3-methyl-*trans*-5-decen-4-olide	
3-nonen-4-olide	51352-68-2
4-butyl-4-octanolide	7774-47-2
3-ethyl-2-oxo-4-butanolide	
beta-angelicalactone	591-11-7
3-methyl-4-nonanolide	33673-62-0
cis-7-decen-4-olide	63095-33-0
d(-)-2-hydroxy-3,3-dimethyl-4-butanolide	599-04-2
3,6-dimethyl-2(3*H*)-hexahydrobenzofuranone	92015-65-1
2-oxothiolane	1003-10-7

Table FA02 Food Additives with Standards of Use

Note: The substances marked with *1 belong to "Existing Food Additives." See Table FA04 (List of Existing Food Additives).

Anticaking agents

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Calcium Ferrocyanide Potassium Ferocyanide Sodium Ferrocyanide	Salt	Not more than 0.02 g/kg salt as anhydrous sodium ferrocyanide (in case used in combination, total level shall not exceed this level.)		
Silicon Dioxide (Fine)		Not more than 2 % in food as silicon dioxide	Not permitted in substitute for mother's milk and weaning food	

Antifoaming agent

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Silicone Resin		Not more than 0.05 g/kg	Restricted for the purpose of antifoaming	

Antimold agents (preservatives)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Diphenyl	Grapefruit Lemon Oranges	Less than 0.070 g/kg (residual level)	Restricted for use in pieces of papers to be inserted in packaging for storage or transportation.	
Imazalil	Citrus fruits (excluding citrus UNSHU, mandarin orange)	Not more than 0.005 g/kg (residual level)		Refer to section of residual pesticides.
	Banana	Not more than 0.002 g/kg (residual level)		
o-Phenylphenol Sodium o-Phenylphenate	Citrus fruits	Not more than 0.01 g/kg (residual level as o-phenylphenol)		
Thiabendazole (TBZ)	Banana (whole)	Not more than 0.003 g/kg (residual level)		
	Banana (pulp)	Not more than 0.0004 g/kg (residual level)		
	Citrus fruits	Not more than 0.01 g/kg (residual level)		

Antioxidants

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Butylated Hydroxyanisole (BHA)	Dipping solution for frozen fish and shellfish (other than frozen fish, shellfish, and oyster to be served raw), and frozen whale meat (other than frozen whale meat to be served raw)	Not more than 1 g/kg (for dipping solution; in case used in combination with Butylated Hydroxytoluene, total level of both shall not exceed this level)		
	Butter Dried fish and shellfish Fats and oils Mashed potato (dried) Salted fish and shellfish	Not more than 0.2 g/kg (in case used in combination with Butylated Hydroxytoluene, total level of both shall not exceed this level)		
Butylated Hydroxytoluene (BHT)	Frozen fish and shellfish (other than frozen fish, shellfish, and oyster to be served raw) Frozen whale meat (other than frozen whale meat to be served raw)	Not more than 1g/kg (for dipping solution; in case used in combination with Butylated Hydroxyanisole, total level of both shall not exceed this level)		
	Butter Dried fish and shellfish Fats and oils Mashed potato (dried) Salted fish and shellfish	Not more than 0.2 g/kg (in case used in combination with Butylated Hydroxyanisole, total level of both shall not exceed this level)		
	Chewing gum	Not more than 0.75 g/kg		
Calcium Disodium Ethylenediamine -tetraacetate (EDTA-CaNa2)	Canned or bottled nonalcoholic beverage	Not more than 0.035 g/kg (as EDTA-CaNa2)	Shall be converted to (EDTA-CaNa2) before preparation of final food.	
Disodium Ethylenediamine-tetraacetate (EDTA-Na2)	Canned or bottled food (other than nonalcoholic beverage)	Not more than 0.25 g/kg (as EDTA-CaNa2)		
Erythorbic Acid Sodium Erythorbate	Fish paste products (excluding SURIMI) Bread.		Shall not be used for nutrition purpose	(Quality improver)
	Other foods		Restricted to purposes of antioxidation	

(Continued)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Guaiac Resin*1	Fats/oils, Butter	Not more than 1 g/kg		
Isopropyl Citrate	Fats/oils, Butter	Not more than 0.1g/kg (as mono-isopropyl citrate)		
Propyl Gallate	Fats and oils	Not more than 0.2g/kg		
	Butter	Not more than 0.1g/kg		
dl-α-Tocopherol (Vitamin E)			Restricted to purposes of antioxidation (except as an ingredient in preparation of ß-Carotene, Vitamin A, Vitamin A Esters of Fatty Acids, or Liquid Paraffin)	

Bleaching agents

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Sodium Chlorite	Cherry Citrus peels (limited to those for confectionery) FUKI (butterbur) Grape Peach Eggs (limited to parts of egg shell) Seasoned and processed herring roe (excluding dried and frozen herring roe) Vegetables for direct consumption	0.5 g/kg dipping solution (as sodium chlorite)	Decompose or remove prior to preparation of final food.	
Potassium Pyrosulfite Sodium Hydrosulfite Sodium Pyrosulfite Sodium Sulfite Sulfur Dioxide	AMANATTO (sweetened ADZUKI beans)	(residual level as sulfur dioxide) Less than 0.1 g/kg	Not permitted in sesame seed, bean, and vegetable.	(antioxidant, preservative) Tapioca starch, for saccharification means the starch not consumed as direct food and used to prepare syrup of sugars derived from starch by hydrolysis, hydrogenation, etc.
	Tapioca starch for saccharification	Less than 0.25 g/kg		
	Cooked beans, sweetened	Less than 0.1 g/kg		

(Continued)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
	Candied cherries	Less than 0.3 g/kg		Candied cherries means candied and pitted cherries or such cherries with crystal sugar applied on the surface or such immersed in the packing media of syrup.
	Dijon mustard	Less than 0.5 g/kg		
	Dried fruits (excluding raisins)	Less than 2 g/kg		
	Raisons	Less than 1.5 g/kg		
	Dried potatoes	Less than 0.5 g/kg		
	Frozen raw shelled crab	Less than 0.1 g/kg		
	Wine Miscellaneous alcoholic beverages	Less than 0.35 g/kg		Excluding fruit squeezings containing not less than 1% by volume of alcohol and concentrate of the same used for manufacture of wine.
	Gelatin	Less than 0.5 g/kg		
	Molasses	Less than 0.3 g/kg		
	KAMPYOU (dried gourd shavings)	Less than 5 g/kg		
	MIZUAME (starch syrup)	Less than 0.2 g/kg		
	Natural fruit juice	Less than 0.15 g/kg		Natural fruit juice means the juice to be diluted to not less than a 1:5 ratio before serving.
	KONJAK flour (Devil's tongue root flour)	Less than 0.9 g/kg		
	Shelled prawn	Less than 0.1 g/kg		
	Other foods	Less than 0.03 g/kg (provided, however, that in case the level of sulfiting agent in food (except *konyaku*) listed in the third column of the Table of General Standards of Use of Food Additives is not less than 0.03 g/kg (as sulfur dioxide), less than that residual level.)		Excluding from other foods, cherries used for the manufacture of candied cherries; hops used for the manufacture of beer; and fruit juice, fruit squeezings containing not less than l % by volume of alcohol and concentrate of the same used for manufacture of wine.

Chewing gum bases

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Calcium Carbonate	Chewing gum	Not more than 10% (as calcium)	Restricted in the case where its use is indispensable for manufacture or processing of food or for purpose of dietary supplement.	(Dietary supplement, raising agent, yeast nutrient)
Talc*1		Not more than 5% (residue)	Restricted in the case where its use is indispensable for manufacture of chewing gum	(Processing aids)
Calcium Monohydrogen Phosphate Tricalcium Phosphate		Not more than 1% in food (as calcium)	Restricted in the case where its use is indispensable for manufacture or processing of food or for purpose of dietary supplement.	(Dietary supplement, emulsifier, raising agent, yeast nutrient)
Ester Gum Polybutene Polyisobutylene	Chewing gum bases		Restricted only for chewing gum bases	
Polyvinyl Acetate				(Glazing agent)

Coagulants for TOFU, soybean curd

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Calcium Chloride		Not more than 1% in food (as calcium)	Restricted in the case where its use is indispensable for manufacture or processing of food.	(Dietary supplement)
Calcium Sulfate				(Dietary supplement, raising agent, yeast nutrient)

Coating materials

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Hydroxypropyl Cellulose Hydroxypropyl Methylcellurose	Food for special dietary use (Limited to coating capsules and tablets)			
Morpholine Salts of Fatty Acids Polyvinyl Acetate Sodium Oleate	Rind of fruit or fruit vegetable		Shall not use other purpose except as coating material.	(Chewing gum base)

Color

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Colors (except chemically synthesized colors)	color		Not permitted to use in *kombu* (kelp), meat, raw fish and shellfish (including fresh whale meat), tea, *nori* (laver), beans, vegetables, and *wakame*, except gold in *nori*	
Annatto, Water-soluble Potassium Norbixin Sodium Norbixin			Not permitted to use in *kombu* (kelp), meat, raw fish and shellfish (including fresh whale meat), tea, *nori* (laver), bean, vegetable, and *wakame* (seaweed, *Undaria pinnatifida*)	
ß-Carotene			Not permitted to use in *kombu* (sea tangle), meat, fresh fish and shellfish (including raw whale meat), tea, *nori* (laver), bean, vegetable, and *wakame* (seaweed, *Undaria pinnatifida*)	(Dietary supplement)
Copper Chlorophyll	*Kombu*, tangle	Not more than 0.15 g/kg (as copper in dry matter)		
	Fruit and vegetable (stored goods)	Not more than 0.1g/kg (as copper)		
	Chewing gum	Not more than 0.05g/kg (as copper)		
	Fish-paste product (excluding SURIMI)	Not more than 0.03g/kg (as copper)		
	Pastry (excluding Confectionery bread)	Not more than 0.0064 g/kg (as copper)		
	Chocolate, Fresh Cakes (except special soft bread)	Not more than 0.001g/kg (as copper)	Use for chocolate is limited to coloring chocolate base (including coating chocolate base with colored syrup).	
	Agar-agar gel in *mitsumame* (sweetened boiled bean mixture) packaged in cans or plastic packaging	Not more than 0.0004 g/kg (as copper)		

(Continued)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Sodium Copper Chlorophyllin	*Kombu*, tangle	Not more than 0.15 g/kg (as copper in dry matter)		
	Fruit and vegetable (stored goods)	Not more than 0.1g/kg (as copper)		
	Syrup	Not more than 0.064g/kg (as copper)		
	Chewing gum	Not more than 0.05g/kg (as copper)		
	Fish-paste product (excluding *surimi*))	Not more than 0.04g/kg (as copper)		
	Candies	Not more than 0.02g/kg (as copper)		
	Chocolate, Pastry (excluding confectionery bread)	Not more than 0.0064 g/kg (as copper)		
	Agar-agar gel in *mitsumame* (sweetened boiled bean mixture) packaged in cans or plastic packaging	Not more than 0.0004 g/kg (as copper)		
Food Blue No. 1 (Brilliant Blue FCF) Food Blue No. 1 Aluminium Lake Food Blue No. 2 (Indigocarmine) Food Blue No. 2 Aluminium. Lake Food Green No. 3 (Fast Green FCF) Food Green No. 3 Aluminium Lake Food Red No. 102 (Cochineal Red) Food Red No. 104 (Phloxine) Food Red No. 105 (Rose Bengale) Food Red No. 106 (Acid Red) Food Red No. 2 (Amaranth) Food Red No. 2 Aluminium Lake Food Red No. 3 (Erythrosine) Food Red No. 3 Aluminium Lake Food Red No. 40 (Allura Red AC) Food Red No. 40 Aluminium Lake Food Yellow No. 4 (Tartrazine)	Not permitted to use in the following foods: beans, raw fish (including raw whale meat) and raw shellfish, fish pickles, *kinako* (roasted soybean flour), *kombu* (kelp) and *wakame* (seaweed), meat, meat pickles, marmalade, *miso* (fermented soybean paste), noodle (including wontons (Chinese flour dumpling with pork in them, served with soup), *nori* (laver), soy sauce, sponge cake (including *castella* and other types), tea, vegetables, and whale meat pickles.			

(Continued)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Food Yellow No. 4 Aluminium Lake Food Yellow No. 5 (Sunset Yellow) Food Yellow No. 5 Aluminium Lake Preparations of Tar Colors Titanium Dioxide				Restricted for the purpose of coloring.
Sodium Iron Chlorophyllin			Not permitted to use in *kombu* (sea tangle), meat, fresh fish and shellfish (including raw whale meat), tea, *nori* (laver), bean, vegetable, and *wakame* (seaweed, *Undaria pinnatifida*).	
Iron Sesquioxide	Banana KONJAK			Restricted for use at section of carpophore of banana.
Colors other than chemically synthesized additives These colors can be found in the lists of "Existing Food Additive" and "Substances Generally Provided as Food and Used Also as Food Additives." Refer to the following tables.			Not permitted to use in *kombu* (sea tangle), meat, fresh fish and shellfish (including raw whale meat), tea, *nori* (laver), bean, vegetable, and *wakame* (seaweed, *Undaria pinnatifida*). However, use of gold on *nori* (laver) is permitted.	

*1
1) Colors in the list of “Existing Food Additive.”
Items marked with ※ are candidates for future elimination from the list. The Ministry of Health,Labour and Welfare will publicize the new list in May, 2011.
2) Colors in the list of “Substances Generally Provided as Food and Used Also as Food Additives”

Colors in the list of “Existing Food Additives.”

Annatto Extract
Alkanet color※
Aluminium
Bamboo Grass color※
Beet Red
Bone Carbon Black
Cacao color
Cacao Carbon Black※
Caramel I
Caramel II
Caramel III
Caramel IV
Carthamus yellow
Carthamus red
Carob Germ color
Carrot Carotene
Chlorophylline
Chlorophyll
Cochineal extract
Crayfish color※
Dunaliella Carotene
Enzimatically modified Rutin (extract)
Fish Scale foil
Gardenia blue
Gardenia red
Gardenia yellow
Grape Skin color
Haematococcus Algae color
Japanese Persimon color
Kaoling color
Kooroo color
Krill color※
Lac color
Logwood color
Marigold color
Monascus Yellow
Monascus color
Onion color
Orange color
Palmoil Carotene
Paprika color
Pecan Nut color
Phaffia color
Powdered Annatto※
Purple Sweet Potato color
Purple Corn color
Purple Yam color
Sandalwood Red
Shea Nut color
Shikon color※
Silver
Spirulina color
Sweet Potato Caroten※
Tamarind color
Tomato color
Turmeric
Vegetable Carbon Black※
Vegetable Oil Soot color

Colors in the list of “Substances Generally Provided as Food and Used Also as Food Additives”

American red raspberry colour
Azuki colour
Beefsteak plant colour
Black berry colour
Black currant colour
Black huckleberry colour
Blueberry colour
Boysenberry colour
Cherry colour
Chicory colour
Chlorella, powdered
Cocoa
Cowberry colour
Cranberry colour
Dark sweet cherry colour
Elderberry colour
European dewberry colour
Fruit juice
  Berry juice
  Black currant juice
  Blackberry juice
  Blueberry juice
  Boysenberry juice
  Cherry juice
  Cowberry juice
  Cranberry juice
  Dark sweet cherry juice
  Dewberry juice
Fruit juice(cont.)
  Elderberry juice
  Gooseberry juice
  Grape juice
  Huckleberry juice
  Lemon juice
  Loganberry juice
  Morello cherry juice
  Mulberry juice
  Orange juice
  Pineapple juice
  Plum juice
  Raspberry juice
  Red currant juice
  Salmonberry juice
  Strawberry juice
  Thimbleberry juice
  Uguisukagura juice
  Whortleberry juice
Gooseberry colour
Grape juice colour
Hibiscus colour
Hydrangea leaves extrac
Laver colour
Loganberry colour
Malt extract
Morello cherry colour
Mulberry colour
Olive Tea
Paprika
Perilla colour
Plum colour
Raspberry colour
Red cabbage colour
Red currant colour
Red radish colour
Red rice colour
Saffron
Saffron colour
Salmonberry colour
Sepia colour
Strawberry colour
Tea
Thimbleberry colour
Turmeric
Uguisukagura colour
Vegetable juice
  Beefsteak plant juice
  Beet red juice
  Carrot juice
  Onion juice
  Red cabbage juice
  Tomato juice
Whortleberry colour

Color fixatives

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Sodium Nitrite	Meat product Whale meat bacon	Not more than 0.07g/kg (residual level as $NO2^-$)		
	Fish sausage and fish ham	Not more than 0.05g/kg (do.)		
	Salmon roe	Not more than 0.005g/kg (do.)		
	Ikura (salmon roe)	Not more than 0.005 g/kg (do.)		*Tarako* means cured roe of walleye pollack.
	Tarako (cod roe)	Not more than 0.005 g/kg (do.)		
Potassium Nitrate Sodium Nitrate	Meat products Whale meat bacon	Not more than 0.007 g/kg (do.)	Refer to Fermentation as to Cheese and SAKE	(Fermentation) Refer to Fermentation as to Cheese and *sake*

Color retention agents

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Ferrous Gluconate	Table olive	Not more than 0.15 g/kg (as iron)		(Dietary supplement)
Nicotinamide Nicotinic Acid			Shall not use in meat and raw fish and shellfish (including whale meat).	(Dietary supplement)

Dietary supplements

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Biotin	Food for special dietary use		Use limited only for food for special dietary use	
Calcium Carbonate		Not more than 1% in food as calcium (excluding and food for special use under the Health Promotion Act)	Restricted in the case where its use is indispensable for manufacture or processing of food or is for purpose of nutrition.	(Chewing gum base, raising agent, yeast nutrient) Refer to chewing gum
Calcium Chloride				(Coagulant for TOFU)
Calcium Citrate				(Emulsifier, flavor (taste), raising agent)
Calcium Dihydrogen Phosphate			Restricted in the case where its use is indispensable for manufacture or processing of food or is for purpose of nutrition.	(Yeast nutrient, emulsifier, raising agent)
Calcium Dihydrogen Pyrophosphate				(Emulsifier, raising agent)
Calcium Gluconate			Restricted in the case where its use is for purpose of nutrition.	
Calcium Glycerophosphate				
Calcium Hydroxide			Restricted in the case where its use is indispensable for manufacture or processing of food or is for purpose of nutrition.	
Calcium Lactate				(Flavor (taste), raising agent)
Calcium Monohydrogen Phosphate			Restricted in the case where its use is indispensable for manufacture or processing of food or is for purpose of nutrition.	(Chewing gum base, emulsifier, raising agent, yeast nutrient)
Calcium Pantothenate				
Calcium Sulfate			Restricted in the case where its use is indispensable for manufacture or processing of food or is for purpose of nutrition.	(Coagulant for tofu, raising agent, yeast nutrient)

(Continued)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
ß-Carotine Sweet Potato carotene*1 Dunaliella carotene*1 Carrot carotene *1 Palmoil carotene*1			Not permitted to use in *kombu* (sea tangle), meat, fresh fish and shellfish (including raw whale meat), tea, *nori* (laver), bean, vegetable, and *wakame* (seaweed, *Undaria pinnatifida*).	(Color)
Cholecalciferol (Vitamin D3)				Standard for Storage: shall be stored in shaded and tight-sealed container with head space air replaced by inert gas in cool room.
Copper Salts Cupric Gluconate	Substitute for mother's milk	Not more than 0.6mg/L as copper in prepared milk at specified concentration		Excluding the case under special approval from Minister of Health, Labour and Welfare (Milk/Milk products Ordinance) for use in specially prepared dry milk.
	Food with Nutrient Function Claims	Restricted to less than 5 mg of Cu in estimated daily intake of that food.		
Cupric Sulfate		Not more than 0.6mg/L as copper in prepared milk at specified concentration		
L-Cysteine Monohydrochloride	Bread Natural juice			(Quality improver)
Ferrous Gluconate	Substitute for mother's milk Weaning food Dry milk for pregnant and lactating women			(Color retention agent)
Monocalcium Di-L-Glutamate			Restricted in the case where its use is for purpose of nutrition.	(Flavor (taste), raising agent)
Nicotinamide Nicotinic Acid			Shall not use in raw meat and raw fish and shellfish (including whale meat).	(Color retention agent)
all-rac-α-Tocopheryl Acetate	Food with Nutrient Function Claims	*	*Restricted to less than 150 mg of α-tocopherol of estimated daily intake of food.	
R,R,R-α-Tocopheryl Acetate				

(Continued)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Tricalcium Phosphate		Not more than 1% in food as calcium (excluding food for special use under the Health Promotion Act)	Restricted in the case where its use is indispensable for manufacture or processing of food or is for purpose of nutrition.	(Chewing gum base, emulsifier, raising agent, yeast nutriment)
Vitamin A Fatty Acid Ester Vitamin Oil, Powdered Vitamin A				Standard for Storage: shall be stored in shaded and tight-sealed container with head space air replaced by inert gas in cool room.
Zinc Salts Zinc Gluconate	Substitute for mother's milk	Not more than 6mg/L as zinc in prepared milk at specified concentration		Excluding the case under special approval from Minister of Health, Labour and Welfare (Milk/Milk products Ordinance) for use in specially prepared dry milk.
	Food with Nutrient Function Claims	Restricted to less than 15 mg of Cu in estimated daily intake of that food.		
Zinc Sulfate	Substitute for mother's milk	Not more than 6mg/L as zinc in prepared milk at specified concentration		

Emulsifiers

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Calcium Citrate	Processed cheese Cheese food Processed food derived from processed cheese	Not more than 1% in food as calcium (except special nutrition food under the Health Promotion Act)		(Dietary supplement, flavor (taste), raising agent)
Calcium Dihydrogen Phosphate				(Dietary supplement, raising agent, yeast nutrient)
Calcium Dihydrogen Pyrophosphate				(Dietary supplement, raising agent)
Calcium Monohydrogen Phosphate				(Chewing gum base, dietary supplement, raising agent, yeast nutrient)

(Continued)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Calcium Stearoyl Lactylate	Mix powder for manufacture of *namagashi* (Pastry)	Not more than 10g/kg		Sponge cake means body of decoration cake, short cake, etc. Butter cake means Scotch cake, fruit cake, etc. In this provision, confectionery is restricted to baked products prepared from wheat flour *Namagashi* (Pastry) is restricted to those made from rice. *Mushipan* (steamed bread) is restricted to that prepared from wheat flour. Dry noodles other than instant noodles and macaroni are not referred to here. Macaroni includes macaroni, spaghetti, vermicelli, lasagna , etc. *Mushimanju* is restricted to *manju* fermented and steamed using wheat flour as material. Macaroni includes spaghetti, vermicelli, noodles and lasagna.
	Mix powder for manufacture of Butter cake, Sponge cake and *mushipan* (steamed bread)	Not more than 8g/kg		
	Bread and confectionery treated with fats and oils	Not more than 5.5g/kg		
	Confectionery (excluding butter cake and sponge cake)	Not more than 5g/kg		
	Mushimanju (steamed bean-jam bun)	Not more than 2.5g/kg		
	Namagashi (Pastry)	Not more than 6g/kg		
	Butter cake Sponge cake *Mushipan* (steamed bread)	Not more than 5.5g/kg		
	Noodles (excluding macaronis)	Not more than 4.5g/kg (in boiled noodles)		
	Baked confectionery (excluding butter cake and sponge cake) and confectionery treated with fats and oils Bread	Not more than 4g/kg		
	Macaronis	Not more than 4g/kg (in dry macaronis)	Moisture of dry macaroni is set to be 12%.	
	Mushimanju, steamed bean-jam bun	Not more than 2g/kg (in dry matter)		
Sodium Stearoyl Lactylate	Mix powder for manufacture of *namagashi* (Pastry)	Not more than 10g/kg		
	Mix powder for manufacture of Butter cake, Sponge cake and *mushipan* (steamed bread)	Not more than 8g/kg		

(Continued)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
	Bread and confectionery treated with fats and oils	Not more than 5.5g/kg		
	Confectionery (excluding butter cake and sponge cake)	Not more than 5g/kg		
	Mushimanju (steamed bean-jam bun)	Not more than 2.5 g/kg		
	Namagashi (Pastry)	Not more than 6g/kg		
	Butter cake Sponge cake *Mushipan* (steamed bread)	Not more than 5.5g/kg		
	Noodles (excluding macaroni)	Not more than 4.5g/kg (in boiled noodles)		
	Baked confectionery (excluding butter cake and sponge cake) and confectionery treated with fats and oils Bread	Not more than 4g/kg		
	Macaronis	Not more than 4g/kg (in dry macaronis)		
	Mushimanju, steamed bean-jam bun	Not more than 2g/kg (in dry matter)		

(Continued)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Polysorbate 20 Polysorbate 60	Food in not normal form (capsules, tablet)	25 g/kg (as total of Polysorbate 80)	When more than two kinds of Polysorbate are used, the limit is the sum of them. Except when permitted to use for special dietary foods	
	Cocoa and chocolate products Additives to shortening and instant noodles Sauces Chewing guns Milk fat replace	5 g/kg		
Polysorbate 65	Ice cream group Decoration on confectionary Sugar-added yoghurt Dressing Mayonnaise Mixed powder Baked confectionary Wet cakes	3 g/kg		
	Candies Soup Flour paste Flavored ice	1 g/kg		
Polysorbate 80	Pickles of seaweed Chocolate drinks Pickled vegetables	0.5 g/kg		
	Unripened cheese	0.08 g/kg		
	Canned or bottled seaweed Canned or bottled vegetables	0.03 g/kg		
	Other foods	0.02 g/kg		
Tricalcium Phosphate	Process cheese Cheese food Processed food derived from process cheese	Not more than 1 % in food as calcium (except food for special use under the Health Promotion Act)		(Chewing gum base, dietary supplement, raising agent, yeast nutrient)

Fermentation aids

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Potassium Nitrate	Cheese	Not more than 0.2g/L in raw milk (as potassium or sodium salt)		(Color fixative)
Sodium Nitrate	Japanese SAKE (rice wine)	Not more than 0.1g/L in mash (as potassium or sodium salt)		(Color fixative)

Flavorings

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Acetaldehyde Acetophenone *Aliphatic Higher Alcohols*2* *Aliphatic Higher Aldehydes (except substances generally recognized as highly toxic)*2* *Aliphatic Higher Hydrocarbons (except substances generally recognized as highly toxic)*2* Allyl Cyclohexylpropionate Allyl Hexanoate Allyl Isothiocyanate Amylalcohol α-Amylcinnamaldehyde Anisaldehyde *Aromatic Alcohols*2* *Aromatic Aldehydes (except substances generally recognized as highly toxic)*2* Benzaldehyde Benzyl Acetate Benzyl Alcohol Benzyl Propionate d-Borneol Butanol Butyl Acetate Butylamine Butyl Butyrate Butyraldehyde Butyric acid 1,8-Cineole Cinnamaldehyde Cinnamic Acid Cinnamyl Acetate Cinnamyl Alcohol Citral Citronellal Citronellol Citronelly Acetate Citronelly Formate Cyclohexyl Acetate Cyclohexyl Butyrate Decanal Decanol 2,3-Dimethylpyrazine 2,5-Dimethylpyrazine 2,6-Dimethylpyrazine *Esters*2* *Ethers*2*			Flavors listed in this table shall not be used for purpose other than flavoring unless pre	

(Continued)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Ethyl Acetate				(Processing aids)
Ethyl Acetoacetate Ethyl Butyrate Ethyl Cinnamate Ethyl Decanoate 2-Ethyl-3,(5or6)-dimethylpyrazine Ethyl Heptanoate Ethyl Hexanoate Ethyl Isovalerate 2-Ethyl-3-methyl-pyrazine 2-Ethyl-5-methyl-pyrazine Ethyl Octanoate Ethyl Phenylacetate Ethyl Propionate 2-Ethylpyrazine Ethylvanillin Eugenol *Fatty Acids*2* *Frufural and its derivatives (except substances generally recognized as highly toxic)*2* Geraniol Geranyl Acetate Geranyl Formate Hexanoic Acid Hydroxycitronellal Hydroxycitronellal Dimethylacetal *Indole and its derivatives*2* Ionone Isoamyl Acetate Isoamylalcohol Isoamyl Butyrate Isoamyl Formate Isoamyl Isovalerate Isoamyl Phenylacetate Isoamyl Propionate Isobutyl Phenylacetate Isobutylaldehyde Lsoeugenol Isopentylamine Isopropanol *Isothiocyanates (except substances generally recognized as highly toxic)*2* *Isovaleraldehyde* *Ketones*2*				

(Continued)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
*Lactones (except substances generally recognized as highly toxic)*2* Linalool Linalyl Acetate Maltol *d l*-Menthol *l*-Menthol l-Menthyl Acetate *p*-Methylacetophenone Methyl Anthranilate 2-Methylbutanol 3-Methyl-2-butanol 2-Methylbutyraldehide Methyl Cinnamate N-Methylanthranilate Methyl β-Naphthyl Ketone 2-Methylpyrazine 6-Methylquinoline 5-Methylquinoxaline Methyl Salicylate γ-Nonalactone Octanal l-Perillaldehyde 2-Pentanol(*sec*-Amylalcohol) Phenethyl Acetate Phenethylamine *Phenols (except substances generally recognized as highly toxic)*2* *Phenol Ethers (except substances generally recognized as highly toxic)*2* Pineridine Piperonal Propanol Propionaldehyde				
Propionic Acid				(Preservative)
Pyrrolidine *Terpene Hydrocarbons*2* Terpineol Terpinyl Acetate 5,6,7,8-Tetrahydroquinoxalin *Thioethers (except substances generally recognized as highly toxic)*2* *Thiols (except substances generally recognized as highly toxic)*2* 2,3,5,6-Trimethylpyrazine δ-Undecalactone Valeraldehyde Vanillin				

*2: [List of examples of flavorings used for food]

Among flavorings, 18 kinds of substances, i.e. Aliphatic Higher Alcohols, Aliphatic Higher Aldehydes, Aliphatic Higher Hydrocarbons, Aromatic Alcohols, Aromatic Aldehydes, Esters, Ethers, Fatty Acids, Furfural and its derivatives, Indole and its derivatives, Isothiocyanates, Ketones, Lactones, Phenols, Phenol Ethers, Terpene hydrocarbons, Thioethers and Thiols are designated not by each compound name but by class name.

The Ministry of Health and Welfare issues a publication about the examples of flavorings used for food in Japan based on the results of investigation. Please refer to below list FA01 for the detailed lists.

The latest lists are available from the Japan Food Chemical Research Foundation website at:

http://www.ffcr.or.jp/ (Japanese, English page)

Flavorings (for taste-related purpose), *choumiryou*

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
(Amino acid) Monocalcium Di-L-Glutamate		Not more than 1 % calcium (except food for special use under the Health Promotion Act)		(Dietary supplement)
(Organic acids) Calcium Citrate		Not more than 1 % calcium (except special nutrition food under the Health Promotion Act)		(Dietary supplement, emulsifier, raising agent)
Calcium Lactate				(Dietary supplement, raising agent)
D-Mannitol	Refer to Quality Improver section.			(Quality improver)

Flour treatment agents

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Ammonium Persulfate	Flour	Not more than 0.3g/kg		
Benzoyl Peroxide	Flour		Its use shall be limited as Diluted Benzoyl Peroxide after dilution with one or more of Aluminium Potassium Sulfate, Calcium Phosphates, Calcium Sulfate, Calcium Carbonate, Magnesium Carbonate, and starch.	
Chlorine Dioxide	Flour			
Diluted Benzoyl Peroxide	Flour	Not more than 0.3g/kg		
Potassium Bromate	Bread (restricted to that made by wheat flour)	Not more than 0.03g/kg		Decompose or remove prior to preparation of final food.

Humectant, emulsifier, and/or stabilizer

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Sodium Chondroitin Sulfate	Dressing Fish sausage Mayonnaise	Not more than 20g/kg Not more than 3 g/kg Not more than 20g/kg		

Insecticide

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Piperonyl Butoxide	Cereal	Not more than 0.024g/kg		

Mold release agent/antisticking agent

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Liquid Paraffin*1	Bread	Less than 0.1 % (residual level in bread)	Restricted for use to divide dough by automatic dividing implements and for the purpose of antisticking agent during the process of baking.	
Magnesium Stearate	Food for special dietary use (limited to capsules and tablets)			

Plasticizer for chewing gum

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Propylene Glycol	Chewing gum	Not more than 0.6 %		(Quality sustainer)

Preservatives

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Benzoic Acid Sodium Benzoate	Caviar	Not more than 2.5 g/kg (as benzoic acid)		Caviar means canned or bottled roe of sturgeon and is generally served raw and has not been pasteurized.
	Margarine	Not more than 1.0g/kg (as benzoic acid)	When used in margarine with Sorbic Acid, Potassium Sorbate ,or Calcium Sorbate, total level of the additives as benzoic acid shall not be more than 1.0g/kg.	
	Nonalcoholic beverage, Syrup, Soy sauce	Not more than 0.60 g/kg (as benzoic acid)		
	(For following foods, only Sodium benzoate should be applied.) Fruit paste and fruit juices (including concentrated juice) for manufacture of confectionary	Not more than 1.0g/kg (as benzoic acid)		Fruit paste means thick pasty food made by crushing or straining fruits.
Butyl p-Hydroxy-benzoate Isobutyl p-Hydroxy-benzoate Ethyl p-Hydroxy-benzoate Propyl p-Hydroxy-benzoate Isopropyl p-Hydroxy-benzoate	Rind of fruit or fruit vegetable	Not more than 0.012 g/kg (as p-hydroxybenzoic acid)		
	Fruit sauce	Not more than 0.2g/kg (as p-hydroxybenzoic acid)		
	Non-alcoholic beverage Syrup	Not more than 0.1g/kg (as p-hydroxybenzoic acid)		
	Soy sauce	Not more than 0.25g/L (as p-hydroxybenzoic acid)		
	Vinegar	Not more than 0.1g/L (as p-hydroxybenzoic acid)		

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Calcium Propionate Propionic Acid Sodium Propionate	Bread Cake	Not more than 2.5g/kg (as propionic acid)		(flavoring)
	Cheese	Not more than 3g/kg (as propionic acid)	When used in combination with Sorbic Acid or Potassium Sorbate or preparation of either of the additives, total level of the additives as propionic acid and as sorbic acid shall not be more than 3 g/kg.	
Nisin	Meat products Cheese (except Processed Cheese) Whipped Cream Products	Not more than 0.0125g/kg (as polypeptide including Nisin A)	When a product is permitted to be labeled as for special dietary use, this limit will not apply.	Whipped Cream Product means whipped food made of milk-fat-rich material.
	Sauces Dressing Mayonnaise	Not more than 0.01g/kg		
	Process Cheese Confectionary	Not more than 0.00625g/kg		
	Processed egg products *Miso*	Not more than 0.005g/kg		
	Wet confectionary with starch as the main material	Not more than 0.003g/kg		

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Sorbic Acid Potassium Sorbate Calcium Sorbate	Cheese	Not more than 3g/kg (as sorbic acid)	When used in combination with Propionic Acid, Calcium Propionate or Sodium Propionate, total level of the additives as sorbic acid and as propionic acid shall not be more than 3g/kg.	
	Fish-paste product (excluding *surimi*) Meat product Sea urchin Whale meat product	Not more than 2g/kg (as sorbic acid)		
	Smoked cuttlefish Smoked octopus	Not more than l.5g/kg (as sorbic acid)		
	An (sweetened *adzuki* bean or other bean paste) Candied cherry Dried fish and shellfish product (excluding smoked cuttlefish and smoked octopus) Flour paste Gnocchi, Jam *Kasu-zuke* (pickled in *sake* lees) *Koji-zuke* [(preserved in *koji* (malted rice)] *Miso* (fermented soy paste) *Miso-zuke* (preserved in *miso*) *Nimame* (sweetened cooked beans) *Shio-zuke* (salted pickle) *Shouyu-zuke* (pickled in soy sauce) Syrup *Takuan-zuke* (pickled radish in rice bran paste or similar material) *Tsukudani* (storable food boiled down in soy sauce)	Not more than 1g/kg (as sorbic acid)		Candied cherry means candied and pitted cherries or such cherries with crystal of sugar applied on the surface or such immersed in the packing media of syrup Flour paste means heat-treated and pasteurized food in paste form prepared from the principal ingredients of flour, starch, nuts or their processed products, cocoa, chocolate, coffee, fruits or their juice and other ingredients which include sugar ,fats and oils, powdered milk, eggs, and flour and to be used as fillings of bread or confectionaries or applied on their surface. TAKUAN-ZUKE means pickled raw or dried radish prepared by immersing in rice bran or wheat bran paste containing taste-related flavor, spice, food color, etc., after pickling in salt, excluding ITCHOU-ZUKE radish and HAYAZUKE radish

(Continued)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
	Margarine	Not more than 1 g/kg (as sorbic acid)	When used in margarine with Benzoic Acid or Sodium Benzoate, total level of the additives as benzoic acid and as sorbic acid shall not be more than 1 g/kg.	
	Dried prune Ketchup Soup (excluding potage) *Su-zuke* (pickled in vinegar) *Tare* (grilled meat 's sauce) *Tsuyu* (Japanese soup preparation)	Not more than 0.5g/kg (as sorbic acid)		
	Amazake [(sweet drink made from fermented rice (restricted to be served after dilution to not less than 3 times in volume)] Fermented milk (for raw material for preparation of fermented milk drink) Fermented milk drink (for raw material for preparation of fermented milk drink, excluding pasteurized product)	Not more than 0.3g/kg (as sorbic acid)		
	Wine Miscellaneous alcoholic beverage	Not more than 0.2g/kg (as sorbic acid)		
	Fermented milk drink (excluding pasteurized product)	Not more than 0.05g/kg (as sorbic acid)		
	(For following foods, only Potassium Sorbate and/or Calcium Sorbate should be applied. Sorbic acid should not be applied.) Fruit paste for manufacture of confectionery, and Fruit juice (including concentrated fruit	Not more than 1 g/kg (as sorbic acid)		Fruit paste means thick pasty food made by crushing or straining fruits.

	juice)			
Sodium Dehydroacetate	Butter Cheese Margarine	Not more than 0.5g/kg (as dehydroacetic acid)		

Processing aids

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Acetone	Guarana nuts fats and oils		Restricted for extraction of ingredients in Guarana nuts in the process of preparation of Guarana beverage and for fractionation of components of fats and oils Remove prior to preparation of final food.	
Acid Clay*1 Bentonite *1 Diatomaceous Earth *1 Kaolin*1 Perlite*1 Talc*1 Similar insoluble substances as above 6 substances *1		Not more than 0.5 % in food (residual level) (including the case where 2 or more substances are used) Not more than 5 % in chewing gum in the case where only Talc is used	Only in the case where its use is indispensable for manufacture or processing of food.	
Calcium Silicate		2 %*	Not permitted to use in food replacement for mother's milk or baby food. * When used with powdered SiO2, 2 % is the total.	

(Continued)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Ethyl Acetate			Ethyl Acetate may be used for purpose of denaturalization of ethanol to be used as solvent for vinyl acetate resin, in the process of removal of the astringency of persimmons or preparation of granules or pellets of spice, as solvent of Butylated Hydroxytoluene, or Butylated Hydroxyanisole and as an ingredient for manufacture of edible vinegar, in manufacturing process of *konyaku* flour or crystalline fructose, or for stimulating purpose of yeast autolysis, in addition to its use as flavor. In the case for the purpose of yeast autolysis, remove prior to preparation of final food.	(Flavorings)
Hexane*1			Restricted for extraction of fats and oils in manufacturing process of edible fats and oils. Remove prior to preparation of final food.	
Hydrochloric Acid Ion Exchange Resin Oxalic acid Potassium hydroxide Sodium hydroxide Sulfuric acid			Neutralize or remove prior to preparation of final food.	
Magnesium Silicate	(Fats and Oils)		Magnesium Silicate and its products are not to be used other than for use of fat/oil filtration.	
Magnesium Stearate				Restricted for use for nutrition functional capsules and pills
Oxalic Acid			Neutralize or remove prior to preparation of final food.	

(Continued)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Polyvinyl-polypyrrolidone			Restricted for purpose of filtration aid. Remove prior to preparation of final food.	
Potassium Hydroxide Potassium Hydroxide solution			Neutralize or remove prior to preparation of final food.	
Silicon Dioxide (Other than Silicon Dioxide, Fine)			Restricted for purpose of filtration aid. Remove prior to preparation of final food.	
Sodium Hydroxide Sodium Hydroxide Solution			Neutralize or remove prior to preparation of final food.	
Sodium Methoxide			Decompose prior to preparation of final food and remove resulting methanol.	
Sulfuric Acid			Neutralize or remove prior to preparation of final food.	
AluminumAmmonium Sulfate Aluminum Potassium Sulfate	(Raising agent)		Not to be used for *miso* (fermented soybeans).	

Propellant

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Nitrous oxide	Whipped creams			Whipped creams mean foamed products prepared by use of either food using milk fat or substitute food of milk fat as principal ingredient.

Quality improver

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
L-Cysteine Monohydrochloride	Bread Natural fruit juice			(Dietary supplement)
Erythorbic Acid Sodium Erythorbate	Fish-paste products (excluding SURIMI) Bread		Shall not be used for purpose of nutrition.	(Antioxidants)
D-Mannitol	*Furikake* (sprinkles) restricted to those containing granules)	Not more than 50 % as an ingredient in granules	When mixed with potassium chloride and glutamate to prepare product of flavoring purpose, content of D-Mannnitol in the mixture should be less than 80%.	(Flavorings) *Furikake* includes *chazuke*. *Tsukudani* refers only to those prepared from KOMBU, angle.
	Candies	Not more than 40 %		
	Rakugan (Rice flour cake)	Not more than 30 %		
	Tsukudani, storable food boiled down in soy sauce (restricted for those prepared from *kombu* tangle)	Not more than 25% as residual level		
	Chewing gum	Not more than 20 %		
Potassium Bromate	Bread	Not more than 0.03g/kg of flour (as bromic acid)	Decompose or remove prior to preparation of final food.	Only for bread prepared from wheat flour

Quality sustainer

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Propylene Glycol	Uncooked noodle Smoked cuttlefish	Not more than 2 % (as added level of propylene glycol)		(Plasticizer for chewing gum)
	Crust of Chinese pastry or dumpling; *shao ma*i, spring roll, won ton, and *ziaozi* (GYOUZA in Japanese)	Not more than 1.2 % (as added level of propylene glycol)		
	Other food	Not more than 0.6 % (as added level of propylene glycol)		

Raising agents (Baking powder)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Aluminium Ammonium Sulfate Aluminium Potassium Sulfate			Shall not be used in MISO.	(Processing aids)
Calcium Carbonate		Not more than 1 % in food as calcium (except special nutrition food under the Health Promotion Act)		(Chewing gum base, dietary supplement, yeast nutrient)
Calcium Citrate				(Dietary supplement, emulsifier, flavor (taste))
Calcium Dihydrogen Phosphate				(Dietary supplement, emulsifier, yeast nutrient)
Calcium Dihydrogen Pyrophosphate				(Dietary supplement, emulsifier)
Calcium Lactate				(Dietary supplement, flavouring/taste)
Calcium Monohydrogen Phosphate				(Chewing gum base, dietary supplement, emulsifier, yeast nutrient)
Calcium Sulfate				(Coagulant for TOFU, dietary supplement, yeast nutrient)
Tricalcium Phosphate				(Chewing gum base, dietary supplement, emulsifier, yeast nutrient)

Sterilizing agents

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Hydrogen Peroxide			Decompose or remove prior to preparation of final food.	
Hypochlorous Acid Water			Shall be removed prior to preparation of final food.	
Sodium Chlorite				Refer to Bleaching agents
Sodium Hypochlorite			Shall not be used in sesame seeds.	

Surface treating agent of natural cheese

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Natanycin	Natural cheese (limited to be used on the surface area of hard and semihard cheeses	Less than 0.02 g/kg		Hard cheese is defined as cheese with MFFB (% of moisture on fat free basis) of 49 – 56 %, while semi-hard cheese is defined as cheese with MFFB of 54 –69 %.

Sweeteners

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Acesulfame Potassium	Substitute for sugar	Not more than 15 g/kg		Substitute for sugar means those that are directly added to coffee, black tea, etc. and are used as substitute food for sugar.
	Food with nutritional function (limited to tablets)	Not more than 6 g/kg		
	Chewing gum	Not more than 5 g/kg		
	An confectionery (except Chewing gum) and Pastry	Not more than 2.5g/kg		
	Ice cream products Jam *Tare* *Tsuke-mono* Ice candy Flour paste	Not more than 1 g/kg		
	Wine Miscellaneous alcoholic beverage Soft drinks Milk drink Lactic bacteria fermented beverage (when used for beverage to be served after dilution, the diluted beverage)	Not more than 0.5g/kg		
	Other foods	Not more than 0.35g/kg		
	Food for specified use under the Nutrition Improvement Act	Specified level under the Act.		
Disodium Glycyrrhizinate	Soy sauce, *miso* (fermented soy-bean paste)			
Saccharin	Chewing gum	Not more than 0.05 g/kg (as saccharin)		
Sodium Saccharin	*Koji-zuke* (preserved in *koji*, fermented rice) *Su-zuke* (pickled in vinegar) *Takuan-zuke* (preserved radish in rice bran paste)	Less than 2 g/kg (as residual level of sodium saccharin)		
	Powdered nonalcoholic beverage Fermented milk (as material in lactic acid drinks)	Less than 1.5 g/kg (do.)		

(Continued)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
	Kasu-zuke (pick-led in *sake* lees) *Miso-zuke* (preserved in fermented soy-bean paste) *Shouyu-zuke* (preserved in soy sauce) Processed fish and shellfish (excluding *surimi* products, *tsukudani*, pickled food, and canned or bottled food)	Less than 1.2 g/kg (do.)		
	Nimame (cooked beans or peas, sweetened) Processed seaweed Soy sauce *Tsukudani* (preserved food boiled down in soy sauce)	Less than 0.5 g/kg (do.)		
	Edible ices Milk drinks Sauce Nonalcoholic beverage Fish-paste product Syrup Vinegar Lactic acid bacteria drinks	Less than 0.3 g/kg (less than 1.5 g/kg in case of materials for nonalcoholic beverage or lactic acid bacteria drinks or fermented milk product to be diluted not less than 5-fold before use, less than 0.9 g/kg in case of vinegar to be diluted not less than 3-fold before use) (do.)		Edible ices include sherbet, flavored ices and other similar products.
	An (*adzuki* bean paste) Fermented milk product (excluding fermented milk product to be used as ingredient for lactic acid bacteria beverage) Flour paste Ice cream products Jam *Miso* (fermented soybean paste)	Less than 0.2 g/kg (do.)		These levels shall also be applied to liquid mixes and mix powders that are the ingredients of confectionery, ice cream, or ice cakes.

(Continued)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
	Tsukemono (other than *kasu-zuke, koji-zuke, miso-zuke, shouyu-zuke, su-zuke, takuan-zuke*)			
	Confectionery	Less than 0.1 g/kg (do.)		
	Canned or bottled food (including all food not listed in this column and fish and shellfish product)	Less than 0.2 g/kg (do.)		
	Food for special use under the Nutrition Improvement Act	Specified level under the Act		
Sucralose	Substitute for sugar	Not more than 12g/kg		Substitute for sugar means that it is directly added to coffee, black tea, etc. and is used as substitute food for sugar. When a product is permitted to be labeled as for special dietary use, this limit will not apply.
	Chewing gum	Not more than 2.6g/kg		
	Confectionery and Pastry	Not more than 1.8g/kg		
	Jam	Not more than 1 g/kg		
	Japanese *sake* (rice wine) Compound *sake* (formulated rice wine) Wine Miscellaneous alcoholic beverage Soft drinks Milk drink Lactic acid bacteria drinks (when used for beverages to be served after dilution, the diluted beverage)	Not more than 0.4g/kg		
	Other foods	Not more than 0.58g/kg		
	Specified level under the act	Food for specified use under the Nutrition Improvement Act		

Thickeners (stabilizers or gelling agents)

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Calcium Carboxymethy-lcellulose Methylcellulose Sodium Carboxymethylcellulose Sodium Carboxymethyl-starch		Not more than 2 %	In the case where 2 or more of Calcium Carboxymethyl-cellulose, Methylcellulose, Sodium Carboxymethyl-cellulose, or Sodium Carboxymethyl-combination, the total level shall not be more than 2 %.	
Propylene Glycol Alginate		Not more than 1 %		
Sodium Polyacrylate		Not more than 0.2 %		

Yeast nutrients

Substance name	Permitted food	Maximum level	Limitation of use	Note (Principal other uses)
Calcium Carbonate		Not more than 1 % in food as calcium (except special nutrition food under the Health Promotion Act)	Restricted in the case where its use is indispensable for manufacture or processing of food or for purpose of dietary supplement.	(Chewing gum base, dietary supplement, raising agent)
Calcium Sulfate				(Coagulant for tofu, dietary supplement, raising agent)
Calcium Dihydrogen Phosphate				(Dietary Supplement, emulsifier, raising agent)
Calcium Monohydrogen Phosphate Tricalcium Phosphate				(Dietary Supplement, chewing gum base, emulsifier, raising agent)

Table FA03 Food Additives with No Standards of Use

Meaning of parenthetical abbreviated names

AC : Anticaking agent
AO : Antioxidant
AR : Acidity regulator
BA : Binding agent
CB : Chewing gum bases
CD : Color developer (Color fixative)
COA : Coagulant for TOFU, soybean curd
COL : Color
CR : Color retention agent
DS : Dietary supplement
EM : Emulsifier
FA : Food acid
FE : Fermentation aid
FT : CHOUMIRYOU, flavoring for taste-related purpose, excluding sweeteners and food acids
HU : Humectant
KA : *Kansui* , alkaline agent for the preparation of Chinese noodles
PA : Processing aid
PC : Plasticizer for chewing gum
QI : Quality improver
RA : Raising agent (baking powder)
SW : Sweetner
TH : Thickener
YN : Yeast nutrient

Anticaking agent
Magnesium carbonate (DS, RA)

Antioxidants
L-Ascorbic Acid (DS, QI, RA)
L-Ascorbyl Palmitate (DS)
L-Ascorbyl Stearate (DS)
Calcium L-Ascorbate (DS)
Sodium L-Ascorbate (DS, QI)

Acidity regulators
Acetic Acid (FA)
Adipic Acid (FA, RA)
Carbon Dioxide (FA)
Citric Acid (FA, RA)
Dipotassium Hydrogen Phosphate (EM, FT, KA, RA)
Disodium Dihydrogen Pyrophosphate (KA, RA)
Disodium Hydrogen Phosphate (EM, KA, FT, RA)
Disodium Succinate (FA, FT)
Disodium DL-Tartrate (FA, FT)
Disodium L-Tartrate (FA, FT)
Fumaric Acid (FA, RA)
Glacial Acetic Acid (FA)
Gluconic Acid (FA)
Glucono-δ-Lactone (COA, FA, RA)
Lactic Acid (FA, RA)
DL-Malic Acid (FA, RA)
Monosodium Fumarate (FA, RA)
Monosodium Succinate (FA, FT)
Phosphoric Acid (FA)
Potassium DL-Bitartrate (FT, RA)
Potassium L-Bitartrate (FT, RA)
Potassium Carbonate (Anhydrous) (YN, KA, RA)
Potassium Dihydrogen Phosphate (EM, FT, KA, RA)
Potassium Gluconate (EM, FA, FT, HU, YN)
Sodium Acetate (FA, FT)
Sodium Bicarbonate (KA, RA)
Sodium Carbonate (KA, RA)
Sodium Dihydrogen Phosphate (EM, KA, FT, RA)
Sodium Gluconate (EM, FA, FT, HU, YN)
Sodium Lactate (FA, FT)
Sodium DL-Malate (FA, FT, RA)
Succinic Acid (FA, FT)
DL-Tartaric Acid (FA, RA)
L-Tartaric Acid (FA, RA)
Trisodium Citrate (FA, FT)

Binding agents
Disodium Hydrogen Phosphate
Potassium Metaphosphate (EM, KA, RA)
Potassium Polyphosphate (EM, KA, RA)
Potassium Pyrophosphate (EM, KA, RA)
Sodium Metaphosphate (EM, KA, RA)
Sodium Polyphosphate (EM, KA, RA)
Sodium Pyrophosphate (EM. KA, RA)

Chewing gum bases
Glycerol Esters of Fatty Acids (EM)
Propylene Glycol Esters of Fatty Acids (EM)
Sorbitan Esters of Fatty Acids (EM)
Sucrose Esters of Fatty Acids (EM)

Coagulants for TOFU, soybean curd
Glucono-δ-Lactone (FA, AR, RA)
Magnesium Chloride (PA, YN, DS)
Magnesium Sulfate (FE, DS)

Color
Riboflavin (DS)
Riboflavin 5'-Phosphate Sodium (DS)
Riboflavin Tetrabutyrate (DS)

Color retention agents
Ferrous Sulfate (DS)

Dietary supplement
[Amino acids]
DL-Alanine (FT)
L-Arginine L-Glutamate (FT)
L-Glutamic Acid (FT)
Glycine (FT)
L-Histidine Monohydrochloride (FT)
L-Isoleucine (FT)
L-Lysine L-Aspartate (FT)
L-Lysine L-Glutamate (FT)
L-Lysine Monohydrochloride (FT)
D-Methionine (FT)
L-Methionine (FT)
Monosodium L-Aspartate (FT)
Monosodium L-Glutamate (FT)
L-Phenylalanine (FT)
L-Theanine (FT)
DL-Threonine (FT)
L-Threonine (FT)
DL-Tryptophan (FT)
L-Tryptophan (FT)
L-Valine (FT)

[Minerals]
Calcium Stearate
Ferric Ammonium Citrate
Ferric Chloride
Ferric Citrate
Ferric Pyrophosphate
Ferrous Sulfate (Crystal) (CD)
Iron Lactate
Magnesium Carbonate (AC, RA)
Magnesium Chloride (YN, PA, COA)
Magnesium Hydroxide
Magnesium Oxide (PA)
Magnesium Sulfate (COA, FE)
Sodium Ferrous Citrate
Trimagnesium Phosphate

[Vitamins]
L-Ascorbic Acid (AO, QI, RA)
L-Ascorbic Acid 2-Glucoside
L-Ascorbyl Palmitate (AO)
L-Ascorbyl Stearate (AO)
Bisbentiamine
ß-Carotene (COL)
Calcium L-Ascorbate (AO)
Cholecalciferol
Dibenzoyl Thiamine
Dibenzoyl Thiamine Hydrochloride
Ergocalciferol
Folic Acid

Methyl Hesperidin
Pyridoxine Hydrochloride
Riboflavin (COL)
Riboflavin 5'-Phosphate Sodium (COL)
Riboflavin Tetrabutyrate (COL)
Sodium L-Ascorbate (AO, QI)
Sodium Pantothenate
Thiamine Dicetylsulfate
Thiamine Dilaurylsulfate
Thiamine Hydrochloride
Thiamine Mononitrate
Thiamine Naphthalene-1,5-Disulfonate
Thiamine Thiocyanate
Vitamin A
Vitamin A Esters of Fatty Esters

Emulsifiers

Glycerol Esters of Fatty Acids (CB)
Lecithin (*1 Existing Food Additives)
Propylene Glycol Esters of Fatty Acids (CB)
Sorbitan Esters of Fatty Acids (CB)
Starch Sodium Octenylsuccinate (TH)
Sucrose Esters of Fatty Acids (CB)

[Emulsifiers (for use in processed cheese, cheese food, and food from processed cheese)]

Ammonium Dihydrogen Phosphate (YN, FE)
Diammonium Hydrogen Phosphate (YN, FE)
Dipotassium Hydrogen Phosphate (KA, RA, AR, FT)
Disodium Dihydrogen Pyrophosphate (KA)
Disodium Hydrogen Phosphate (KA, RA, AR, FT)
Potassium Dihydrogen Phosphate (KA, FT, AR, RA)
Potassium Gluconate (AR, FA, FT, HU, YN)
Potassium Metaphosphate (KA, BA, RA)
Potassium Polyphosphate (KA, BA, RA)
Potassium Pyrophosphate (KA, BA, RA)
Sodium Dihydrogen Phosphate (KA, RA, AR, FT)
Sodium Gluconate (AR, FA, FT, HU, YN)
Sodium Metaphosphate (KA, BA, RA)
Sodium Polyphosphate (KA, BA, RA)
Sodium Pyrophosphate (KA, BA, RA)
Trisodium Citrate (FA, FT, AR)
Trisodium Phosphate (KA, FT)
Tripotassium Phosphate (KA, FT)

Food acids

Acetic Acid (AR)
Adipic Acid (AR)
Carbon Dioxide (AR)
Citric Acid (AR, RA)
Disodium Succinate (AR, FT)
Disodium DL-Tartrate (AR, FT)
Disodium L-Tartrate (AR, FT)
Fumaric Acid (AR, RA)
Glacial Acetic Acid (AR)
Gluconic Acid (AR)
Glucono-δ-Lactone (AR, COA, RA)
Lactic Acid (AR, RA)
DL-Malic Acid (AR, RA)
Monopotassium Citrate (AR)
Monosodium Fumarate (AR, FT, RA)
Monosodium Succinate (AR, FT)
Phosphoric Acid (AR)
Potassium Gluconate (AR, EM, FT, HU, YN)
Sodium Acetate (AR, FT)
Sodium Gluconate (AR, EM, FT, HU, YN)
Sodium Lactate (AR, FT)
Sodium DL-Malate (AR, FT, RA)
Succinic Acid (AR, FT)
DL-Tartaric Acid (AR, FT)
L-Tartaric Acid (AR, FT)
Tripotassium Citrate (AR)
Trisodium Citrate (AR, EM, FT)

Fermentation aids

Ammonium Dihydrogen Phosphate (YN)
Ammonium Sulfate (YN)
Diammonium Hydrogen Phosphate (YN, EM)
Magnesium Sulfate (COA, DS)
Trimagnesium Phosphate

Flavorings for taste-related purpose, CHOUMIRYOU, excluding sweeteners and food acids

[Amino acids]

DL-Alanine (DS)
L-Arginine L-Glutamate (DS)
L-Glutamic Acid (DS)
Glycine (DS)
L-Histidine Monohydrochloride (DS)
L-Isoleucine (DS)
L-Lysine L-Aspartate (DS)
L-Lysine L-Glutamate (DS)
L-Lysine Monohydrochloride (DS)
DL-Methionine (DS)
L-Methionine (DS)
Monoammonium L-Glutamate

Monomagnesium Di-L-Glutamate
Monopotassium L-Glutamate (DS)
Monosodium L-Aspartate (DS)
Monosodium L-Glutamate (DS)
L-Phenylalanine (DS)
L-Theanine (DS)
DL-Threonine (DS)
L-Threonine (DS)
DL-Tryptophan (DS)
L-Tryptophan (DS)
L-Valine (DS)

[Inorganic salts]
Dipotassium Hydrogen Phosphate (AR, RA)
Potassium Chloride
Potassium Dihydrogen Phosphate (KA, RA, AR, EM)
Sodium Dihydrogen Phosphate (AR, RA, KA, EM)
Disodium Hydrogen Phosphate (AR, RA, EM, KA)
Tripotassium Phosphate (EM, KA)
Trisodium Phosphate (EM, KA)

[Nucleotides]
Calcium 5'-Ribonucleotide
Disodium 5'-Cytidylate
Disodium 5'-Guanylate
Disodium 5'-Inosinate
Disodium 5'-Ribonucleotide
Disodium 5'-Uridylate

[Organic acids]
Disodium Succinate (FA, AR)
Disodium DL-Tartrate (FA, AR)
Disodium L-Tartrate (FA, AR)
Monopotassium Citrate (FA)
Monosodium Fumarate (FA, AR)
Monosodium Succinate (FA, AR)
Potassium DL-Bitartrate (AR, RA)
Potassium L-Bitartrate (AR, RA)
Potassium Gluconate (AR, EM, FA, HU, YN)
Sodium Acetate (FA, AR)
Sodium Gluconate (AR, EM, FA, HU, YN)
Sodium Lactate (FA, AR)
Sodium DL-Malate (FA, AR)
Succinic Acid (FA, AR)
Tripotassium Citrate (FA)
Trisodium Citrate (FA, EM, AR)

Humectant
Potassium Gluconate (AR, EM, FA, FT, YN)
Sodium Gluconate (AR, EM, FA, FT, YN)
D-Sorbitol (SW, PC)

KANSUI, alkaline agents for preparation of Chinese noodles
Dipotassium Hydrogen Phosphate (EM, RA, AR, FT)
Disodium Dihydrogen Pyrophosphate (BA. EM, RA, AR)
Disodium Hydrogen Phosphate (AR, EM, RA, FT)
Potassium Carbonate (Anhydrous) (AR, RA, YN)
Potassium Dihydrogen Phosphate (EM, RA , AR, FT)
Potassium Metaphosphate (BA, EM, RA)
Potassium Polyphosphate (BA, EM, RA)
Potassium Pyrophosphate (BA, EM, RA)
Sodium Bicarbonate (AR, RA)
Sodium Carbonate (AR, RA)
Sodium Dihydrogen Phosphate (AR, EM, RA, FT)
Sodium Metaphosphate (BA, EM, RA)
Sodium Polyphosphate (BA, EM, RA)
Sodium Pyrophosphate (BA, EM, RA)
Tripotassium Phosphate (EM, FT)
Trisodium Phosphate (AR, EM, FT)

Pasteurizing Agent
High-Test Hypochlorite

Processing aids
Ammonia
Hydroxylpropyl Cellulose
Hydroxylpropyl Methylcellulose
Magnesium Chloride (DS, YN, COA)
Magnesium Oxide (DS)
Sodium Caseinate
Sodium Sulfate

Plasticizers for chewing gum

Glycerol
D-Sorbitol (SW, HU)

Quality Improver

L-Ascorbic Acid (DS, AO, RA)
Sodium L-Ascorbate (DS, AO)

Raising agents

Adipic Acid (FA, AR)
Ammonium Bicarbonate
Ammonium Carbonate (YN)
Ammonium Chloride (YN)
L-Ascorbic Acid (DS, AO, QI)
Citric Acid (FA, AR)
Dipotassium Hydrogen Phosphate (AR, FT, KA, EM)
Disodium Dihydrogen Pyrophosphate (BA, KA, EM, AR)
Disodium Hydrogen Phosphate (AR, FT, KA, EM)
Fumaric Acid (FA, AR)
Glucono-δ-Lactone (COA, FA, AR)
Lactic Acid (FA. AR)
DL-Malic Acid (FA. AR)
Magnesium Carbonate (AC, DS)
Monosodium Fumarate (FA, AR, FT)
Potassium Carbonate (Anhydrous) (AR, KA. YN)
Potassium Dihydrogen Phosphate (AR, FT, KA, EM)
Potassium DL-Bitartrate (AR, FT)
Potassium L-Bitartrate (AR, FT)
Potassium Metaphosphate (BA, KA, EM)
Potassium Polyphosphate (BA, KA. EM)
Potassium Pyrophosphate (BA, KA. EM)
Sodium Bicarbonate (AR, KA)
Sodium Carbonate (AR, KA)
Sodium Dihydrogen Phosphate (AR, FT, KA, EM)
Sodium DL-Malate (FA, FT, AR)
Sodium Metaphosphate (BA, KA, EM)
Sodium Polyphosphate (BA, KA, EM)
Sodium Pyrophosphate (BA, KA, EM)
DL-Tartaric Acid (FA, AR)
L-Tartaric Acid (FA, AR)

Sweeteners

Aspartame
D-Sorbitol (PC, HU)
Neotame
Xylitol

Thickener (Stabilizer or gelling agent)

Acetylated Distarch Adipate
Acetylated Distarch Phosphate
Acetylated Oxidized Starch
Ammonium Alginate
Calcium Alginate
Distarch Phosphate
Hydroxy propyl Distarch Phosphate
Hydroxypropyl Starch
Monostarch Phosphate
Oxidized Starch
Phosphated Distarch Phosphate
Potassium Alginate
Sodium Alginate
Starch Acetate
Starch Sodium Octenyl Succinate (EM)

Yeast nutrients

Ammonium Carbonate(RA)
Ammonium Chloride(RA)
Ammonium Dihydrogen Phosphate(FE,EM)
Ammonium Sulfate(FE)
Diammonium Hydrogen Phosphate(FE,EM)
Magnesium Chloride(COA,PA,DS)
Magnesium Sulfate(COA)
Potassium Carbonate(Anhydrous)(AR,KA,RA)
Potassium Glivonstr(AR,EM,FA,FT, HU)
Soodium Gliconate(AR,EM,FA,FT, HU)

Table FA04 Existing Food Additives

No food additive appearing in the list, or any food or preparation containing such food additives are subject to the provisions of Article 10 of the Food Sanitation Act as an interim measure in the amendment to the Act (No.101, 1995).

Notes:

1) The list is arranged in alphabetical order for the convenience of readers. Numbers in parentheses indicate the position in the original Japanese list.
2) Natural flavoring agents and substances generally provided as food and used as food additives are not subject to the provisions of Article 10. Therefore, they do not appear in the list.
3) Additives bearing * markings may be eliminated from the list in due course. The Ministry of Health and Welfare published a list of 80 candidate additives (18 May, 2010, Food Safety Office 0518 No.1). The forthcoming new list will be publicized in May 2011.

Absinth extract (270)
A substance obtained from the whole absinth grass.
α-Acetolactate decarboxylase (12)
N-Acetylglucosamine (11)*
Acid clay (168)
Acid phosphatase (169)
Actinidine (4)Activated acid clay (68)
Active carbon (67)
Acylase (6)
5'-Adenylic acid (13)
Agarase (3)
Agrobacterium succinoglycan (5)
A substance obtained from the culture of bacteria belonging to *Agrobacterium*.
L-Alanine (19)
Alginate lyase (26)
Alginic acid (25)
Alkanet colour (23)*
A substance obtained from alkanet roots.
Aloe extract (94)*
A substance obtained from the leaved of *Aloe arborescens* MILL.
Aloe vera extract (28)*
A substance obtained from aloe leaves.
Aluminium (27)
Amino acid-sugar reaction product (224)
A substance obtained by heating the mixture of amino acids and monosaccharides.
Aminopeptidase (16)
α-Amylase (17)
ß-Amylase (18)
Annatto extract (14)
A substance obtained from the seed coats of annatto.
Anthocyanase (29)
Arabino galactan (21)*
L-Arabinose (22)
L-Arginine (24)
Artemisia sphaerocephala seed gum Artemisia seed gum (167)
Ascorbate oxidase (7)
L-Asparagine (8)
L-Aspartic acid (9)
Aspergillus terreus glycoprotein (10)
A substance obtained from the culture of mold.
Aureobasidium cultured solution (1)
A substance obtained from the culture of bacteria belonging to of Azotobacter vinelandii.
Bacillus natto gum (263)
A substance obtained from the culture of bacteria belonging to *Bacillus natto*.
Bamboo grass colour (165)*
A substance obtained from the leaves of bamboo grass.
Bees wax (366)
Beet red (292)
Bentonite (347)
Betaine (332)
Bone carbon black (154)
A substance obtained by carbonizing bones.
Bone charcoal (153)
A substance obtained from bovine bones.
Brazilina licorice extract (311)
A substance obtained from Brazilian licorice roots.
Bromelain (318)
Buckwheat ash extract (211)
Butane (307)
Cacao carbon black (61)*
Cacao colour (60)

Caffeine (extract) (73)
A substance obtained from coffee beans or tea leaves.
Calcinated calcium (187)*
A substance obtained by calcinating sea urchin shells, shells, coral, whey, bones or eggshells.
Candelilla wax (90)
A substance obtained from the candelilla stems.
Cane wax (166)*
Capsicum water-soluble Extract (247)
Caramel I (plain) (78)
A substance obtained by heating food-grade carbohydrates including starch hydrolysates, molasses or saccharides excluding Caramel II (No.79), Caramel III (No.80). And Caramel IV (No.81).
Caramel II (caustic sulfite process) (79)
A substance obtained by adding sulfite compounds to, and heat-treating, food grade carbohydrates including starch-hydrolysates, molasses or saccharides, excluding Caramel IV (No.81).
Caramel III (ammonia process) (80)
A substance obtained by adding ammonium compounds to, and heat-treating, food grade carbohydrates including starch-hydrolysates, molasses or saccharides, excluding Caramel IV (No.81).
Caramel IV (sulfite ammonia process) (81)
A substance obtained by adding sulfite compound and ammonium compounds to, and heat-treating, food grade carbohydrates including starch-hydrolysates, molasses or saccharides.
Carboxypeptidase (84)
Carnauba wax [Brazil wax] (83)
A substance obtained from leaves of carnauba trees.
Carob bean gum [Locust bean gum] (86)
A substance obtained by grinding and dissolving and precipitating the seed albumins of locust bean beans.
Carob germ colour (85)
Carrageenan (74)
A substance obtained from the whole algae of IBARA-NORI (Hypneaceae Hypnea), KIRINNSAI (Solieriacea Eucheuma), GINNANSOU (Gingartenacea Iridaea), SUGI-NORI (Gingartinaceae Girartina) or TSHUNOMATA (Chondrus.).
Carrot carotene (274)
Carthamus red (336)
A substance obtained from safflower flowers.
Carthamus yellow (337)
Cassia gum (64)
A substance obtained by grinding the seed of EBISU-GUSA-MODOKI (*Cassia tora LINN*).
Catalase (66)
Catechin (70)*
Cellulase (208)
Charcoal (380)
A substance obtained by carbonizing bamboo or wood.
Chicle Chiquibul Crown gum Nispero (228)
A substance obtained from the secretion of sapodilla trees.
Chilte (233)*
A substance obtained from the secretion of chite trees (*Chidoscolus elasticus* LUNDELL).
Chinese bayberry extract (387)
Chitin (96)
Chitinase (95)
Chitosan (98)
Chitosanase (97)
Chlorophyll (132)
Chlorophylline (131)
Cholesterol (248)*
A substance obtained from fish oil or lanolin (Refer to NO. Lanolin).
Clove extract (130)
A substance obtained from the buds, leaves or flowers of clove.
Cobalt (156)*
Cochineal extract [Carminic acid] (152)
A substance obtained from cochineal insects.
Coffee bean extract (265)
Copal resin (155)*
A substance obtained from the secretion of copal trees.
Copper (245)
Crayfish colour (72)*
A substance obtained from crayfish shells or eyes.
Cristobalite (115)
Crude magnesium chloride (sea water) (210)
A substance obtained by separating potassium chloride and sodium chloride from sea water.
Crude potassium chloride (sea water) (209)
A substance obtained by separating sodium chloride from sea water.
Curdlan (71)
A substance obtained from the culture of bacteria belonging to *Argobacterium* or *Alcaligenes.*
Cyanocobalamin Vitamin B_{12} (173)
Cyclodextrin (178)

Cyclodextrin glucanotransferase (179)
L-Cystine (181)
5'-Cytidylic acid (184)
Dammar resin (227)*
A substance obtained from the secretion of dammar trees.
5'-Deaminase (237)
Depolymerized Natural rubber (238)*
A substance obtained by decomposing the secretion of para rubber trees.
Dextran (241)
Dextranase (240)
Diatomaceous earth (135)
Dokudami extract (249)*
A substance obtained from the leaves of DOKUDAMI (*Houttuynia cordata* THUNB).
Dunaliella carotene (243)
A substance obtained from the whole algae of dunaliella.
Elemi resin (47)
A substance obtained from the secretion of elemi trees.
Ellagic acid (46)*
Enzymatically decomposed apple extract (148)
A substance composed mainly of catechins and chlorogenic acid obtained by enzymatically decomposingapple fruits.
Enzymatically decomposed lecithin (149)
A substance composed mainly of phosphatidic acid and lysolechitin obtained from vegetable lecithin or yolk lecithin.
Enzymatically decomposed rice bran (162)*
A substance composed mainly of phytic acid and peptides obtained dewaxed rice bran.
Enzymatically decomposed rutin (406)*
A substance composed mainly of isoquercitrin and obtained from rutin.
Enzymatically hydrolyzed coix extract (147)*
A substance obtained by enzymatically hydrolyzing the seeds of Job's tears (*Coix lacryma-jobi var. ma-yuen* STAPF).
Enzymatically hydrolyzed guar gum (106)
A substance composed mainly of polysaccharides obtained by grinding and hydrolyzing guar seeds.
Enzymatically modified licorice extract (140)*
A substance composed mainly grycyrrheitinic acid-3-glucuronide obtained by enzymatically hydrolyzing a licorice extract.
Enzymatically modified hesperidin (143)
A substance obtained by adding glucose to hesperidin (Refer No. Hesperidin).
Enzymatically modified isoquercitrin (139)
A substance composed mainly α-glucosylquercetin obtained from enzymatically decomposed rutin.
Enzymatically modified lecithin (145)
A substance mainly composed of phosphatidylglycerol obtained from vegetable lecithin) or yolk lecithin.
Enzymatically hydrolyzed licorice extract (146)
A substance obtained from the licorice
Enzymatically modified naringin (142)
A substance mainly composed of α-glucosylmaringin obtained from naringin.
Enzymatically modified rutin (extract) (144)
A substance mainly composed ofα-glucosylrutin obtained from rutin extract.
Enzymatically modified tea extract (141) *
A substance obtained by adding glucose to a tea extract, using cyclodextrin glucosyltransferase.
Essential oil-removed fennel extract (199)
A substance obtained from fennel seeds.
Esterase (45)
Eucalyptus leaf extract (389)*
Exomaltotetraohydrolase (43)
Ferritin (304)
Ferulic acid (305)
Ficin (300)
Fish scale foil (101)
A substance obtained by extraction from the epithelium of fish.
Fractionated lecithin Cephalin Lipoinositol (320)
A substance composed mainly of sphingomyelin, phosphatidiyl inositol, phosphatidyl choline obtained from vegetable lecithin (Refer to No. Vegetable lecithin) or yolk lecithin (Refer to No. Yolk Lecithin).
Fructosyl transferase (312)
Fukuronori extract (306)
A substance composed mainly of polysaccharides obtained from FUKURO-NORI (G*loiopeltis furcata* POSTEL et RUPR).
Furcellaran (298)
A substance composed mainly of polysaccharides obtained from the whole algae of furcellaria.
α-Galactosidase (75)
ß-Galactosidase (Lactase) (76)
Gallic acid (352)
Garden balsam extract (348)*
A substance obtained from the leaves of garden balsam.

Gardenia blue (110)
A substance obtained from gardenia fruits and protein-decomposed substances.
Gardenia red (11)
A substance obtained by adding ß-glucosidase to the mixture of ester-hydrolysates of iridoid glycosides obtained from gardenia fruits and protein-decomposed substances.
Gardenia yellow (112)
A substance composed mainly of allylsulfides obtained from gardenia fruit.
Garlic extract (275)*
Gastric mucin (65)*
A substance composed mainly of mucopolysaccharides obtained from mammals' gastric mucosae.
Gellan gum (176)
A substance composed mainly polysaccharides obtained from the culture of bacteria belonging to *Pseudomonas elodea*.
Gentian root extract (136)*
A substance obtained from gentian roots orrhizomes.
Ginger extract (186)
Glucanase (117)
Glucoamylase (118)
Glucosamine (119)
Glucose isomerase (124)
Glucose oxidase (125)
α-Glucosidase (120)
ß-Glucosidase (121)
α-Glucosyltransferase[4-α-Glucanotransferase,6-α-Glucanotransferase] (122)
α-Glucosyltransferasetreated stevia (123)
A substance obtained from a stevia extract. (Refer to NO. Stevia extract.)
Glutaminase (126)
L-Glutamine (127)
Gold (103)
Granite porphyry (63)
Grape seed extract (310)
Grape skin-derived substance (309)
A substance composed mainly of polyphenols obtained from the pericarps of American grapes.
Grape skin colourGrape skin extract (308)
Grapefruit seed extract (128)
Green tuff (116)*
Guaiac resin (107)
A substance obtained from the trunks/branches of
Guajac resin (extract) (108)
A substance obtained from the secretion of guaiacum trees.
Guar gum (105)
A substance obtained from guar seeds, excluding enzymatically hydrolyzed guar gum.
Gum Arabic [Arabic gum, Acacia gum] (20)
Gum ghatti (69)
A substance obtained from the secretion of ghatti trees.
Gutta hang kang (113)*
A substance obtained from the secretion of gutta hang kang trees.
Gutta percha (114)
A substance obtained from the secretion of gutta pecha trees.
Haematococcus algae colour (343)
A substance obtained from the whole algae ofhaematococcus.
Hego-Ginkgo leaf extract (328)
A substance obtained by extraction from the leaves of HEGO and ginkgo.
Helium (346)
Heme iron (345)
Hemicellulase (344)
Heptane (341)
Hesperetin (331)*
Hesperidin Vitamin P (330)
Hesperidinase (329)
Hexane (324)
Higher fatty acid (137)
A substance obtained by hydrolyzing animal or vegetable fats/oils or their hardened fats and oils.
Himematsutake extract (295)*
L-Histidine (291)
Hokosshi extract (349)
A substance obtained from the seed of HOKOSSHI *(Psoralea corylifolia* O>KNZ).
Horseradish extract (200)
Hyaluronic acid (287)
Hydrogen (192)
L-Hydroxyproline (293)
Inositol (36)
Inulinase (35)
Invertase (38)
Iron (242)
Iso-α-bitter acid (31)

A substance composed mainly isohumulones obtained from hop flowers.

Isoamylase (30)

Isodonis extract (288)*

A substance composed mainly of anmein obtained from the stems or leaves of HIKIOKOSHI (*Isodon japonicus* HARA).

Isomaltodextranase (32)

Itaconic acid (33)

Jamaica quassia extract (185)

A substance obtained from the tranks/branches or bark of Jamaicanquassia trees.

Japan wax (381)

A substance obtained from the fruits of Japanese wax trees.

Japanese persimmon colour (62)

A substance obtained from Japanese persimmon fruits.

Japanese styrax benzoin extract (44)*

A substance composed mainly of benzoic acid obtained from the secretion of ANSOKLU-KO-NO-KI (*Styrax benzoin* DRY).

Jelutong (177)

A substance obtained from the secretion of julutong trees.

Jojoba wax (353)

A substance composed mainly of icosanyl icosanata obtained from jjojoba fruits.

Kaorliang colour (151)

A substance composed mainly of apigeninidin and luteolindin obtained from kaoliang seeds.

Kaolin (59)

Karaya gum (82)

A substance composed mainly of polysaccharides obtained from the secretion of KRAYA trees (*Sterculia urens* ROXB) or silk cotton trees.

Kooroo colour, Matsudai colour (129)

A substance obtained by extraction from the roots of SOMEMONO-IMO (*Dioscorea matsudai* HAYATA.

Krill colour (49) *

Lac colour (394)

A substance composed mainly of laccaic acids obtained from the secretion of lac scale insects.

Lactoferrin concentrates (393)

A substance composed mainly of lactoferrin obtained from mammals' milk.

Lactoperoxidase (392)

Lanolin (395)

A substance composed mainly of esters of higher alcohols and α–hydroxylic acids obtained from waxy substances bearing the surface of sheep wool

Leche de vaca (410)*

A substance composed mainly of esters of amyrin obtained from the secretion of leche de vaca trees (Brosimum utile (H.B.K.)PITT).

Lemon peel extract (412)*

A substance composed mainly of geraniol and citrail obtained from lemon peels.

L-Leucine (414)

Levan (411)*

A substance composed mainly of polysaccharides obtained from the culture of bacteria belonging to *Bacillus subtilis.*

Licorice extract (88)

A substance composed mainly of glycyrrhizic acid obtained from the roots or rhizomes of Chinese licorice, Xinjiang licorice or licorice.

Licorice oil extract (89)

A substance composed mainly of flavonoids and obtained from the roots or rhizomes of Chinese licorice, Xinjiang licorice or licorice.

Linseed gum [Linseed extract] (15)

A substance composed mainly of polysaccharides obtained from linseed.

Linter cellulose (405)

A substance composed mainly of cellulose obtained from cotton single pilus.

Lipase (401)

Lipoxygenase (402)

Liquid paraffin (404)

Logwood colour (415)

A substance composed mainly of haematoxylin and obtained from the heart wood of logwood.

L-Lysine (399)

Lysozyme (400)

Macrophomopsis gum (357)

A substance composed mainly of polysaccharides obtained from the culture of microorganism belonging to *Macrophomopsis.*

Maltose phosphorylase (362)

Maltotriohydrolase (363)

Mannentake extract (409)

A substance obtained by the extraction from the mycelium or fruit body of MANNAEN-TAKE (*Ganoderma lucidum* KARST) or its culture.

Marigold colour (361)
A substance composed mainly of xanthophylis obtained from marigold flowers.
Massaranduba balata (360)*
A substance composed mainly of amyrin acetate and poly isoprenes obtained from the secretion of massarandula balata trees.
Massaranduba chocolate (359)*
A substance composed mainly of amyrin acetate and polyisoprenes obtained from the secretion of massarandula chocolate trees.
Mastic gum (358)
A substance composed mainly of masticadienoic acid and obtained from the secretion of mastic trees.
Melaleuca oil (375)
A substance composed mainly of essential oil obtained from mlaleuca leaves.
Menaquinone (extract) [Vitamin K_2 (extract) (373)
A substance composed mainly of mnaquinone-4 from the culture of bacteria belonging to *Arthrobacter*.
Methylthioadenosine (372)*
A substance composed mainly of 5'-dehydory-5'-methylthioadenosine obtained from yeasts belonging to *Saccharomyces*.
Mevalonic acid (374)
Microcrystalline cellulose (289)
A substance composed mainly of crystalinee cellulose obtained from pulp.
Microcrystalline wax (356)
Microfibrillated cellulose (290)
A substance composed mainly of cellulose obtained by microfibrililating pulp or cotton.
Milt protein (191)
A substance composed mainly of basic proteins obtained from fish testes.
Mixed tocopherols (365)
A substance composed mainly of d- α-, d- β-, d-β - and d-δ -tocopherols and obtained from vegetable oils.
Monascus colour (334)
A substance composed mainly of ankaflavin and monascolubrin obtained from the culture of mould belonging to *Monascus*.
Monascus yellow (333)
A substance composed mainly of xanthromonacins obtained from the culture of mould belonging to *Monascus*.
Montan wax (386)*
A substance composed mainly of esters of fatty acid arid tetracosyl-triacontanyl alcohol or hexacosyltriacontanyl alcohol obtained from brown coal or lignite.
Morin (385)*
Mousouchiku charcoal extract (377)*
A substance obtained by extraction from the cabonized stems of Mousouchiku bamboo.
Mousouchiku dry distillate (376)
A substance obtained by dry distillation from the stems of Mousouchiku bamboo.
Mousouchiku extract (378)
A substance composed mainly of 2,6-dimethoxy-1,4-benzoquinone obtained from the stem skins of Mousouchiku bamboo.
Mulberry bark extract (133)*
A substance composed mainly of stilbene derivatives ad flavonoids obtained from the rhizome skins of mulberry.
Muramidase (371)
Mustard extract (77)
A substance composed mainly of allylisothiocyanata obtained from Indian mustard seeds.
Myrrh (367)
A substance obtained by extraction from the secretion of myrrh trees.
Nagingin (267)
Nainginase (266)
Nickel (272)
Niger gutta (269)*
A substance composed mainly of amyrin acetate and polyiosprenes obtained from the secretion of niger gutta trees,
Nitrogen (229)
Non-calcinated calcium (364)
A substance composed mainly of calcium salts obtained by drying shells, pearl layers, coral, bones or eggshells.
Nystose (271)*
Olibanum (273) *
A substance composed mainly ofα- and β-boswellic acids obtained from the secretion of Olibanum.
Oligo-N-acetylglucosamine (52)*
Oligogalacturonic acid (53)
Oligoglucosamine (54)*
Onion colour (218)
A substance composed mainly of quercetin obtained from onion bulbs.
Orange colour (57)

A substance composed mainly of carotene and xanthophylls obtained from the fruits or peels of AMA-DAIDAI(Citrus sinensis OSBECK).

Oregano extract (56)

A substance composed mainly of carvacrol and thymol obtained from oregano leaves.

γ-Oryzanol (55)

A substance composed mainly of booth esters consisting of each combination of sterols and ferulic acid and triterpene alcohols and feulic acid obtained from rice bran or germ oil.

Oxygen (170)

Ozokerite (50)

Ozone (51)

Paffia extract (281)*

A substance composed mainly of ecdysteroids and saponins obtained from the roots of paffia (*Pafiic iresinoides* SPRENGEL).

Palladium (284)

Palm oil carotene (282)

A substance composed mainly of CAROTENE obtained from oil palm fruits.

Pancreatin (286)

Papain (280)

Paprika colour [Paprika oleoresin] (246)

A substance composed mainly of capsanthins obtained from capsicum fruits.

Paraffin wax (285)

Peach gum (384)

A substance composed mainly of polysaccharides obtained from the secretion of peach trees.

Pecan nut colour (323)

A substance composed mainly of flavonoids obtained from the pericarps or astringent skins of pecan nuts.

Pectin (326)

Pectin digests (327)

A substance composed mainly of galacturonic acid obtained from pectin.

Pectinase (325)

Pepper extract (339)

A substance composed mainly of feruperines obtained from pepper fruits.

Pepsin (340)

Peptidase (342)

Perilla extract (182)

A substance composed mainly of terpenoids obtained from perilla seeds or leaves.

Perlite (283)

Peroxidase (278)

Petroleum naphtha (264)

Phaffia colour (299)

A substance composed mainly of astaxanthins obtained from the culture of yeast belonging to *Phaffia*.

Phellodendron bark extract (100)*

A substance composed mainly of berberine obtained from the bark of phellodendron trees.

Phosphodiesterase (350)

Phospholipase (351)

Phytase (301)

Phytic acid (302)

A substance composed mainly of inositol hexaphosphate obtained from rice bran or corn seeds.

Phytin (extract) (303)

A substance composed mainly of magnesium inositol hexa phosphate obtained from rice bran or corn seeds.

Pimento extract (296)

A substance composed mainly of eugenol and thymol obtained from pimento fruits.

Platinum (279)

ε-Polylysine (355)

Polyphenol oxidase (354)

Powdered annatto (335)*

A substance composed mainly of norbixin and bixin obtained from annatto seeds.

Powdered bile (223)

A substance composed mainly of cholic acid and desoxycolic acid obtained from bile.

Powdered cellulose (321)

A substance composed mainly of cellulose obtained by decomposing pulp, excluding No.289 Mycrocrystalline cellulose.

Powdered rice hulls (322)

A substance composed mainly of cellulose obtained from rice hulls.

Powdered stevia (210)

A substance composed mainly of steviol glycosides obtained by grinding stevia leaves.

L-Proline (319)

Propane (316)

Propolis extract (317)

A substance composed mainly of flavonoids obtained from honeycomb.

Protease (315)

Psyllium seed gum (164)
A substance composed mainly of polysaccharides obtained from the seed coats of blond psyllium.
Pullulan (314)
Pullulanase (313)
Purple corn colour (369)
A substance composed mainly of cyanidine-3-glucoside obtained from corn seeds.
Purple sweet potato colour (368)
A substance composed mainly of cyanidine acylglucosides and penidin acylglucosides obtained from the tuberous roots of sweet potatoes.
Purple yam colour (370)
A substance composed mainly of cyanidine acylglucosides obtained from yam tuberous roots.
Quassia extract (268)
A substance composed mainly of quassin obtained from the trunks/branches or bark of NIGAKI trees.
Quercetin (109)
Quicklime (198)
Quillaja extract (102)
A substance composed mainly of saponins obtained from the bark of quillaja trees.
Rakanka extract (391)
A substance composed mainly of mogulosides obtained from rakanka fruits.
Redbark cinchona extract (99)
A substance composed mainly of quinidine, quininne and cinchorine obtained from the bark of redbark cinchona trees.
Rennet (413)
Resin of depolymerized natural rubber (160)*
A substance composed mainly of diterpenes, triterpenes and tetraterpenes obtained from rubber.
L-Rhamnose (397)
Rhamsan gum (396)
A substance composed mainly of polysaccharidesobtained from the culture of bacteria belonging to *Alcaligenes.*
D-Ribose (403)
Rice bran oil extract (161)
A substance composed mainly of ferulic acid obtained from rice bran oil.
Rice bran wax (163)
Rice straw ash extract (34)
A substance obtained from the ashes of rice stems or leaves.
Roasted rice bran extract (276)
A substance composed mainly of maltol obtained from roasted rice bran.
Roasted soybean extract (277)
A substance composed mainly of maltol obtained from roasted soybean seeds.
Rosemary extract (418)
A substance composed mainly of carnosic acid, carnosol, and polyisoprenes obtained from rosemary leaves or flowers.
Rosidinha (416)*
A substance composed mainly of amyrin acetate and polyisopenes obtained from the secretion of rosidinha trees.
Rosin (417)
A substance composed mainly ofabietic acid obtained from the secretion of pine trees.
Rubber (159)
A substance composed mainly of polyisoprenes obtained from the secretion of Pararubber trees, excluding No.238 Depolymerized natural rubber.
Rumput roman extract (87)
A substance composed mainly of capillin obtained from the whole grass of rumput roman.
Ruthenium (408)
Rutin (extract) (407)
A substance composed mainly of rutin obtained from the whole grass of AZUKI (*Azukia angularis* OHWI), the buds or flowers of Japanese pagoda trees or buckwheat grass.
Sage extract (204)
A substance composed mainly of carnosic acid and phenolic diterpenes obtained from
Salvia leaves.
Sandalwood red (183)
A substance composed mainly of santalin obtained from the trunks/branches of red sandalwood trees.
Sandarac resin (171)*
A substance composed mainly of sandaracopimaric acid obtained from the secretion of sandarac trees.
Sclero gum (193)*
A substance composed mainly ofpolusaccharides obtained from the culture of microorganism belonging to *Sclerotium glucannicum*.
Seaweed ash extract (58)
A substance composed mainly of pottassium iodide obtained from the ashes of brown algae.
Sepiolite (206)*
L-Serine (207)
Sesame seed oil unsaponified matter (157)

A substance composed mainly of seamolin obtained from sesame seeds.

Sesame straw ash extract (158)

A substance obtained by extraction from the ashes of sesame stems or leaves.

Sesbania gum (205)*

A substance composed mainly of polysaccharides obtained from sesbania seeds.

Shea nut colour (172)

A substance obtained from the fruits or seed coats of shea.

Shellac (174)

A substance composed mainly of esters of aleuritic acid and shellolic acid or jalaric acid obtained from the secretion of scale insects.

Shellac wax (175)

A substance composed mainly was of obtained from the secretion of scale insects.

Shikon colour [Lithospermum root colour] (180)*

A substance composed mainly of shikonin obtained from the root of MURASAKI plant.

Silver (104)

Smoke flavourings (134)

A substance obtained by capturing the gas generated by burning sugar canes, bamboo, corn stalks or wood, or a substance obtained by dry distillation from such materials.

Sodium chloride-decreased brine (saline lake) (48)

A substance composed mainly of salts of alkaline metals or alkaline earth metals obtained by separating sodium chloride from saline lake water.

L-Sorbose (214)*

Sorva (Leche capsi) (212)*

A substance composed mainly of amyrin acetatre and polyisoprenes obtained from the secretion of sorvinha trees.

Sorvinha (213)*

Soybean saponin (215)

A substance composed mainly of saponins obtained from soybeans.

Sphingolipid (197)*

A substance composed mainly of sphingosine derivatives obtained from bovine or rice bran.

Spice extract (138)

Substances obtained by extraction or steam-distillataion from

Hemp seeds, asafetida,ajpwan,anise,angelica,fennel,turmeric,allspice,oregano, orange peel, Chinese pepper, cassia, chamomile, mustard, cardamom, curry leaves, licorice, caraway, gardenia, cumin, cress, clove, poppy seeds, caper, pepper, sesame seeds, coriander, sassafras, saffron, savory, salvia, Japanese pepper, perilla, cinnamon, shallot, juniperberry, ginger, star anise, spearmint, horseradish, celery, sorrel, thyme, onion, tamarind, tarragon, chive, chevil, dill, capsicum, nutmeg, wormwood, nigella, carrot, garlic, basil, parsley, mint, vanilla, paprika, hyssop, fenugreek, peppermint, horsemint, marjoram, *myouga* (*Zingiber Mioga* (ROSC), lavender, linden, lemongrass, lemonbalm, rose, rosemary, laurel or *wasabi* (Japanese horseradish), excluding Turmeric oleoresin (No. 40),Oregano extract (56),Orange colour (57), Mustard extract (77), Licorice extract (88), Licorice oil extract (89), Gardenia yellow (112), Clove extract (130), Sesame seed oil unsaponified matter (157), Perilla extract (182), Ginger extract (196), Essential oil removed fennel extract (199), Horseradish extract (200), Sage extract (204), Onion colour (218), Tamarind colour (219), Tamarind seed gum (200), Tannin (extract) (226), Paprika colour (246), Capsicum water-soluble extract (247), Absinth extract (270), Carrot carotene (274), Garlic extract (275),Pepper extract (339)*, Rosemary extract (418), Wasabi extract (419)

Spirulina colour (196)

A substance composed mainly of phycocyanin obtained from the whole alga of spirulina.

Stevia extract (194)

A substance composed mainly of steviol glycosides obtained by extraction from stevia leaves.

Sunflower seed extract (294)

A substance composed mainly of isocholorogenic acid and chlorogenic acid obtained from sunflower seeds.

Sweet potato carotene (37)*

A substance composed mainly of carotene obtained from the tuberous roots of sweet potatoes.

Talc (222)

Tamarind colour (219)

A substance composed mainly of flavonoids obtained from tamarind seeds.

Tamarind seed gum (220)

A substance composed mainly of polysaccharides obtained from tamarind seeds.

Tannase (225)

Tannin (extract) (226)

A substance composed mainly of tannin and tannic acid obtained from Japanese persimmon fruits, chestnut

astringent skins*, Japanese gall, tamarind seed coats*, angelica powder, nutgall or silver wattle bark.

Tara gum (221)

A substance composed mainly of polusaccharides obtained from the seeds of tara trees.

Taurine (extract) (217)

A substance composed mainly of taurine obtained from the viscera or meat of fish or mammals.

Tea dry distillate (230)

A substance obtained by dry distillation from tea leaves.

Tea extract (232)

A substance composed mainly of catechins obtained from tea leaves.

Tea seed saponin (231)*

A substance composed mainly of saponins obtained from tea seed.

Thaumatin (216)

A substance composed mainly of thaumatin obtained from the seeds of *Thaumatococcus danielli* BENTH.

Theobromine (239)

Thujaplicin (extract) (236)

A substance composed mainly of thujaplicins obtained from the trunks/branches or roots of HIBA trees.

Timber ash (382)

A substance obtained by ashing bamboo or wood. Timber ash extract (383)

d-α -tocopherol (251)

d-γ -tocophero (252)

d-δ -tocophero (253)

Tocotrienol (250)

Tomato colour [Tomato lycopene] (254)

A substance composed mainly of lycopeneobtained from tomato fruits.

Tororoaoi (262)

A substance composed mainly of polusaccharides obtained from the roots of TORORO-AOI plant.

Tourmaline (244)*

Tragacanth gum (255)

A substance composed mainly of polysaccharides obtained from the secretion of tragacanth trees.

Transglucosidase (256)

Transglutaminase (257)

Trehalose (260)

Trehalose phosphorylase (261)

Triacylglycerol lipase Triacylglycerol lipase (258)*

Tripsin (259)

Tunu (235)*

A substance composed mainly of obtained from the secretion of tunu trees.

Turmeric oleoresin [Curcumin] (40)

A substance composed mainly of curcumin obtained from turmeric rhizomes.

L-Tyrosine (234)

Urease (42)

Urushi Wax (41)

A substance composed mainly of glycerol palmitate obtained from the fruits of Japanese lacquer trees.

Vegetable carbon black (189)

A substance composed mainly carbon of obtained by carbonizing plants.

Vegetable lecithin (190)

A substance composed mainly of lecithin obtained from rape seeds or soybeans.

Vegetable oil soot colour (388)*

A substance composed mainly of carbonobtained by burning vegetable oils.

Vegetable sterol (188)

A substance composed mainly of phytosterols obtained from oil seeds.

Venezuelan chicle (338)

A substance composed mainly ofamyrin acetate and polyisoprenes obtained from the secretion of Venezuelan chicle trees.

Vermiculite (297)

Wasabi extract (419)

A substance composed mainly of isothiocyanate obtained from the rhizomes or leaves of WASABI (*Wasabia japonica* MATSUM.).

Welan gum (39)

A substance composed mainly of polysaccharides obtained from the culture of bacteria belonging to *Alcaligene*s.

Wood chip (379)

A substance obtained by grinding the trunk/branches of Siberian filbert or BUNA (*fagus crenata* BLUME)

Xanthan gum (91)

A substance composed mainly of polysaccharides obtained from *Xylanase* (92)

D-Xylose (93)

Yeast cell wall (150)

Table FA05 List of Source Material of Natural Flavoring Agents

"Natural Flavoring Agents" are defined as the food additives intended for use for flavoring food that are substances obtained from animals or plants, or mixtures thereof (the Food Sanitation Act, Article 4, Paragraph 3).

Natural Flavoring Agents shall be declared by the names of source substances or synonyms shown below. The phrase "flavoring agents" is required to be attached.

Agrimony
Ajowan
Akayajio
Akebia
Alfalfa
Alkanet
Allspice
Almond
Aloe
Amacha
Amachazuru
Amber
Ambergris
Ambrette
Amigasayuri
Amyris
Angelica
Angola weed
Angostura
Anise
Annatto
Anzutake (Chanterelle)
Apple
Apple mint
Apricot
Areca nut (Betel nut)]
Aritaso
Arnica
Artemisia
Artichoke
Asafetida
Avens (Herb bennet)
Avocado
Bamboo shoot
Banana
Barberry
Basikurumon
Basil
Bay
Beans
Bearberry
Beech
Bees wax
Benzoin
Betony
Blessed thistle
[Bergamot mint Bergamot]
Betel
betony
Birch
Biwa (Loquat)
Black caraway (Nigella)]
Black tea
Blackberry
Blessed thistle
Blueberry
Boldo
Borage
Boronia
Bran
Breadfruit
Brown sugar
Bryonia
Buchu
Buckbeans
Buffaloberry
Bugle
Bunaharitake
Burdock
Burnet bran
Butter
Butter milk
Butter oil
Cacao
Cactus
Cade
Cajeput (Cajuput)
Calabash nutmeg
Calamint
Calamondin
Calamus
Camellia
Camomile
Camphor tree
Caper
Capsicum
Caraway
Cardamon
Carissa (Karanda)
Carnation
Carob (Locust bean)
Carrot
Cascara
Cascarilla
Cashew nut
Cassie
Castoreum
Catechu
Catnip
Cedar
Celery
Centaury
Century plant]
Chinese bayberry
Cereals
Champac
Cheese
Cherimoya
Cherry
Cherry laurel
Cherry tree
Chervil
Chestnut
Chichitake
Chicory
Chigaya
Chinese bayberry
Chinese olive
Chinese quince
Chirata
Chive
Chlorella
Chokeberry
Chosengomishi
Chrysanthemum
Cinchona
Cinnamon
Citronella
Citrus
Civet
Clary sage
Clove
Clover
Cnidium fruit
Coca
Coconut
Coffee
Cola

Colombo
Coltsfoot
Comfrey
Common nasturtium solution
Common pomegranate
Common popsissewa
Copaiba
Coriander
Corn-mint (Japanese mint)
Costmary
Costus
Crab
Cranberry
Cream
Cubeb
Cucumber
Cultured lactic acid bacteria
Cultured Moniliaceae solution
Cumin
Currant
Curry leaf
Curry powder
Cypress
Damiana
Dandelion
Date palm
Davana
Deertongue
Dill
Dittany
Dittany of Crete
Dog grass (Couch grass)
Dokudami
Doragon's blood
Dried bonito
Durian
Ebisugusa
Egg
Egoma
Elder
Elecampane
Elemi
Eleutherococcus
Elm
Elm-mushroom
Endive
Engosaku
Enju (Japanese-pagoda-tree)
Enokidake
Erigeron
Eucalyptus
Eupatorium
Eyebright
Feijoa (Pineapple guava)
Fennel
Fenugreek
Fermented alcoholic beverages
Fermented milk
Fermented seasoning solution
Fig
Fir
Fish
Flax
Forger me not (Mouse ears)
Fruit vegetables
Fujibakama
Fujimodoki
Fumitory
Fusel oil
Galanga
Galbanum
Gambir
Garden rhubarb (Edible rhubarb)
Gardenia
Garlic
Genet
Gennoshoko
Gentian
Geranium
Germander
Getto
Giboshi
Ginger
Ginkgo (Gingko)
Ginseng
Gishigishi (Dock)
Golden rod
Goldthread
Gooseberry
Goshuyu
Grains of paradise
Grape
Grapefruit
Green tea
Ground ivy
Guaiacum
Guarana
Guava
Gumi (Oleaster)
Gymnema sylvestre
Hakobe (Common chickweed)
Hamabofu
Hamago
Hamanasu (Rugosa rose)
Hamasuge,
Hanasuga
Hatsutake
Haw
Hawthorn
Hay
Hazelnut
Heather
Hemp
Henna
Hiba
Hibiscus (Roselle)
Hickory
Hikiokoshi
Himehagi
Hinoki
Hiratake
Hishi (Water chestnut)
Hoarhound
Honey
Honeysuckle
Honoki
Hop
Horseradish
Horsemint
Houkitake
Houshou
Hyacinth
Iceland moss
Ikariso
Immortelle (Everlasting flower)
Iwaohgi Imperatoria
Inokozuchi
Itadori
Ivy
Jaborandi
Janohige
Japanese pepper
Japanese persimmon
Jasmin
Jew's mallow
Job's tears
Jojoba
Jujube
Juniper berry
Kaininso
Kamala
Karasubishaku (Dragon root)
Karasuuri
Katakuri
Kawamidori
Kencur
Kenponashi (Japanese raisin tree)
Kibanaohgi
Kidachi aloe
Kihada
Kikaigaratake
Kikurage (Jew's-ear)
Kikyo (Baloon flower)

Kisasage
Kiwifruit
Knotgrass
Kobushi
Koganebana
Kohone
Koji
Kombu kelp
Kondurango
Koutake
Krill
Kuko
Kurara
Kuromoji
Kusaboke (Dwarf Japanese quince)
Kusasugikazura
Kuzu (Thunberg kudzu vine)
Labdanum (Ciste)
Laurel
Lavender
Leaf vegetables
Leek
Lemon
Lemongrass
Licorice
Life-everlasting flower
Lilac
Lily
Lime
Linaloe
Linden
Lindera root
Lion's foot
Liqueur
Litch
Litsea
Lobster (Prawn, Shrimp)
Long-leaved podocarp
Longan
Longose
Lotus
Lovage
Lungmoss
Lungwort
Maidenhair fern
Maitake
Maize
Mallow
Malt
Mango
Mangosteen
Manna ash
Maple
Marigold
Marjoram
Marshmallow
Massoi
Mastic
Matatabi (Silver vine)
Mate tea
Matico
Matusbusa
Matsuhodo
Matsuoji
Matsutake
Meadowsweet
Meat
Mehajiki
Melilot
Melissa (Balm)
Melon
Mesquite
Mikan
Milfoil
Milk
Milk thistle
Mimosa
Mishimasaiko
Miso (Soybean paste)
Mistletoe
Mitsumata
Molasses
Moutan bark
Mugwort
Mulberry
Mullein
Murasaki (Gromwell)
Mushroom
Musk
Mustard
Myoga
Myrobalan
Myrrh
Myrtle
Nadeshiko
Naginatakoju
Nameko
Nanten
Naratake
Narcissus
Natto
Nemunoki (Silk tree)
Nettle
Nezumimochi
Nori (Laver)
Nut
Nutmeg (Mace)
Oak
Oak moss
Octopus
Oil and fats
Okera
Olibanum
Olive
Ominaeshi
Onion
Oolong tea
Opoponax
Orange
Orange flower
Origanum
Orris
Osmanthus
Palmarosa
Pandanus
Papaw
Papaya
Parsnip
Pepino
Para cress
Parsley
Parsnip
Passion fruit
Patchouli
Peach .
Peanut
Pear
Pellitory
Pennyroyal
Pepper
Peppermint
Peptone
Perilla
Peru balsam
Petitgrain
Pickled products pine
Pineapple
Pistachio
Plantain
Plum
Poplar
Poppy
Pressed sake cake
Pressed soy sauce cake
Prickly ash
Primrose
Proteins Reseda
Prunella (Self-heal)
Purging cassia
Quassia
Quebracho
Quillaja (Quillaia)
Quince
Radish

Rakanka (Lo han kuo)
Ramboutan
Raspberry
Red beans
Red sandalwood
Renge
Rengyo
Rhatany
Rhubarb
Roasted barley
Rooibos
Rose
Rose apple
Rosemary
Rosewood
Rowan tree(European mountain ash)
Royal agaric,
Rue
Rush
Root and tuber vegetables
Ryofunso
Safflower
Saffron
Sage
Sagiomodaka
Salsify
Sandalwood
Sandarac
Sanshuyu
Santa herb
Sapodilla
Saposhinikovia root
Sarashinashoma
Sarsaparilla
Sarunokoshikake
Sasa, Bamboo grass]
Sasakusa
Sassafras
Sauces
Savory
Schinus molle
Sea buckthorn
Sea squirt
Sea urchi n
Seaweed
Sekisho
Sendan
Senega
Senkyu
Senna
Sesame
Shakuyaku (Chinese peony)
Shallot
Shellfish
Shiitake
Shimeji
Shoro
Shukusha
Silver weed
[Simarouba Shimeji
Skirret
Sloe berry
Snake
Snakeroot, Serpentary
Soy sauce
Soybeans
Spearmint
Spignel
Spikenard
Spirits
Spruce
Squid
St.John's wort
Star anise
Starfruit (Carambora)
Strawberry
Strawberry tree
Styrax
Suberihiyu (Pigweed)
Sugar apple, Sweet sop
Sugi (Peacock pine)
Sundew
Sunflower
Suppon (Snapping turtle)
Suppontake
Tade (Water pepper)
Tamarind
Tamogitake
Tangerine (Mandarin)
Tansy
Tara (Angelica tree)
Tarragon
Tenma
Tenryocha
Thistle
Thyme
Ti-tree
Tochu
Toki
Tolu balsam
Tomato
Tonka beans
Truffle
Tsukushi (Fern-ally)
Tsuriganeninjin
Tsurudokudami
Tsuyukusa
Tuberose
Turmeric
Ukogi
Ume (apanese apricot)
Usubasaishin
Valerian
Vanilla
Verbena (Vervain)
Veronica
Vetiver
Vinegar
Violet
Walnut
Warabi (Eagle fern)
Waremoko, (Garden burnet)
Wasabi
Watafujiutsugi
Water cressWatermelon
Wax jambu (Mankil)
WheyWild cherry
Wine lees
Winter bloomWintergreen
Woodruff
Wormseed
Wormwood
Yakuchi
Yamabushi take
Yeasts
Yl ang-ylang
Yoroigusa
Yucca
Yukinoshita
Yuzu
Zdravetz
Zedoary

Table FA06 Substances which are generally provided as Food and which are used as Food Additives

Abbreviations in parentheses indicate the main purpose of usage.

COL: color SW: sweetener BE: bitterness enhancer E: enzyme
FT: flavor/taste enhancer (*chomiryou*) TH: thickener/stabilizer PA: processing aid

Agar (PA)
Amacha extract (SW)
American red raspberry colour
Beefsteak plant colour
Black berry colour
Black currant colour
Black huckleberry colour
Blueberry colour
Boysenberry colour
Casein(PA)
Cherry colour
Chicory colour
Chlorella extract (FT,PA)
Cocoa (COL)
Collagen (PA)
Corn cellulose (PA)
Cowberry colour
Cranberry colour
Daidai extract (BE)
Dark sweet cherry colour
Egg white (PA)
Elderberry colour
Ethanol (PA)
European dewberry colour
Fermentation-derived cellulose(PA,TH)
Fruit juice (COL)
- Berry juice
- Black currant juice
- Blackberry juice
- Blueberry juice
- Boysenberry juice
- Cherry juice
- Cowberry juice
- Cranberry juice
- Dark sweet cherry juice
- Dewberry juice
- Elderberry juice
- Gooseberry juice
- Grape juice
- Huckleberry juice
- Lemon juice
- Loganberry juice
- Morello cherry juice
- Mulberry juice
- Orange juice
- Pineapple juice
- Plum juice
- Raspberry juice
- Red currant juice
- Salmonberry juice
- Strawberry juice
- Thimbleberry juice
- Uguisukagura juice
- Whortleberry juice

Gelatin(PA)
Gluten(TH)
Gluten decomposites (TH)
Gooseberry colour
Grape juice colour
Hibiscus colour
Hop extract(BE)
Hydrangea leaves extract
Kelp extract (TH)
Konnyaku extract (PA)
Lactic acid bacteria concentrate(TH)
Laver colour
Loganberry colour
Malt extract (COL)
Mannan (TH)
Morello cherry colour
Mugwort extract (BE)
Mulberry colour
Okra extract (TH)
Olive Tea (COL,BE)
Paprika(COL)
Perilla colour
Plum colour
Powdered licorice (SW)
Raspberry colour
Red cabbage colour
Red currant colour
Red radish colour
Red rice colour
Rennet casein (TH)
Saffron (COL)
Saffron colour
Salmonberry colour
Seaweed cellulose (TH)
Sepia colour
Soybean polysaccharides(PA,TH)
Strawberry colour
Sweet potato cellulose (PA)
Tea (BE)
Thimbleberry colour
Turmeric (COL)
Uguisukagura colour
Vegetable juice (COL)
- Beefsteak plant juice
- Beet red juice
- Carrot juice
- Onion juice
- Red cabbage juice
- Tomato juice

Wheat extract (PA)
Wheat flour (PA)
Whey salt (Whey mineral) (FT)
Whortleberry colour

IV. Apparatus and Containers/ Packages

Table AP01 Standards on Materials in General

Materials (used for areas that contact with food)	Type	Standards
Metal	1. Implements	shall be so designed that copper, lead, or their alloys will not be scraped off.
	2. Tin for plating	Lead content : less than 0.1%
	3 .Metals used to make or to repair implements or containers/ packages	Lead content: less than 0.1% Antimony content: less than 5%
	4. Solder used to make or to repair implements or containers/ packages	Lead content: less than 0.2%
	5. Electrodes to electrify foods directly of implements	Limited to Iron, aluminum, platinum, and titanium. (In case weak current is used, stainless steel may be used.)
Implements and containers/ packages, in general	6. Colors	Synthetic coloring agents other than those listed in the "Table 1" of the Enforcement Regulations shall not be used, (Excepting the cases where the colors are used in such a way that they will have no possibility of mixing with foods.)
Polyvinyl chloride	7. Implements or containers/packages that contact with food fats and oils or fat-rich foods	Materials made from polyvinylchloride,which contain Bis (2-ethylhexyl) phthalate, as a main raw material shall not be used. (This does not apply to cases where the phthalate has been used so as not to dissolve or leach into foods.)

Table AP02 Specifications and standards by Material

Material: Glass, Ceramic and Enameled						
Type				Test item	* a	Standards
Glass	Samples less than 2.5cm deep after liquid is filled or those not capable to be filled in.			Cadmium Lead		not more than 0.7 μg/cm² not more than 8 μg/cm²
	Samples deeper than 2.5cm when filled	Implements other than for cooking by heating	Capacity less than 600ml	Cadmium Lead		not more than 0.5 μg/ml not more than1.5 μg/ml
			Cap. between 600ml and 3L	Cadmium Lead		not more than 0.25 μg/ml not more than 0.75 μg/ml
			Cap. not less than 3L	Cadmium Lead		not more than 0.25 μg/ml not more than 0.5 μg/ml
		Implements used for cooking by heating		Cadmium Lead		not more than 0.05 μg/ml not more than 0.5 μg/ml
Ceramic	Samples less than 2.5cm deep after liquid is filled or those not capable to be filled in.			Cadmium Lead		not more than 0.7 μg/cm² not more than 8 μg/cm²
	Samples deeper than 2.5cm when filled	Implements other than for cooking by heating	Capacity less than 1.1 L	Cadmium Lead		not more than 0.5 μg/ml not more than 2 μg/ml
			Cap. between 1L and 3L	Cadmium Lead		not more than 0.25 μg/ml not more than 1 μg/ml
			Cap. not less than 3L	Cadmium Lead		not more than 0.25 μg/ml not more than 0.5 μg/ml
		Implements used for cooking by heating		Cadmium Lead		not more than 0.05 μg/ml not more than 0.5 μg/ml
Enameled	Samples less than 2.5cm deep after Liquid is filled, or not capable to be filled in.		Implements other than for cooking by heating	Cadmium Lead		not more than 0.7 μg/cm² not more than 8 μg/cm²
			Implements used for cooking by heating	Cadmium Lead		not more than 0.5 μg/cm² not more than 1 μg/cm²
	Samples deeper than 2.5cm when filled	Capacity not less than 3L		Cadmium Lead		not more than 0.5 μg/cm² not more than 1 μg/cm²
		Cap. less than 3L	Implements other than for cooking by heating	Cadmium Lead		not more than 0.07 μg/ml not more than 0.8 μg/ml
			Implements used for cooking by heating	Cadmium Lead		not more than 0.07 μg/ml not more than 0.4 μg/ml

* a) Leaching condition/solution: at room temperature (dark place) for 24 hours by 4 % acetic cid.

Material: Synthetic Resin (Page 1)					
Type	Material test	Elution test			
		Test item	Leaching condition	Leaching solution	Standards
Synth. resin, in general (General Standard)	Cadmium, Lead: not more than 100µg/ml each	Heavy metal	at 60°C for 30min. *7	4% acetic acid	not more than 1 µg/ml (as PB)
		Quantity *1 of KMnO4 Consumed		Water	not more than 10 µg/ml
Phenolic,resin Melamine, and Urea resins (Specific Standard)		Phenol	at 60°C for 30min. *7	Water	not more than 5 µg/ml
		Formaldehyde			negative
		Evaporation residue	at 25°C, for 1 hr.	Heptane	not more than 30 µg/ml
			at 60°C, for 30min.	20% Ethanol*4	
			at 60°C for 30min. *7	Water	
				4% acetic acid	
Synth. resin made from formaldehyde (Sp.Stand.)		Phenol	at 60℃, for 30min. *7	water	negative
		Formaldehyde			negative
		Evaporation residue		4% acetic acid	not more than 30 µg/ml
Polyvinyl chloride*2 (PVC) (Sp.Stand.)	▪Dibutyl tin compound. : not more than 50µg/ g (as dibutyl tin chloride) ▪Cresyl phosphates: not more than 1µg/gs ▪Vinyl cholorides: not more than 1µg/g	Evaporation residue	st 25℃, for1 hr.	Heptane *3	not more than 150 µg/ml
			at 60℃, for 30min.	20% ethanol*4	not more than 30 µg/ml
			at 60℃, for 30min.	Water *5	
				4% acetic acid *6	
Polyethylen (PE) and Polypropylene (PP) (Sp.Standard)		Evaporation residue	at 25℃, for1 hr.	Heptane *3	not more than 30 µg/ml *a
			at 60℃, for 30min.	20% ethanol*4	not more than 30 µg/ml
			at 60℃, for 30min. *7	Water *5	
				4% acetic Acid *6	

Material: Synthetic Resin (Page 2)					
Type	Material test	Elution test			
		Test item	Leaching condition	Leaching solution	Standards
Polystyrene (PS) (Sp.Stand.)	Volatile substance as a total of styrene + toluene + ethylbenzene + isopropyl-benzene + n-propyl benzene: not more than 5 mg/g. But in case of polystyrene foam (limited to that using hot water), this shall be not more than 2 mg/g , and styrene and ethyl benzene are not more than 1 mg/g, respectively.	Evaporation residue	at 25°C, for 1 hr.	Heptane *3	not more than 240 µg/ml
			at 60°C, for 30min.	20% ethanol*4	not more than 30 µg/ml
			at 60°C, for 30min. *7	Water *5	
				4 % acetic acid*6	
Polyvinylidene Chloride (PVDC) (Sp.Stand.)	・ Barium: not more than 100µg/g ・ Vinylidene chloride: not more than 6 µg/g	Evaporation residue	at 25°C, for 1 hr.	Heptane *3	not more than 30 µg/ml
			at 60°C, for 30min.	20 % ethanol*4	
			at 60°C, for 30min. *7	Water*5	
				4 %acetic acid*6	
Polyethylene Terephthalate (PET) (Sp.Stand.)		Antimony	at 60°C, for 30min. *7	4 % acetic acid	not more than 0.05 µg/ml
		Germanium			not more than 0.1 µg/ml
		Evaporation residue	at 25°C, for 1 hr.	Heptane *3	not more than 30 µg/ml
			at 60°C, for 30min.	20 % ethanol*4	
			at 60°C, for 30min. *7	Water*5	
				4 % acetic acid*6	

Material: Synthetic Resin (Page 3)					
Type	Material test	Elution test			
		Test item	Leaching condition	Leaching solution	Standards
Polymethyl Metha-crylate (PMMA) (Sp.Stand.)		Methyl methacrylate	at 60°C, for 30min.	20% ethanol	not more than 15 µg/ml
		Evaporation residue	at 25°C, for 1 hr.	Heptane *3	not more than 30 µg/ml
			at 60°C, for 30min.	20 % ethanol*4	
			at 60°C, for 30min. *7	Water*5	
				4 % acetic acid *6	
Nylon (PA) (Sp.Stan.)		Capro-lactam	at 60°C, for 30min.	20 % ethanol	not more than 15 µg/ml
		Evaporation residue	at 25°C, for 1 hr.	Heptane *3	not more than 30 µg/ml
			at 60°C, for 30min.	20 % ethanol*4	
			*7 at 60°C, for 30min.	Water*5	
				4 % acetic acid *6	
Polymethyl pentene (PMP) (Sp.Stan.)		Evaporation residue	at 25°C, for 1 hr.	Heptane*3	not more than 120 µg/ml
			at 60°C for 30mi.	20 % ethanol *4	not more than 30 µg/ml
			*7 at 60°C, for 30min.	Water*5	
				4 %acetic acid*6	
Polycarbonate (PC) (Sp,Stand.)	・ Bis-phenol A *b: not more than 500µg/g ・ Diphenyl Carbonate: not more than 500µg/g ・ Amines (Triethylamine and tributylamine): not more than 1 µg/g ・ Amines (Triethylamine and tributylamine): not more than 1 µg/g	Bisphenol A (Phenol & p-t-butylphenol)	at 25°C, for 1 hr.	Heptane *3	not more than 2.5 µg/ml
			at 60°C, for 30min.	20 % ethanol*4	
			at 60°C, for 30min. *7	Water*5	
				4 %acetic acid*6	
		Evaporation residue	at 25°C, for 1 hr.		
		Evaporation residue	at 25°C, for 1 hr.	Heptane *3	not more than 30 µg/ml
			at 60°C, for 30min.	20 % ethanol*4	
			at 60°C, for 30min. *7	Water *5	
				4 %acetic acid*6	

Material: Synthetic Resin (Page 4)					
Type	Material test	Elution test			
		Test item	Leaching condition	Leaching solution	Standards
Polylactic Acid		Total of lactic acid	at 60°C, for 30min.	Water	not more than 30 µg/ml
		Evaporation residue	at 60°C, for 30min.	20 % ethanol*4	not more than 30 µg/ml
				Water*5	
				4 %acetic acid*6	
Polyvinyl alcohol (PVA) (Sp.Stan.)		Evaporation residue	at 25°C, for 1 hr.	Heptane *3	not more than 30 µg/ml
			at 60°C, for 30min.	20 % ethanol*4	
			at 60°C, for 30min. *7	Water*5	
				4 %acetic acid*6	

Material: Rubber					
Type	Material test	Elution test			
		Test item	Leaching condition	Leaching solution	Standards
Rubber utensils (except nursing utensils)	・ Cadmium: not more than 100 µg/g ・ Lead: not more than 100 µg/g ・ 2-Mercapto imidazoline (in rubber containing chlorine) : negative	Phenol	at 60°C, for 30min. *7	Water	not more than 5 µg/ml
		Formaldehyde			negative
		Zinc		4 % acetic acid	not more than 15 µg/m
		Heavy metals			not more than 1 µg/ml (as Pb)
		Evaporation residue		Water*5*8	not more than 60 µg/ml
				4 % acetic acid*6	
			at 60°C, for 30min.	20 % ethanol *3*4	
Nursing utensils	・ Cadmium: not more than 10 µg/g ・ Lead: not more than 10 µg/g	Phenol	at 40°C, for 24hrs.	Water	not more than 5 µg/ml
		Formaldehyde			negative
		Zinc		4 % acetic acid	not more than 1µg/ml
		Heavy metals		4 % acetic acid	not more than 1 µg/ml (as Pb)
		Evaporation residue	at 60°C, for 30min.	Water	not more than 40 µg/ml

Material: Metal cans [except those containing dried foods (except fats and oils and fatty foods)]					
Type	Material test	Elution test			
		Test item	Leaching condition	Leaching solution	Standards
		Arsenic	at 60°C, for 30min. *7	Water*5	not more than 0.2µg/ml (as As203)
			at 60°C, for 30min.	0.5 % solution of citric acid*6	
		Cadmium	*7 at 60°C, for 30min.	Water*5	not more than 0.1 µg/ml
			at 60°C, for 30min	0.5 %solution of citric acid*6	
		Lead	*7 at 60°C, for 30min.	Water*5	not more than 0.4µg/ml
			at 60°C, for 30min.	0.5 %solution of citric acid*6	
		Phenol	at 60°C, for 30min. *7	Water	not more than 5µg/ml *11
		Formaldehyde			negative *11
		Evaporation residue	at 25°C, for 1 hr.	Neptane *3 *9	not more than 30 µg/ml *11
			at 60°C, for 30min.	20 % ethanol*4	
			at 60°C, for 30min. *7	Water*5*10	
				4 % acetic acid*6	
		Epichlorohydrin	at 25°C, for 2 hrs.	Pentane	not more than 0.5µg/ml*11 *12
		Vinylchloride	at not more than 5°C, for 24 hrs.	Ethanol	not more than 0.05µg/ml*11

Notes:
*1 Except phenolic resin, melamine resin and urea resin.
*2 Materials tests do not apply to implements other than tableware and cooking utensil.
*3 Fats and oils and fatty foods.
*4 Alcoholic beverages.
*5 Food whose pH value exceeds 5.
*6 Food whose pH value is 5 or less.
*7 However, 95°C for 30 minutes when used at the temperature exceeding 100°C.
*8 Limited to implements.
*9 Not more than 90µg/ml when the sample is a can whose inside is coated with a paint composed mostly of natural fats and oils and whose coatings contain zinc oxide more than 3 %.
*10 Quantity of a chloroform-soluble substance (limited to 30µg/ml or less) is to be determined when a sample can similar to *9 is used and such quantity exceeds 30µg/ml.
*11 Limited to those coated with synthetic resins.
*12 The eluted solution is considered to have been concentrated by 5 times although the concentration in the eluted solution is not more than 25µg/ml.

*a) not more than 150µg/m for a sample used at the temp. of 100°C or less.
*b) inclg. Phenol,pt butyl-phenol:

Table AP03 Specifications and standards by Use

Kinds of food	Kinds of implements and containers/ packages	Standards
Pressure- and Heat-Sterilized Packaged Food (except canned and bottled foods)	Containers/ packages, in general	1. Containers/packages shall be light-blocking and impermeable to gas (except when products have no risk of quality degradation due to deterioration of fats and oils). 2. They shall not be broken, deformed, colored, or discolored when filled up with water, sealed, and heated under pressure in the same conditions as in actual manufacture. 3. Compression proof test: Contents or water shall not leak out. 4. Heat sealing strength test: Not less than 23 N (Except metal cans sealed by seaming). However, this does not apply to rectangular containers which show value of higher than 20kPa by inner pressure strength test. 5. Dropping test: Contents or water shall not leak out.
Soft drinks (except Fruit juice as material)	(1) Made of glass	1. Glass containers that are to be reused shall be transparent. 2. They shall pass the following tests a. Sustained pressure-resistance test: Gas shall not leak out (This only applies to those for filling a carbonic acid-containing soft drinks, and this does not apply to those capped with paper lids.) b. Reduced pressure-resistance test: Air shall not leak out (This applies only to those containers filled with soft drinks with carbonic acid excepting those capped with paper lids). c. Liquid leak test: Contents shall not leak out (This applies only to those containers filled with soft drinks without carbonic acid by a method other than hot filling excepting those capped with paper lids).
	(2) Made of metal	1. Metal containers shall pass the following tests a. Pressure resistance test: Air shall not leak out (This only applies to those whose inside pressure exceeds atmospheric pressure at normal temperature.) b. Reduced pressure-resistance test: Air shall not leak out (This only applies to those whose inside pressure is the same as or lower than atmospheric pressure at room temperature.) 2. They shall pass the following tests a. Pinhole test: No pinhole shall be found (This only applies to those containers/packages using sealing materials (other than metal) at their opening. b. Bursting strength test: Not less than 490.3 kPa (same as above). c. Piercing strength test: Not less than 15 N (same as above)

Kinds of food	Kinds of implements and containers/ packages	Standards
	(3) Made of synthetic resins, synthetic resin-processed paper, and synthetic resin-processed aluminum foil	1. Synthetic resins to be used for the parts in direct contact with food contents are limited to those whose standards have been set forth in the Section of "Standards by Materials" (except synthetic resin-processed aluminum foil which is used for sealing). 2. They shall pass the following tests a. Dropping test: Contents or water shall not leak out. b. Pinhole test: No pinhole shall be found. c. Sealing test: Air shall not leak out (This applies only to heat-sealed container-packages made of synthetic resins and synthetic resin-processed paper). d. Compression proof test: Contents or water shall not leak out. (This only applies to heat-sealed containers/packages made of synthetic resins or synthetic resin-processed aluminum foil.) e. Sustained pressure-resistance test: Gas shall not leak out. (this only applies to those which are sealed by crown caps and filled with carbonic acid-containing refreshing drinks). f. Sustained reduced pressure resistance test: Coloring with methylene blue shall not be observed. (This only applies to those which are sealed by crown caps and hot-filled with soft drinks). g. Liquid leak test: Contents shall not leak out. (This only applies to those which are sealed by crown caps and filled with soft drinks without carbonic acid by a method other than hot-filling.)
	Combination	1. Metals are limited to those conforming to the standard for metal cans set forth in Section 4 "Standards by Materials," and for synthetic resins, synthetic resin-processed paper, and synthetic resin-processed aluminum foil, synthetic resins used for parts in direct contact with contents are limited to those conforming to the standards set forth in (3) -1 above. (However, this does not apply to synthetic resin-processed aluminum foil which is used for hermetic sealing purpose.) 2. They shall pass the following tests a. Dropping test: Contents or water shall not leak out. b. Pinhole test: No pinhole shall be found. Sealing test: Air shall not leak out (This applies only to those containers/packages sealed by hermetic heat-sealing). c. Reduced pressure resistance test: Air shall not leak out. (T his applies only to those hot-filled with soft drinks.) d. Liquid leak test: Contents shall not leak out. (This only applies to those which are filled with soft drinks by a method other than hot-filling, and sealed by a method other than hot-sealing.)

Kinds of food	Kinds of implements and containers/ packages	Standards
Flavored ice		1. Implements for manufacture shall have such a structure as easily cleanable and having smooth inside and contact surfaces which are made of rust-proof materials or treated to prevent rust. 2. Both distributing and capping shall be performed by the machines. Machines shall be cleaned and sterilized easily and capable of preventing any contamination. 3. Containers/packages for storage or transport purposes shall have such structures as to prevent dust and insects from entering, and also such a structure that prevents melt water from contacting with flavored ice directly.
Foods in general	(1)Automatic vending machine, main body (limited to those whose part is in direct contact with food)	1. Materials used for parts in direct contact with food shall be stainless steel or others which have not the risk of dissolving out toxic or hazardous substances, and shall be acid-resistant, heat-resistant, water -proof, and impermeable. (Those for filtering food need not be impermeable.) 2. (Description of mechanical structures: omitted.)
	(2)Cartridge-type feed tank of an automatic vending machine (same as above)	1. The same as above, except what is described in the parentheses 2. (Description of mechanical structures: omitted.)
	(3) Containers used for selling food from an automatic vending machine (same as above)	1. Containers for offering food (except soft drinks) shall be cleaned and sterilized. (Except those made of new unused paper, synthetic resins, synthetic resin-processed paper or aluminum foil, or in combination, which have been sterilized or manufactured by a method with sterilizing effect and handled with care so as not to be contaminated before use.). 2. Containers for offering soft drinks shall be made of unused paper, synthetic resins, synthetic resin-processed paper or aluminum foil, or in combination, which have been sterilized or manufactured by a method with sterilizing effect and handled with care so as not to be contaminated before use.
Stock solution of soft drinks	Transporting devices or containers/ packages of soft drink stock solution which is kept in a cup-filling type or in a full-automatic machine.	1. Metal containers shall be constructed in such a way that they are easily cleaned with screw-in type lids or stoppers, and have a smooth inside surface, and made of rustproof materials or treated to prevent rust. 2. For synthetic resin containers/packages, the standard containers/packages for soft drinks (except material fruit juices) made of synthetic resins, synthetic resin-processed paper and synthetic resin-processed aluminum foil set forth in E-2-(3) above "Standards by Applications" shall apply mutatis-mutandis.

Table AP04 Standards for Manufacturing

Standards for manufacturing Apparatus or Containers/Packages

Materials	Standards
1. Apparatus and containers / packages made of copper or copper alloy	The areas in contact with food shall be totally tin- or silver-plated, or otherwise treated not to cause any sanitary hazards (except those with characteristic gloss and rust-free).
2. Apparatus and containers / packages in general	Synthetic coloring agents other than those listed in Table 1 of the Enforcement Regulations shall not be used, (excepting the cases where the colors are used by way of melting them into glaze, glass or enamel or by other methods which shall prevent the possibility of their mixing with food).
3. Containers/packages made of paper, shaved wood or metal foil for flavored ice	They shall be sterilized after the manufacture.
4. Apparatus and containers / packages in general	The spine of the Specified Cattle shall not be used as raw material. However, this shall not apply to fat and oil intended to be used as raw material and derived from the Specified Cattle but have been hydrolyzed, saponified or ineteresterified under the condition of high temperature and high pressure.
5. Apparatus and containers / packages in general	Polylactic acid with a content of higher than 6% of D-lactic acid shall not be used to manufacture implements or containers/packages which are used at a temperature higher than 40 degree C. (However, this does not apply to those which are used for less than 30 minutes at lower than 100 degree C or for less than 2 hours at lower than 66 degree C.)

Table AP05 Specifications and Standards for Milk and Milk Products

Kinds of milk, etc.	Types of container-packages (for use in sales)	Classification by materials	Materials test	Elution test				Strength test
				Test items	Leaching conditions	Leaching solution	Standard	
Cow's milk, special cow's milk, pasteurized goat's milk, partly skimmed milk, skimmed milk, processed milk, and cream	Glass bottle		Transparent uncolored one with a mouth inside diameter of 26 mm or above					
	Synthetic resin container-packages synthetic resin processed paper container-packages *1, *2	Synthetic resin (PE, Ethylene 1-alkene copolymerized resin, or polyethelene terephthalate) to be used for parts in direct contact with contents *3	・n-Hexane extract: Not more than 2.6 % ・Xylene-soluble sub-stance: Not more than 11.3 % ・Arsenic: Not more than 2 ppm (as As_2O_3) ・Heavy metal: Not more than 20 ppm (as Pb)	Heavy metal	at 60°C for 30 minutes	4 % acetic acid	Not more than 1 ppm (as Pb)	・Bursting strength *8: Not less than 196.1 kPa for contents of 300 ml or less (392.3 kPa for container/ packages for contents which can be kept at normal temperature). Not less than 490.3 kPa for contents above 300 ml (784.5 kPa for container-packages for contents which can be kept at normal temperature) ・Sealing strength (except combined container-packages): Shall be free from breakage and air leakage when the inner pressure was elevated to 13.3 kPa. ・Pinhole: No dot of methylene blue shall be found on filter paper when container-package was filled with methylene blue solution and put for 30 minutes on filter paper. ・Penetrating strength: At a speed of 50mm/min strike the sample surface with a pin that is 1mm in diameter and 0.5mm in radius with a semi-circular tip. Determine the maximum load until the pin penetrates the surface. The value expressed in N should be no less than 9.8N.
				Evaporation residue			Not more than 15 ppm (F=5, for milk, etc. except cream)	
					at 25°C for 60 minutes	n-Heptane	Not more than 15 ppm (F=5, for cream only)	
				Quantity of $KMnO_4$ consumed	at 60°C for 30 minutes	Water	Nor more than 5 ppm	
(Continued)			・Cadmium: Not more than 100ppm ・Lead: Not more than 100 ppm	Antimony	at 60°C for 30 minutes	4 % acetic acid	Not more than 0.025 ppm	These tests only apply to PET.
				Germanium			Not more than 0.05 ppm	

Kinds of milk, etc.	Types of container-packages (for use in sales)	Classification by materials	Materials test	Elution test				Strength test
				Test items	Leaching conditions	Leaching solution	Standard	
	Metal cans (limited to containers for cream)	Metals	Same as the standard for metal cans set forth for Fermented Milk etc.	Same as left	Same as left	Same as left	Same as left	
	Combined container-packages (those made of synthetic resins or synthetic resin-processed paper. Those made of two or more materials, among above materials and metals) *1	Synthetic resin (PE, LLDPE or PET) to be used for direct contact with contents *3	Same as the standard for synthetic resin -container-packages and synthetic resin processed paper containers-packages set forth for Cow's milk etc.	Same as left	Same as left	Same as left	Same as left	Same as left (Bursting strength test and pin hole test shall be performed for both synthetic resin and synthetic resin processed paper.)
		Metals	Same as the standard for metal cans set forth for Fermented Milk etc.	Same as left	Same as left	Same as left	Same as left	
Fermented milk, fermented milk drink, and milk drink	Glass bottle		Transparent one					
	Container-packages made of synthetic resins, synthetic resin-processed paper, and synthetic resin-processed aluminium foil *2, *4	Synthetic resin(PE or LLDP) to be used for direct contact with contents	Same as the standard applied to Milk, etc.	Same as left (Evaporation residue for 4 % acetic acid only)	Same as left	Same as left	Same as left	Shall comply one of the following tests: bursting strength or penetrating strength (not less than 9.8N) (same methods as for cow's milk, etc.)
		Synthetic resin (Polystyrene(PS)) to be used for direct contact with contents	・ Volatile substances (a total of styrene, toluene, ethylbenzene, isopropyl-benzene and n-propyl-benzene): Not more than 1,500 ppm ・ Arsenic: Not more than 2 ppm (as As_2O_3) ・ Heavy metal : Not more than 20 ppm (as Pb)	Heavy metal	at 60°C for 30 minutes	4 % acetic acid	Not more than 1 ppm (as Pb)	
				Evaporation residue			Not more than 15 ppm	
				Quantity of $KMnO_4$ consumed		Water	Not more than 5 ppm	
(Continued)	(Continued)							

Kinds of milk, etc.	Types of container-packages (for use in sales)	Classification by materials	Materials test	Elution test				Strength test
				Test items	Leaching conditions	Leaching solution	Standard	
		Synthetic resin (PP) to be used for direct contact with contents	・n-Hexane extract: Not more than 5.5 % ・Xylene-soluble sub-stance: Not more than 30 % ・Arsenic: Not more than 2 ppm (as As_2O_3) ・Heavy metal: Not more than 20 ppm (as Pb)	Heavy metal	at 60°C for 30 minutes	4 % acetic acid	Not more than 1 ppm (as Pb)	
				Evaporation residue			Not more than 15 ppm	
				Quantity of $KMnO_4$ consumed		Water	Not more than 5 ppm	
		Synthetic resin (PET) to be used for direct contact with contents	・Cadmium: Not more than 100 ppm ・Lead: Not more than 100 ppm	Heavy metal	at 60°C for 30 minutes	4 % acetic acid	Not more than 1 ppm (as Pb)	
				Evaporation residue			Not more than 15 ppm	
				Quantity of $KMnO_4$ consumed		Water	Not more than 5 ppm	
				Antimony		4 % acetic acid	Not more than 0.025 ppm	
				Germanium			Not more than 0.05 ppm	
	Metal cans			Arsenic	at 60°C for 30 minutes	4 % acetic acid	Not more than 0.1 ppm (as As_2O_3)	
				Heavy metal			Not more than 1 ppm (as Pb)	
				Evaporation residue *7			Not more than 15 ppm (for those using synthetic resins for parts in direct contact with the contents)	
				Quantity of $KMnO_4$ consumed *7		Water	Not more than 5 ppm (Same as above)	
				Phenol *7			Negative (Same as above)	
(Continued)	(Continued)			Formaldehyde *7			Negative (Same as above)	

(Continued)

Kinds of milk, etc.	Types of container-packages (for use in sales)	Classification by materials	Materials test	Elution test				Strength test
				Test items	Leaching conditions	Leaching solution	Standard	
		Synthetic resins to be used for parts in direct contact with contents	・ Cadmium: Not more than 100 ppm ・ Lead: Not more than 100 ppm ・ Dibutyl tin compound (Iimited to PVC): Not more than 50 ppm (as dibutyl tin chloride) ・ Cresol phosphoric ester (limited to PVC): Not more than 1,000 ppm ・ Vinyl chloride (limited to PVC): Not more than 1 ppm					
	Combined container-packages (those made of two or more materials, among synthetic resins, synthetic resin-processed paper, synthetic resin-processed aluminium foil, and metals) *5	Synthetic resins, synthetic resin-processed paper, and synthetic resin-processed aluminium foil	Same as standard set forth in synthetic resins, etc. for fermented milk, etc.	Same as left	Same as left	Same as left	Same as left	Sealing strength: same for milks, etc. Burst strength: Not less than 196.1 kPa
		Metal	Same as standards set forth in metal cans for fermented milk	Same as left	Same as left	Same as left	Same as left	
(Continued)	(Continued)							

(Continued)

Kinds of milk, etc.	Types of container-packages (for use in sales)	Classification by materials	Materials test	Elution test				Strength test
				Test items	Leaching conditions	Leaching solution	Standard	
		Synthetic resin-processed aluminium foil for hermetic sealing		Heavy metal	at 60°C for 30 minutes	4 % acetic acid	Not more than 1 ppm (as Pb)	Bursting strength: Not less than 490.3 kPa
				Evaporation residue			Not more than 15 ppm	
				Quantity of $KMnO_4$ consumed		Water	Not more than 5 ppm	
				Phenol			Negative	
				Formaldehyde			Negative	
		Synthetic resins of synthetic resin-processed aluminium foil for hermetic sealing which is used for parts in direct contact with contents.	・ Arsenic: Not more than 2 ppm (as As_2O_3) ・ Cadmium: Not more than 100 ppm ・ Lead: Not more than 100 ppm ・ Dibutyl tin compound (limited to PVC): Not more than 50 ppm (as dibutyl tin dichloride) ・ Cresol phosphoric ester (limited to PVC): Not more than 1,000 ppm ・ Vinyl chloride (limited to PVC): Not more than 1 ppm					

Kinds of milk, etc.	Types of container-packages (for use in sales)	Classification by materials	Materials test	Elution test				Strength test
				Test items	Leaching conditions	Leaching solution	Standard	
Prepared milk powder	Metal cans (including those using synthetic resins for hermetic sealing of the opening part) *5	PE, ethylene 1-alkene copolymerized or polyethylene terephthalate (PET) used for parts in direct contact with contents	Same as the standard set forth in container-packages laminated synthetic resin for prepared milk powder	Same as left	Same as left	Same as left	Same as left	・ Sealing strength: Same as that of milk
	Container-packages of laminated synthetic resins (container-packages with aluminium foil laminated on synthetic resins or those with cellophane or paper laminated further) *6	Container-packages using PE, ethylene 1-alkene copolymerized resin *3	Same as standard set forth in synthetic resins, etc. for fermented milk, etc.	Same as left	Same as left	Same as left	Same as left	・Bursting strength: Not less than 196.1 kPa for contents 300 g or less Not less than 490.3 kPa for contents above 300 g (196.1 kPa in case that an outer packaging i.e. package made over a container-package for retailing, is done and maximum bursting strengths of the outer and container-packages added together is not less than 980.7 kPa) ・Sealing strength: Same as that of milk
		PET used for parts in direct contact with contents	・ Cadmium: Not more than 100 ppm ・ Lead: Not more than 100 ppm	Heavy metal	at 60°C for 30 minutes	4 % acetic acid	Not more than 1ppm (as Pb)	
				Evaporation residue			Not more than 15ppm	
				Quantity of KMn04 consumed		Water	Not more than 5ppm	
				Antimony		4 % acetic acid	Not more than 0.025 ppm (Limited to container-packages using PET)	
				Germanium			Not more than 0.05 ppm (same as above)	
	Combined container-packages (those made of metal cans and laminated synthetic resins) *6	Metal cans	Same as the standard for metal cans set forth for Prepared milk powder	Same as left	Same as left	Same as left	Same as left	Same as left
		Laminated synthetic resins	Same as the standard for laminated synthetic resins set forth for Prepared milk powder	Same as left	Same as left	Same as left	Same as left	Same as left (Bursting strength : Not less than 490.3 kPa)

Note

*1) Container-packages made of “synthetic resins” are restricted to polyethylene (PE), ethylene 1-alkene copolymerized resin (LLDPE), Nylon, polypropylene (PP) or polyethylene terepthalate (PET)]. Combined container-packages of paper laminated with “synthetic resins” are restricted to PE laminated paper, LLDPE laminated paper or PET laminated paper. Materials for parts in direct contact with products are restricted to PE ,LLDPE, or PET.

*2) Container-packages for products storable at room temperature shall shield the product from light and shall not be gas-permeable.

*3) Additives shall not be used. Provided that, for PE and LLDPE, the following can be used: Not more than 2.5 g of calcium stearate (spec. of Japanese Pharmacopoeia) per 1 kg of synthetic resin; Not more than 0.3 g of glycerine fatty acid ester (spc. of Specifications and Standards of Food, Additives, etc.) per 1 kg of synthetic resin; or Titanium dioxide (spec. of Specifications and Standards of Food, Additives, etc.)

*4) Materials for parts in direct contact with products are restricted to PE, LLDPE, PS, PP or PET.

*5) Opening parts shall be of a structure which ensures hermetic closing and materials for that part are restricted to PE, LLDPE or PET.

*6) Limited to PE, LLDPE or PET for parts in direct contact with contents.

*7) Limited to those metal cans coated with synthetic resins for parts in direct contact with food content.

*8) As to the bursting strength test and the sealing strength test for PET containers or processed paper container-packages, one of the two tests will suffice.

An English translation of the Ordinance （Ministerial Ordinance on Milk and Milk Products Concerning Compositional Standards, etc.” (MHLW Ordinance No.52, 1951: Latest Revision
No.132, October 30, 2007) can be found on the website at:
http://www.mhlw.go.jp/english/topics/foodsafety/index.html

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