Article 5. Standards and Specifications for Each Food Product

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1. Confectionaries

1) Definition

Confectionaries refer to biscuits, candies, chewing gum, and ice candies etc. that are processed by the addition of other foods or food additives using vegetable raw material as its main material.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) For ice candy, sterilization should be performed at 68.5℃ for 30 minutes or in an equivalent or more effective method.

(2) For the size of jelly in cup form, the inner diameter of the surface in contact with the closure should not be less than 5.5 cm and the height and the inner diameter of the bottom should not be less than 3.5 cm.

4) Food type

(1) Biscuit

Biscuit refers to a product made using the vegetable materials, such as grain powders, performing the baking, swelling, frying, or other processes, or adding a food or food additive and includes the biscuit, wafer, cookie, cracker, Han-Gwa(Korean traditional cookies, snack or others).

(2) Candy

Candy refers to a product using plants, sugars, sugar alcohols and red bean precipitant as main base materials, which is then concentrated and formulated by mixing with other foods or food additives to manufacture candy, caramel, Yang-Gang(Red bean jelly) and jelly etc.

(3) Chewing Gum

Chewing gum refers to a product that uses natural or artificial resin as its base materials, which is then processed by mixing with other foods or food additives.

(4) Ice Candy

Ice candy refers to a product made by adding a food or food additive into drinking water and mixing and freezing it and does not include the ice creams containing milk fat.

5) Specifications

(1) Description : Required to have inherent flavor without off-flavor of off-taste

(2) Acid Value : Less than 2.0 (Limited to oil-fried food and not more than 3.0 for oil-and-honey pastry)

(3) Tar color not permitted : Not detected (Limited to candies and chewing gums)

(4) Artificial sweetening : Not detected (limited to candies)

(5) Antioxidants (g/kg) : Not detected except those specified in the following table(Limited to chewing gums)

Butylated Hydroxy Anisole Butylated Hydroxy Toluene Tert-Butylhydroquinone	Not more than 0.75 (when used in combination, total amount of butylated hydroxy anisole, butylated hydroxy toluene, and tert-butylhydroquinone should not be more than 0.75).

(6) Bacterial count

① Biscuits, Candies : Less than 10,000 per 1 g of sample (Limited to sealed food and except food containing lactic acid bacteria)

② Ices : Less than 3,000 per 1 mL of sample solution (Only, except ices containing lactic acid bacteria).

(7) Coliform group : Less than 10 per 1 mL (Limited to ices)

(8) Lactic acid bacteria : More than labelled counts (Limited to ices containing lactic acid bacteria)

(9) Fracturability (Newton) : Not exceeding 5 (Limited to cup-shaped jelly)

(10) Total aflatoxin(㎍/㎏) : Not more than 15 (Total of B1,B2,G1 and G2, only less than 10 ㎍/㎏ of B1 and limited to peanut or nut-containing food)

6) Test methods

(1) Acid value

Take an appropriate amount of sample into an Erlenmeyer flask. The sample amount should be appropriate for obtaining the necessary amount of the milk fat after grinding or cutting. Then, add purified ether and make certain that the sample is soaked in ether. While shaking it from time to time, allow it to stand for about 2 hours. Filter it through a dry filter paper in a way that prevents the outflow of solids, add the purified ether (half amount) into the sample in the flask, mix it, and repeat the filtration through the same filter. Transfer the filtrate to a separatory funnel, add water in the amount equivalent to about 1/2~1/3 of the filtrate, mix it, and discard the water layer. Repeat this procedure. Collect the ether layer and dehydrate it with sodium sulfate anhydride, pass it through nitrogen or carbon dioxide gas, and conduct the pressure reduction in water bath at 40℃ to completely remove ether. Take about 10 g of the

remnant and analyze it according to Article 10-1-1.5.3.1 (Acid Value, Chemical Tests, Lipids, Testing of General Substances, General Testing Methods). "S" in the formula means the amount (g) of milk fat.

(2) Tar color not permitted

Analyze the sample according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

(3) Artificial sweetening

Analyze the sample according to 2.2. Artificial Sweetening described in Article 10. General Testing Methods.

(4) Antioxidants

Analyze the sample according to 2.3 Antioxidants described in Article 10. General Testing Methods.

(5) Bacterial count

Dissolve the sample completely at below 40℃ for a short period and take 10 mL into a bottle. Add a sterilized phosphate buffer or sterilized physiological saline to make the final volume of 100 mL. Use this solution as the test solution and analyze it according to 3.5.1 General Bacteria, 3. Microbiological Methods in Article 10. General Testing Methods.

(6) Coliform group

Analyze the sample solution prepared at the above method for bacterial count according to 다. Desoxycholate Lactose Agar Method, 3.7.2 Quantitative Methods, 3.7 Coliform group Methods described in Article 10. General Testing Methods.

(7) Lactic acid bacteria

Analyze the sample according to 3.9 Lactic Acid Bacteria, 3. Microbiological Methods described in Article 10. General Testing Methods.

(8) Fracturability

Analyze the sample according to 9.5. Physical Testing of Jelly described in Article 10. General Testing Methods.

(9) Aflatoxin

Analyze the sample according to 6.1. Mycotoxin described in Article 10, General Testing Methods.

2. Breads or Rice Cakes

1) Definition

Breads or rice cakes refer to breads, rice cakes, and dumplings made by using the wheat flour, rice flour, glutinous rice flour, or other grain flour as main material, adding other foods or food additives, and processing them.

2) Requirements of Raw Material

(1) Raw material that may be easily spoilt or deteriorated should be stored at freezing or cold temperature.

3) Manufacturing and Processing Standards

(1) For alcohol-treated products (with no less than 1% alcohol), the quality of the residual alcohol should not be deteriorated.

4) Food type

(1) Bread

Bread refers to a bread, cake, sponge cake, doughnut, pizza, pie, hot dog, or others made by using the wheat flour or other grain flour as main material, adding other foods or food additives, and fermenting it or kneading, baking, cooking, or frying it.

(2) Rice Cake

Rice cake refers to a product made of rice flour, glutinous rice flour, or other cereal flours as its main materials. The materials are then mixed with salts, sugars, cereals, legumes, vegetables, fruits, and alcohols etc. before the thermal processing step.

(3) Dumpling

Dumpling refers to foods made by molding the mixture of meat, vegetables, and/or others with dumpling sheets.

5) Specifications

(1) Description : Required to have inherent flavor without off-flavor or off-taste

(2) Tar color : Not detected (Only to loaf bread and sponge cake)

(3) Sodium saccharin : Not detected

(4) Preservatives (g/kg) : Any preservative except the followings should not be detected

Propionic acid Sodium propionate Calcium propionate	Not more than 2.5 (as propionic acid, limited to breads and cakes)

Sorbic acid Potassium sorbate Calcium sorbate	Not more than 1.0 (as sorbic acid, limited to red bean paste etc.)

(5) *Staphylococcus aureus* : Negative (Only to cream breads)

(6) *Salmonella* ssp. : Negative (Only to cream breads)

4) Test method

(1) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

(2) Artificial Sweetener

It is tested according to 2.2. Artificial Sweetener described in Article 10. General Testing Methods.

(3) Preservatives

It is tested according to 2.1. Preservatives described in Article 10. General Testing Methods.

(4) *Staphylococcus aureus*

10 g of cream from cream bread is randomly taken, and homogenized with 90 mL of sterilized saline solution. The homogenized solution is tested according to 3.12.1 Qualitative Methods, 3.12 *Staphylococcus aureus* described in Article 10. General Testing Methods.

(5) *Salmonella ssp.*

Cream of food products spread or filled with cream are used as samples and tests are performed according to 3.11 *Salmonella spp.* described in Article 10. General Testing Methods.

3. Cocoa Products or Chocolates

1) Definition

Cocoa products or chocolates refer to cocoa mass, cocoa butter, cocoa powder, or others obtained from the fruits of *Theobroma cacao* or the chocolate, sweet chocolate, milk chocolate, family milk chocolate, white chocolate, semi-chocolate, and processed chocolate products made by adding foods or food additives to such cocoa mass, cocoa butter, cocoa, powder, or others.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) Alcoholic components should not be added. However, if it is intended that the alcoholic components will be used for the purposes of improving the taste, supplementing the scent, or removing the odor, the alcoholic component may be used at less than 1% (as of alcohol).

4) Food Type

(1) Processed Cocoa Products

① Cocoa Mass

Cocoa product produced by roasting, peeling and crushing cacao fruits.

② Cocoa Butter

Fat obtained by peeling cacao fruits and extracting or pressing them.

③ Cocoa Powder

Powdered cocoa product obtained by roasting, peeling and pressing cacao fruits and defatting them.

④ Other Processed Cocoa Products

Other cocoa products processed by mixing the raw materials obtained from cacao fruits with food or additives but the above cocoa butter, cocoa mass and cocoa powder.

(2) Chocolates

① Chocolate

Chocolate is manufactured by adding foods or food additives to cocoa components and processing them and contains no less than 35% of cocoa solids (No less than 18% of cocoa butter and no less than 14% of fat-free cocoa solids).

② Sweet Chocolate

Sweet chocolate is manufactured by adding foods or food additives to cocoa components and contains no less than 30% of cocoa solids (No less than 18% of cocoa butter and no less than 12% of fat-free cocoa solids).

③ Milk Chocolate

Milk chocolate is manufactured by adding foods or food additives to cocoa components and contains no less than 25% of cocoa solids (No less than 2.5% of fat-free cocoa solids) and no less than 12% of milk solids (No less than 2.5% of milk fat).

④ Family Milk Chocolate

Family milk chocolate is manufactured by adding foods or food additives to cocoa components and contains no less than 20% of cocoa solids (No less than 2.5% of fat-free cocoa solids) and no less than 20% of milk solids (No less than 5% of milk fat).

⑤ White Chocolate

White chocolate is manufactured by adding foods or food additives to cocoa components and contains no less than 20% of cocoa butter and not less than 14% of milk solids (No less than 2.5% of milk fat).

⑥ Semi-Chocolate

Semi-chocolate is manufactured by adding foods or food additives to cocoa solids and contains no less than 7% of cocoa solids.

⑦ Processed Chocolate Product

Processed chocolate product is manufactured by adding various chocolate products of the above ①~⑥ to nuts, candies, biscuits, or other foods and mixing, coating, or filling them.

5) Specifications

(1) Description : It should have inherent flavor without having off-flavor or off-taste.

(2) Lead (mg/kg) : Not more than 2.0 (Limited to cocoa powder)

(3) Iodine value : 33~42 (Limited to cocoa butter)

(4) Not permitted Tar colorant : It should not be detected (Except cocoa mass, cocoa butter, and cocoa powder).

(5) Bacterial count : Less than 10,000 per 1g of sample (Limited to sealed chocolates and except chocolates containing lactic acid bacteria)

(6) Lactic acid bacteria : More than labelled counts (Limited to chocolates containing lactic acid bacteria)

6) Test Method

(1) Lead

It is tested according to 7.1. Harmful Metal described in 10. General Testing Methods.

(2) Iodine value

It is tested according to 1.1.5.3.3 Iodine value, 1. General Composition described in Article 10. General Testing Methods.

(3) Not Permitted Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

(4) Bacterial count

It is tested according to 3.5.1 General Bacteria, 3. Microbiological Methods in Article 10. General Testing Methods.

4. Jams

1) Definition

Jams refer to jellies or syrup products that are manufactured by mixing fruits or fruit vegetables with sugars and include jam, marmalade etc.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) After the sterilization process, the products should be cooled down to maintain the quality and inhibit the growth of thermophilic bacteria.

4) Food type

(1) Jam

Jam refers to a product manufactured by jellying fruits or vegetables (Not less than 40%; not less than 30% in case of berries except strawberry) together with sugars.

(2) Marmalade

Marmalade refers to a product manufactured by using mandarin (Not less than 30%) and includes the rind of the mandarin.

(3) Other Jams

Other jams refer to products manufactured by processing fruits or vegetables or the mixture of fruits or vegetables and sugars and include the syrup (Not less than 30%), jelly (Not less than 20%), and fruit pie filling.

5) Specifications

(1) Tar color : It should not be detected, but other jams.

(2) Preservatives (g/kg) : Any preservative except the followings should not be detected.

Sorbic acid Potassium sorbate Calcium sorbate	It should contain not more than 1.0 when used as sorbic acid.
Benzoic acid Sodium benzoic acid Potassium benzoic acid Calcium benzoic acid	It should contain not more than 1.0 when used as benzoic acid.

para-oxy-methyl benzoic acid para-oxy-ethyl benzoic acid para-oxy-propyl benzoic acid	It should contain not more than 1.0 when used as para-oxy-benzonate
Propionic acid Sodium propionate Calcium propionate	It should contain not more than 1.0 when used as propionic acid
Mixed used of above Preservatives	Total summed values of sorbate, benzonate, para-oxy-benzonate, and propionate should be not more than 1.0.

6) Test Method

(1) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10.General Testing Methods.

(2) Preservatives

It is tested according to 2.1. Preservatives described in Article 10. General Testing Methods.

5. Sugars

1) Definition

Sugars refer to crystalline powdery forms of white sugar and brown sugar etc. that were processed using sugar solution or crude sugar extracted from syrups of sugar canes or sugar beets.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) When manufacturing sugars, the melting, filtration, and crystallization processes should be included.

4) Food Type

(1) White Sugar

White sugar refers to a white colored sugar product manufactured by purification of the sugar solution or crude sugar.

(2) Brown Sugar

Brown sugar refers to a brown colored sugar product manufactured by purification of the sugar solution or crude sugar.

(3) Other Sugars

Other sugars refer to products are manufactured by purifying and processing the sugar solution or crude sugar and adding foods or food additives.

Type Category	White Sugar	Brown Sugar	Other Sugars
(1) Description	It should be colorless, white crystals or crystalline powdery products with sweet taste	It should be brownish crystals or crystalline powdery products with sweet taste	-
(2) Sugar content (%)	Not less than 99.7%	Not less than 97.0%	Not more than 86.0
(6) Artificial sweetener	Should not be detected	Should not be detected	Should not be detected
(7) Lead (mg/kg)	Less than 0.5	Less than 1.0	Less than 1.0
(8) Sulfate dioxide (mg/kg)	Less than 20.0	Less than 20.0	Less than 20.0

5) Specifications

6) Test Method

(1) Sugar content(Sucrose)

26 g sample is transferred into 100 mL of mass flask, and 80 mL of distilled water is mixed with the sample. Then 1 mL of alkaline solution of lead acetate is slowly added with distilled water to fill up the flask to make 100 mL. When the surface of solution develops foam, one drop of ethanol is added to settle down the foam and the solution is mixed vigorously. Then, it is filtered using filter papers by adding small amount of diatomic earth. The initial 25 mL of filtered solution is discarded and the next filtered solution is used as test sample according to 다. Optical Specific Rotation, 1.1.4.1.3 Saccharose content, 1. General composition test method described in Article 10. General Testing Methods.

(2) Artificial Sweetener

It is tested according to 2.2 Artificial Sweetener described in Article 10. General Testing Methods.

(3) Lead (mg/kg)

It is tested according to 7.1. Harmful Metal described in 10. General Testing Methods.

(4) Sulfur Dioxide

It is tested according to 2.5. Sulfurous Acid and its salt described in Article 10. General Testing Methods.

6. Glucoses

1) Definition

Glucoses refer to liquid, powder, or crystalline glucose that is produced by applying the glycosylation and refinement processes of starches as main base materials.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

(1) Liquid Glucose

Liquid glucose refers to a liquid form manufactured by processing starches through saccharification, filtration, concentration, purification and processing the resultant glucose solution.

(2) Powder/Crystalline Glucose

Powder/Crystalline glucose refers to a crystallized or dried form of concentrated glucose solution.

5) Specifications

Types Category	Liquid glucose	Powder & Crystal glucose
(1) Glucose equivalent weight (D.E)	Not less than 80.0	—
(2) Artificial sweetener	Should not be detected	Should not be detected
(3) Dextrin powder	-	Not more than 4.0
(4) Lead (mg/kg)	Not more than 0.5	Not more than 0.5

6) Test Method

(1) Glucose Equivalent Weight (D.E)

It is tested according to 1.1.4.1.2 Invert sugar test method described in 1. General composition described in Article 10. General Testing Methods. After determining the concentration of invert sugar, its equivalent concentration as glucose is calculated by following equation.

$$\text{Glucose equivalence} = \frac{\text{Reducing sugar (As in the form of glucose \%)}}{\text{Sugar solids in the sample (\%)}} \times 100$$

(2) Artificial Sweetener

It is tested according to2.2. Artificial Sweetener described in Article 10. General Testing Methods.

(3) Dextrin Powder

It is yielded by deducting the glucose concentration measured by the Wallstheta sheudal method from 100. If necessary, judgment is made by comparing the color intensity of the spot for standard crystalline glucose with that of the sample on the filter chromatography.

* Wallstheta Sheudal method

As of glucose, 1.5-2 g of sample is mixed with distilled water to make a final volume of 100 mL, and 10 mL from the sample preparation is added to an erlenmeyer flask, and 25 mL of 0.1 N of iodine solution is added and mixed well at room temperature. After, 35 mL of 0.1 N Sodium hydroxide solution is added slowly and allowed to settle for 15 minutes (When the sugar content in the sample is small, it may take 20 minutes for settlement). After settlement, the solution is treated with diluted sulfuric acid to make it acidic. At this step, dissociated iodine is titrated by 0.1 N thiosodium sulfate solution. As the endpoint of the titration nears, 1 mL of starch solution is added to the solution and titration is repeated.

The volume of 0.1 N thiosodium sulfate solution used for the titration of sample free control is deducted from the total titrated volume of thiosodium sulfate solution for sample to be used to calculate the amount of sugar.

At this method, 0.1 N iodine solution 1 mL is equivalent to 9.005 mg of glucose.

(4) Lead

It is tested according to 7.1. Harmful Metal described in Article 10. General Testing Methods.

7. Fructoses

1) Definition

Fructose refers to sugar products that are processed by isomerization of glucose solution, produced by the glycosylation of starch as main base materials, or the product that further processed hydrolyzed solution of sugars.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

(1) Liquid Fructose

Liquid fructose refers to a sugar product that adopted isomerization process for dextrose or liquid dextrose produced by following processing steps of liquefaction, glycosylation, filtration, purification, and concentration of starch, or the concentrated liquid product that is earned by the hydrolysis of sugar.

(2) Crystalline Fructose

Crystalline fructose refers to a crystalline or powdery form of fructose that is dried by crystallization of concentrated liquid fructose.

(3) Other Fructoses

Other fructoses refer to products manufactured by adding foods or food additives to one of the above two types of foods (1)~(2).

5) Specifications

Type Category	Liquid fructose	Crystalline fructose	Other Fructoses
(1) Fructose (%)	More than 35.0 based on anhydride		More than 35.0 based on anhydride
(2) Artificial sweetener	Should not be detected	Should not be detected	Not detected
(3) Specific rotation$[\alpha]_{20}D$		-89.0 ~ -93.5	-

(4) Lead(mg/kg)	Not more than 0.5	Not more than 0.5	Not more than 0.5

6) Test Method

(1) Fructose

For the measurement, 1 g sample is diluted with distilled water to yield a solution that will contain approximately 40 μg of fructose in 1 mL of the solution. From the preparation, 1 mL of the solution is transferred into a test tube placed in an ice-bath, and 4 mL of cysteine sulfate regent and 2 mL carbazol sulfate regent is added sequentially. The mixture is incubated for 30 minutes at 40℃ for reaction, and the reaction is stopped by transferring the test tube into ice water, and the tube is slowly shaken in the water bath at room temperature for 30 seconds. It's absorbance is measured at 560 nm, and the fructose content is calculated by using a standard curve for standard fructose solution.

. Cysteine sulfate regent

It is prepared by dissolving 200 mL of 70% sulfuric acid with 150 ㎎ of L-cysteine monochloride salt ($C_3H_7NO_2S \cdot HCl \cdot H_2O$), dissolved 10 mL distilled water.

. Carbazol sulfate reagent

It is prepared by dissolving 12 ㎎ of carbazol in 10 mL ethanol, and mixing it with 100 mL of 70% sulfuric acid.

(2) Artificial Sweetener

It is tested according to 2.2. Artificial Sweetener described in Article 10. General Testing Methods.

(3) Specific Rotation

It is tested by exactly weighing 10 g of sample as anhydrous matter (Calculated by water content of the sample). The sample is dissolved with distilled water and 0.2 mL of ammonia test solution to make total volume of 100 mL, and its optical rotation value is determined by using a 200 mm long Polarimeter at 20 ℃, and the reading result is multiplied by 5 to get the specific rotational power.

(4) Lead

It is tested according to 7.1. Harmful Metal described in 10. General Testing Methods.

8. Glutinous Rice Jellies (Yeat)

1) Definition

Glutinous rice jellies(Yeat) refer to products manufactured by the processing of sugar solution that is yielded by the hydrolysis of major base material of starch or starchy substances using enzyme or acids.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

(1) Molasses

Molasses refers to a viscous liquid that is filtered and concentrated after the hydrolysis of starch or starchy base materials (100%) using acid or amylase.

(2) Other Yeats

Other yeats refer to a viscous liquid that is processed by adding foods or food additives.

(3) Dextrin

Dextrin refers to a concentrated or dried intermediates of glycosylation product, which is processed by partial hydrolysis of starch or 100% cereal powder using acids or enzymes.

5) Specifications

Types Category	Yeat	Other Yeat	Dextrin
(1) Glucose equivalence (D.E)	Above 20.0	Above 10.0	Above 20.0
(2) Artificial sweetener	Should not be detected	Should not be detected	Should not be detected
(3) Lead (mg/kg)	Not more than 1.0	Not more than 1.0	Not more than 1.0

6) Test Method

(1) Glucose Equivalent Weight (D.E)

It is tested according to (3) Dextrose Equivalence (D.E), 5) Test Method in 6. Glucose.

(2) Artificial Sweetener

It is tested according to 2.2. Artificial Sweetener described in Article 10. General Testing Methods.

(3) Lead

It is tested according to 7.1. Harmful Metal described in 10. General Testing Methods.

9. Sugar Syrups

1) Definition

Sugar syrups refer to a liquid form that is processed by filtration, and concentration of sugar juice harvested from sugar canes, sugar beets, and maple tree.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Total sugar (%) : Above 60.0(As an invert sugars)

(2) Lead (mg/kg) : Not more than 1.0

(3) Artificial sweetener : Should not be detected

6) Test Method

(1) Total Sugar

It is tested according to by 1.1.4. Carbohydrate, 1. General Composition described in Article 10. General Testing Methods.

(2) Lead

It is tested according to 7.1. Harmful Metal described in 10. General Testing Methods.

(3) Artificial Sweetener

It is tested according to 2.2. Artificial Sweetener described in Article 10. General Testing Methods.

10. Oligosaccharides

1) Definition:

Oligosaccharides refer to products such as fructo-, isomato-, galacto-, malto-, xylo-, or gentio-oligosaccharides which are produced by the processing of sugar solutions.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

(1) Fructo-Oligosaccharide

Fructo-Oligosaccharide refers to a liquid or powdery form of product that uses sugar solution that is enzymatically processed to have at least one fructose molecule binding at its structure by using sugary base materials, which is then processed by following processing steps of filtration, purification, and concentration.

(2) Isomalto-Oligosaccharide

Isomalto-Oligosaccharide refers to a liquid or powdery form of product that is processed by filtration, purification, and concentration steps by using sugar solution produced by enzymatic digestion on sugary base materials, which rearranges the molecular structures to be glucose based form.

(3) Galacto-Oligosaccharide

Galacto-Oligosaccharide refers to a liquid or powdery product that is produced by using trans-galacto-oligosaccharide sugar solution produced by enzymatic digestion of sugary base materials, or the product which is processed by filtration, purification and concentration of raffinose and stachyose sugar solution extracted from sugar beet or soybeans.

(4) Malto-Oligosaccharide

Malto-Oligosaccharide refers to a liquid and powdery form of product that is processed by using sugar solution produced by enzymatic digestion of 100% sugary base materials to produce 3~10 linearly bound glucose molecules in its structure.

(5) Xylo-Oligosaccharide

Xylo-Oligosaccharide refers to a liquid and powdery form of product that is processed by using sugar solution produced by enzymatic digestion of xylan used as a base material.

(6) Gentio-Oligosaccharide

Gentio-Oligosaccharide refers to a oligosaccharide manufactured through filtration, purification, and concentration of sugar solution obtained from enzymatic treatment to induce beta-binding of glucose molecules to carbohydrate components.

(7) Other Oligosaccharides

Other Oligosaccharides refer to oligosaccharide products manufactured by adding foods or food additives to one of the above oligosaccharides (1)~(6).

5) Specifications

(1) Oligosaccharide Content (%)

① Fructo-, Isomalto-, Galacto-, Xylo-, and Gentio- oligosacchrides should have more than 10.0

② Malto-oligosaccharide : More than 40

③ Mixed-oligosacchride : It requires more than the content of individual oligosaccharide.

(2) Lead : Not more than 1.0.

6) Test Method

(1) Oligosaccharides

① Fructo-oligosaccharide

A. Equipment

High Performance Liquid Chromatography(HPLC)

B. Regents

Ⓐ Acetonitrile : HPLC grade

Ⓑ Glycerol : Special grade

Ⓒ Ethanol : Special grade (99.5%)

Ⓓ Diatomic Earth(filter-preparative purpose)

Ⓔ 80% Ethanol : It is prepared by mixing 99.5% ethanol and distilled water at the ratio of 80:20 (v/v).

Ⓕ 5% Glycerol : It is prepared by mixing 5 g of exactly weighed glycerol with 50 mL ethanol in a 100 mL mess flask to fully dissolve the glycerol. Then distilled water is added to make total volume of the solution to be 100 mL, and the preparation is used as internal standard

(Arabinose could be used as an internal standard also).

C. Preparation of standard solution

0.4 g of 1-Ketose (GF_2), Nystose (GF_3), and 1-F Fructofuranosyl Nystose (GF_4) of all regents are weighed and mixed with 10 mL of distilled water in 20 mL mess flask to dissolve these regents completely, and additional distilled water is added to meet the 20 mL marking. 10 mL mess flasks are used to transfer 1, 2,

3, 4 and 5 mL of standard solution to each flask, and 1 mL of 5% glycerol is added to all 5 flasks and distilled water is added to fill up the flask up to the 10 mL marking, which is used as standard solutions.

D. Preparation of Sample solution

Ⓐ For samples, holding negligible amounts of fats.

A sufficient amount of sample is exactly weighed to hold approximately 0.2-2 g of Fructo-oligosaccharide and 20 mL of distilled water is used to dissolve and extract it in the 100 mL mess flask(If necessary, heating or ultrasonication can be used to mix the sample completely). After the complete dissolution of the sample, 20 mL of 5% glycerol solution is added and filled up with distilled water up to 100 mL marking. If necessary, the solution can be used after filtration (No.5B). The exact volume of prepared 25 mL sample solution is transferred into a 50 mL mess flask, and diluted by ethanol by filling the flask with 80% ethanol solution up to the 50 mL marking of the flask. If the solution develops precipitation or increases the turbidity, it is filtered with (No.5B) filter paper to be used as a sample solution.

NOTE1: If sample holds large amount of insoluble matters, It is filtered with (No.5B) filter paper. The filtered solution is transferred into a 100 mL mess flask, and the same analysis method is followed.

Ⓑ For samples, containing large amount of fats.

For the analysis of liquid form of samples, an approximate amount of samples that will contain 0.2-2 g of Fructo-oligosaccharide is exactly weighed, and neutralized if necessary (For this manipulation, keep in mind that directly heating the acidic sample can cause hydrolysis of the fructo-oligosaccharides). So, diatomic earth is added and mixed well (The proper amount of diatomic earth is when the added earth turns into crumbly form). The preparation is dried under decompressed atmospheric condition for 2-4 hours, and whole dried amount is transferred into a paper filter tube to undergo 8-16 hours of fat extraction using a soxhlet fat extractor using petroleum ether. After the fat extraction, whole amount in the paper filter tube is followed by the sugar extraction method used above for samples holding negligible amount fats. If the sample for fat extraction is in powder form, diatomic earth is not added, but the whole extraction procedure is same.

E. Test Procedure

Ⓐ High Performance Liquid Chromatography operation condition

- Column : μ- Bondapak CH, p-nitrophenol hydroxylation 2-10 (PNH_2-10) equivalents (Biosil Amino 5S, Shodex Rspak DC-613, Nueleosil NH_2, Lichrosorb NH_2, etc.)
- Mobile phase : Acetonitrile:water (65:35)

The ratio of acetonitrile and water can be adjusted from 65:35 to 70:30 and small volume of ethyl-alcohol can be added for the adjustment.

- Flow rate : 1.0 mL/min
- Detector : Refractive Index detector (RI)

Ⓑ Quantitative test

It is tested by injecting 10 μL standard solutions of Fructo-oligosaccharides and 10 μL of internal standard solutions to have their own chromatograms, each peak area and height of the peak is recorded to have a standard curve. 10 μL of test solution and internal solution are injected to have the histograms of fructo-oligosacchride and internal standard's to have their peak area and height to calculate the total amount of fructo-oligosaccharides (GF_2+GF_3+GF_4) by following equation.

<Calculation>

$$\text{Total fructo-oligosaccharides content (\%)} = (A + B + C) \times D \times \frac{100}{E} \times \frac{100}{1000}$$

A : Concentration (mg/mL) of GF_2 in test solution obtained from standard curve

B : Concentration (mg/mL) of GF_3 in test solution obtained from standard curve

C : Concentration (mg/mL) of GF_4 in test solution obtained from standard curve

D : Dilution factor

E : Sampling weight (g)

② Isomalto-oligosaccharide

A. Equipment

High Performance Liquid Chromatography

B. Regents

Ⓐ 50% Ethyl alcohol

Ⓑ Activated Carbon: the grade used for rice wine fermentation or sugar solution bleaching

Ⓒ Ion-exchange resin: Enforced acid type(H-type) or Enforced alkaline type(OH-type)

Ⓓ Perlite

Ⓔ Acetonitrile : HPLC grade

Ⓕ Standard sugars

Monosaccharides - Glucose, Fructose

Disaccharides - Maltose, *Isomaltose, Sucrose, *Kojibiose, *Nigerose

Cellotriose - Maltotrisose, *Pannose, *Isomaltotriose

Cellotetrose - Maltotetrose, *Isomaltotetraose

Pentose - Maltopentaose, *Isomaltopentaose

Hexose — Maltohexaose, *Isomaltohexaose

Heptaose — Maltoheptaose, *Isomaltoheptaose

(* indicates sugar substance diverged from Isomato-oligosaccharides)

C. Preparation of Standard solution

Ⓐ Exclusion ion chromatography system: Each degree of polymerized linear sugars is exactly weighed to 50 mg, and mixed with 50 mL distilled water in a 100 mL mess flask. If there is a problem in dissolving the sample, additional heating can be used and later filled up with distilled water to 100 mL marking after cooling.

Ⓑ Reverse phase ion chromatography : Each 100 mg of isomalto-oligosaccharide diverged sugar is dissolved with 1 mL of distilled water to be used as a standard solution for the sugar.

D. Preparation of test solution

Ⓐ For samples, containing negligible amount of fats

Approximate amount of sample (0.5-5 g) that will contain the proper amount of isomalto-oligosaccharides approximately 500 mg is exactly weighed, and 30 mL of distilled water or 50% ethanol solution (For sample that contains protein) is mixed and heated to completely dissolve the solution to extract the sugar. The extracted solution is purified by 0.5 g of activated carbon and 1.5 g of ion-exchange resin which was formulated by mixing cation and anion in the ratio of 1: 2. The purified solution is filled up with distilled water to have total volume of 500 mL.

Ⓑ For samples, containing large amount of fats

Approximate amount of sample (0.5-5 g) powdery form of isomalto-oligosaccharide containing sample is exactly weighed and directly transferred into fat extractor for fat extraction, if the sample is in powder form. If the sample is liquid type, it can be neutralized when necessary (outer range of pH 4-10) and then Perlite is added until it turns to crumble form, which will allow the sample to be well dispersed during the following fat extraction for 8-16 hours. After the fat extraction, whole amount of sample is followed by the next operation described in above.

NOTE 1. For the sugar samples, which are mixed with sugars, having 2-5 degree of polymerization such as sugar, lactose, fructo-oligosaccharide, coupling sugar, and galacto-oligosaccharide were mixed in the samples, Each sugar content has to be determined individually by following the individual sugar measurement methods for the sugar samples. However, the presence of starchy sugars such as isomerized sugars, glucose, and molasses do not interfere the analysis of Isomalto-oligosaccharides.

E. Test Procedure

Ⓐ High Performance Liquid Chromatography operation condition

- Exclusion ion chromatography system
- Column : ∮8 mm× 200 mm MCI GEL CKO 4S equivalents
- Guard column : ∮8 mm× 50 mm MCI GEL CKO 8S equivalents
- Column temperature : 65℃
- Mobile phase : Water
- Flow rate : 0.4 mL/min
- Detector : Refractive Index detector

Ⓑ Reversed phase

- Column : ∮4.6 mm× 250 mm TTSK GEL NH_2-60 equivalents
- Column temperature : 35℃
- Mobile phase: Acetonitrile : Water(63:37)
- Flow rate : 0.8 mL/min
- Detector : Refractive Index detector

B. Quantitative test

Ⓐ Standard curve preparation: Standard solutions of 5, 10, 15, 20, and 25 mL are transferred into each 50 mL mess flask, and filled up with distilled water to the marking to make standard solutions, that will contain 25, 50, 75, 100, and 125 mg of sugar in each 50 mL preparation. 10μL of each preparation is injected into the HPLC system, and Peak area and height is recorded to formulate a standard curve.

Ⓑ Calculation

ⓐ The peak area and height gathered from the exclusion ion chromatography will be used to earn the sugar concentration by the degree of polymerization from the standard curve, and the result is calculated as below.

Degree of Polymerization DP1 (Monosaccharide) : A

Degree of Polymerization DP2 (Disaccharide) : B

Degree of Polymerization DP3 (Cellotriose) : C

Degree of Polymerization DP4 (Cellotetrose) : D

Degree of Polymerization DP5 (Pentose) : E

Degree of Polymerization DP6 (Pentose) : F

Degree of Polymerization DP7 (Pentose) : G

Ⓒ The sugar content (%) yielded by analyzing the data produced by reverse phase ion chromatography

DP1 Fructose A1

DP1 Glucose A2

DP2 Maltose B1

DP2 Sucrose B2

DP2 Isomaltose B3

DP2 Nigerose B4

DP2 Gojibiose B5

DP3 Maltotriose C1

DP3 Pannose C2

DP3 Isomaltotriose C3

DP3 Unidentified (Diverged sugar) C4

DP4 Maltotetraose D1

DP4 Isomaltotetraose D2

DP5 Maltopentaose E1

DP5 Isomaltopentaose E2

DP6 Higher polymerization than 6 F

DP6 Isomaltohexaose F2

DP7 Maltoheptaose G1

DP7 Isomaltoheptaose G2

DP8 Higher polymerization H

(NOTE : Isomalto-oligsaccharides do not include linear degree of polymerization more than DP4 and any compounds, having more than degree of polymerization than DP8).

<Calculation>

DP1 Fructose $A\ mg \times \frac{A1}{A1+A2} = a_1\ mg$

DP1 Glucose $A\ mg \times \frac{A2}{A1+A2} = a_2\ mg$

DP2 Maltose $B\ mg \times \frac{B1}{B1+B2+B3+B4+B5+B6} = b_1\ mg$

DP2 Sucrose $B\ mg \times \frac{B2}{B1+B2+B3+B4+B5+B6} = b_2\ mg$

DP2 Isomaltose $B\ mg \times \frac{B3}{B1+B2+B3+B4+B5+B6} = b_3\ mg^{※}$

DP2 Negerose $B\ mg \times \frac{B4}{B1+B2+B3+B4+B5+B6} = b_4\ mg^{※}$

DP2 Kojibiose B mg × $\frac{B_6}{B_1+B_2+B_3+B_4+B_5+B_6}$ = b_5 mg※

DP3 Maltotriose C mg × $\frac{C_1}{C_1+C_2+C_3+C_4}$ = c_1 mg

DP3 Pannose C mg × $\frac{C_2}{C_1+C_2+C_3+C_4}$ = c_2 mg※

DP3 Isomaltotriose C mg × $\frac{C_3}{C_1+C_2+C_3+C_4}$ = c_3 mg※

DP3 Unidentified (Diverged sugar) C mg × $\frac{C_4}{C_1+C_2+C_3+C_4}$ = c_4 mg※

DP4 Maltotetraose D mg × $\frac{D_1}{D_1+D_2}$ = d_1 mg

DP4 Isomaltotetraose D mg × $\frac{D_2}{D_1+D_2}$ = d_2 mg※

DP5 Maltopentaose E mg × $\frac{E_1}{E_1+E_2}$ = e_1 mg

DP5 Isomaltopentaose E mg × $\frac{E_2}{E_1+E_2}$ = e_2 mg※

DP6 Higher polymerization than 6 F mg = f mg

DP6 Maltohexaose F mg × $\frac{F_1}{F_1+F_2}$ = f_1 mg

DP6 Isomaltohexaose F mg × $\frac{F_2}{F_1+F_2}$ = f_2 mg※

DP7 Maltoheptaose G mg × $\frac{G_1}{G_1+G_2}$ = g_1 mg

DP7 Isomaltoheptaose G mg × $\frac{G_2}{G_1+G_2}$ = g_2 mg※

DP8 Higher polymerization H mg = h mg

Substantially, defining the sampling weight and dilution factor as I mg and L, respectively, and considering the *marked sugar represent diverged sugar, the diverged sugar content (%) could be calculated by = $(b3 + b4 + b5 + c2 + c3 + c4 + d2 + e2+f_2 + g_2)\times L \div I \times 100$.

③ Galacto-oligosaccharide (trans-galacto-oligosaccharide)

A. Equipment

High Performance Liquid Chromatography

B. Regents

Ⓐ 20% Sulfosalicylic acid : Special grade regent

20 g of sulfosalicylic acid is dissolved with distilled water to make total volume of 100 mL solution.

Ⓑ Ribose : Special grade

Ⓒ Arabinose : Special grade

C. Preparation of standard solution

2 g of galacto-oligosaccharide is exactly weighed and dissolved with distilled water to make final volume of 50 mL.

D. Preparation of test solution.

Proper amount of sample is exactly weighed to hold approximately 0.1-1 g of galacto-oligosaccharide, and it is dissolved with distilled water to make final solution of 50 mL. The prepared solution is filtered with 0.45 um filter and used as test solution.

NOTE 1. For the samples, requiring protein removal procedure due to the use of several drops of sulfosalicylic acid which activates the formation of insoluble proteins, it is removed by centrifugation or filtered by passing through Sep pak C_{18} cartridge. When these procedures are required, Ribose and Arabinose is used as internal standard.

NOTE 2. For the samples, containing large amount of fats, The pre-treatment procedure used for Fructo-oligosaccharide is used for these samples' pre-treatment.

NOTE 3: If oligosaccharides of DP3 to DP6 are included in the sample, use appropriate enzymes to digest such oligosaccharides into monosaccharides or disaccharides and then, perform the analytical procedures. However, the presence of isomerized sugar, sugar, or polysaccharides does not interfere with the analysis of galacto-oligosaccharide.

However, the presence of sugars like isomerized sugar and polysaccharides do not interfere the analysis of galacto-oligosaccharide.

E. Test Procedure

Ⓐ High Performance Liquid Chromatography operation condition

- Column: Shodex Ionpak KS-802 equivalents or Reverse phase amino columns
- Column temperature : 80℃
- Mobile phase : Water
- Flow rate : 0.4 mL/min
- Detector: Refractive Index (RI) detector

Ⓑ Quantitative test

2, 4, 6, 8, and 10 mL of standard solutions of galacto-oligosaccharide are transferred into 20 mL mess flasks, respectively, and filled up with distilled water to have final volume of 20 mL. From the

prepared standard solution, 10 μL is withdrawn from each preparation to inject into High Performance Liquid Chromatography to acquire peak area and height to produce standard curve. The content of galacto-oligosacchride (%) in the sample is calculated by following equation.

$$\text{Galacto-oligosaccharide (\%)} = B\ \text{mg/mL} \times \frac{50\ \text{mL}}{Ag} \times \frac{100}{1000}$$

A: Sampling weight (g)

FS1B: Concentration of galacto-oligosaccharide obtained from the standard curve (mg/mL)

④ Galacto-oligosacchrides (Raffinose, Stachyose)

A. Regents

Ⓐ Sulfosalicylic acid

Ⓑ Galacto-oligosaccharides(Raffinose, Stachyose) standard solution

Each oligosacchrides of 0.6 g was exactly weighed and dissolved with distilled water to make final volume of 20 mL.

B. Preparation of test solution

Ⓐ For samples, holding negligible amount of fats.

Approximate amount of sample that will contain proper amount (0.07-0.7 g of each galacto-oligosaccharide) is exactly weighed, and dissolved with distilled water to make final volume of 50 mL or extracted. The whole preparation is filtered with 0.45 um filter.

Ⓑ For samples, holding large amount of fats.

If the sample is in liquid form, the same procedure of Ⓐ is used after exactly weighing the sample weight. If necessary, the sample could be neutralized, and diatomic earth is mixed well. Then, the preparation is dried under decompressed atmospheric condition at 60± 2℃ for 2-4hours.

After the drying, the whole amount is transferred into a paper filter tube for the fat extraction by petroleum ether using a soxhlet fat extractor for 8-16 hours. After the removal of fat, the whole amount is taken from the thimble filter and the process of the above Ⓐ is repeated. If the sample is in the powder form, it is directly put into the thimble filter without addition of diatom and then, processed according to the same procedures.

NOTE 1. For the protein containing samples, several drops contained 0.2 g/ mL sulfosalicylic acid is added to remove the protein. If the sample is mixed with large quantity of dextrin, it is removed by the addition of glucoamylase.

C. Test Procedure

Ⓐ High Performance Liquid Chromatography operation condition

- Column: Shodex Ionpak KS-802 equivalents
- Column temperature : 70℃
- Mobile phase : Water
- Flow rate : 1.0 mL/min
- Detector : Refractive Index (RI) detector

Ⓑ Quantitative test

1, 2, 3, 4, and 5 mL of standard solutions of galacto-oligosaccharide are transferred into 5 sets of 10 mL mess flasks, and filled with distilled water to have a final volume of 10 mL. From the prepared standard solution, 10μL is withdrawn from each preparation to inject into High Performance Liquid Chromatography to acquire peak area and height to produce standard curve. The content of galacto-oligosacchride (%) in the sample is calculated by following equation.

$$\text{Galacto-oligosaccharide (\%)} = (A + B) \times \frac{50}{C} \times \frac{100}{1000}$$

A : Concentration of galacto-oligosacchride obtained from the standard curve (mg/mL)

B : Concentration of galactor-oligosacchride in test solution, obtained from the standard curve (mg/mL)

C : Sampling weight (g)

⑤ Malto-oligosaccharide

A. Equipment

Ⓐ High Performance Liquid Chromatography

B. Regents

Ⓐ 50% Ethyl-alcohol

Ⓑ Activated carbon: grade for the manufacture of the refined rice wine or the bleaching of the sugar solution.

Ⓒ Ion-exchange resin: Enforced acid type (H-type) or Enforced alkaline type (OH-type)

Ⓓ Perlite

Ⓔ water : HPLC grade

Ⓕ Standard sugars

Cellotriose (DP3) - Maltotriose

Cellotetrose (DP4) - Maltotetraose

Pentose (DP5) - Maltopentaose

Hexose (DP6) - Maltohexaose

Heptose (DP7) - Maltoheptaose

C. Preparation of standard solution

50 mg of linear sugars of each degree of polymerization is accurately weighed to dissolve with 50 mL of deaerated distilled water. If necessary, the standard sample may be heated to facilitate dissolution. After the heating, it is cooled and distilled water is added to achieve final volume of 100 mL, that is used as a standard solution.

D. Preparation of test solution

Ⓐ For samples, containing negligible amounts of fats.

4 g of sample is exactly weighed and 30 mL distilled water is added or the same amount of 50% ethanol is added for those samples, which contain proteins. And then heating is applied for dissolution or extraction of sugars. The extracted solution is purified by mixing with 0.5 g of activated carbon and ion-exchange resin (1.5 g that is mixed in the ratio of 1:2 of cation to anion), and filled up with distilled water to make the final volume of 100 mL to be used as a test solution.

Ⓑ For samples, containing large amounts of fats.

4 g of sample in powder form is exactly weighed, and fat extracted with a soxhlet fat extractor. If the sample is in liquid form, recording outer pH range between pH 4-10, it is neutralized and Perlite is added until it turns into crumbly form before the fat extraction for 8-16 hours, After the fat extraction, the whole sample in thimble filter is recovered to follow the same procedures as described in ⓐ after the extraction.

NOTE1. For the sugar molecules as like sugar, lactose, fructo-oligosaccharides, coupling sugar, and galacto-oligosaccharides have a similar the degree of polymerization between 2-5, If such sugar molecules are present in a mixed form in the sample, These individual sugar content is independently analyzed, but the starchy sugars as like isomerized sugars, glucose, and molasses are present in a mixed form. Those sugar types do not interfere the analysis of malto-oligosaccharide.

E. Test Procedure

Ⓐ High Performance Liquid Chromatography operation condition

- Column: Aminex HPx42A(Bio Rad) or equivalent exclusion ion-exchange type.
- Column temperature: 85℃
- Mobile phase: Water
- Flow rate: 0.6 mL/min
- Detector: Refractive Index (RI) detector

Ⓑ Quantitative test (Standard curve)

Each concentration of standard solution 10μL is injected and analyzed to have a curve. The standard curve is plotted in a way that the horizontal axis represents the concentrations of malto-oligosaccharide (mg) and the vertical axis represents the peak area.

Ⓒ Calculation

Read the area of malto-oligosaccharide and calculate the content of malto-oligosaccharide in the sample solution.

$$\text{Malto-oligosaccharide content (\%)} = \frac{(A + B + C + D + E)\ \text{mg}}{\text{Sampling weight (mg)}} \times \text{Dilution factor} \times 100$$

DP3 Maltotriose A mg

DP4 Maltotetraose B mg

DP5 Maltopentaose C mg

DP6 Maltohexaose D mg

DP7 Maltoheptaose E mg

⑥ Xylo-oligosaccharide

A. Equipment

Ⓐ High Performance Liquid Chromatography

B. Regents

Ⓐ Water : HPLC grade

Ⓑ Acetonitrile : HPLC grade

Ⓒ Perlite

Ⓓ Standard sugars

Disaccharide - xylobiose

Cellotriose - xylotriose

Cellotetrose - xylotetraose

Pentose - xylopentaose

Hexose - xylohexaose

C. Preparation of Standard solution

Proper amount of samples containing 50 to 100 mg of xylo-oligosaccharides with different degree of polymerization are exactly weighed and dissolved in deaerated 50 mL distilled water. The preparations are filtered with 0.45 um filter to be used as standard solutions.

D. Preparation of Test solution

Ⓐ For samples, holding negligible amounts of fats

3 g of samples are weighed and dissolved in water to make the final volume of 30 mL. The solution is filtered with 0.45um filter to be used as a test solution.

Ⓑ For samples, holding large amounts of fats.

3 g of powdery form of samples are exactly weighed, and fat extracted with a soxhlet fat extractor. If samples are in liquid form, pH neutralization is conducted, Perlite is added into the solution until it turns into crumbly form, and then, fat extraction is conducted for 8-16 hours. After the fat extraction, the whole amount of sample in a thimble filter is completely recovered to prepare the test solution according to the same procedure as used in ⓐ.

E. Test Method

Ⓐ High Performance Liquid Chromatography operation condition

- Column: Carbohydrate column 4.6 × 250 mm or equivalent columns
- Column temperature : Room temperature
- Mobile phase : Acetonitrile: Water (75:25)

(The ratio is adjustable according to the type and condition of column)

- Flow rate : 1.2 mL/min
- Detector: Refractive Index (RI) detector

Ⓑ Quantitative test

Each concentration of standard solution 10 μL is injected and analyzed to have a curve. The standard curve is plotted in a way that the horizontal axis represents the concentrations of xylo-oligosaccharide (mg) and the vertical axis represents the peak area. The xylo-oligosaccharide content (%) in the test solution is calculated by following equation

$$\text{Xylo-oligosaccharide content}(\%) = \frac{(A + B + C + D + E)(mg)}{\text{Sampling weight}(mg)} \times \text{Dilution factor} \times 100$$

xylobiose A mg

xylotriose B mg

xylotetraose C mg

xylopentaose D mg

xylohexaose E mg

⑦ Gentiooligosaccharides

A. Equipment

Ⓐ HPLC

B. Reagents

Ⓐ Water: HPLC grade

Ⓑ Sodium Hydroxide

Ⓒ Sodium acetate

Ⓓ Perlite

Ⓔ Standard

Gentiobiose, Cellobiose

C. Preparation of standard solution

Appropriate amount of sample is taken to assure that it contains about 50-100 mg of gentiobiose and cellobiose and it is dissolved in 1 L of de-aerated water. The solution is filtered through 0.45 ㎛ filter, which is used as the standard solution.

D. Preparation of Test solution

Ⓐ For sample containing negligible amount of fat

100 mg of sample is accurately taken and dissolved in water to make the final volume of 1 L. This solution is filtered through 0.45 ㎛, which is used as the test solution.

Ⓑ For sample containing large amount of fat

100 mg of sample is accurately taken. For powdered sample, it is put into the extractor. For liquid sample, it is neutralized, if necessary, and added with Perlite until it becomes crumbly. Then, fat extraction is performed for 8-16 hours. After fat extraction, the whole amount in the thimble filter is recovered and then, the procedures of Ⓐ are repeated.

E. Test procedure

Ⓐ HPLC operation condition (1)

— Column: PA-1 Column 4.6 × 250 mm or equivalent one

— Column temperature : Room temperature

— Mobile phase :

A: 150 mM Sodium Hydroxide

B: 150 mM Sodium Hydroxise + 600 mM Sodium Acetate

— Flow rate : 1.0 mL/min

— Detector : Pulsed Amperometric Detecter

Ⓑ HPLC operation condition (2)

— Column : Aminex HPX-42A Column 7.8 × 300 mm or equivalent exclusion ion-exchange type

— Column temperature : 85℃

— Mobile phase : Water

— Flow rate : 0.6 mL/min

—Detector : Refractive Index detector (RI)

Ⓒ Quantitative test

ⓐ Standard curve

Each concentration of standard solution 10μL is injected and analyzed to have a curve. The horizontal axis represents concentration of gentio-oligosaccharide in mg and the vertical axis of the curve represents the peak area.

ⓑ Calculation

The area values of gentio-oligosaccharide in different concentration of standard solutions are used to obtain a standard curve and the content of malto-oligosaccharide from sample is calculated from the curve.

Degree of Polymerization DP1 (Monosaccharide): A

Degree of Polymerization DP2 (Disaccharide): B

Degree of Polymerization DP3 or higher (Trisaccharide or higher levels): C

Sugar contents (%) of samples analyzed with use of PA-1 column are as follows;

DP1 Fructose A_1

DP1 Glucose A_2

DP2 Maltose B_1

DP2 Gentiobiose B_2

DP2 Cellobiose B_3

≥ DP3 C

<Calculation>

DP1 Fructose A mg × $\frac{A1}{A1+A2}$ = a_1 mg

DP1 Glucose A mg $\times \frac{A_2}{A_1+A_2} = a_2$ mg

DP2 Maltose B mg $\times \frac{B_1}{B_1+B_2+B_3} = b_1$ mg

DP2 Gentiobiose B mg $\times \frac{B_2}{B_1+B_2+B_3} = b_2$ mg

DP2 Cellobiose B mg $\times \frac{B_3}{B_1+B_2+B_3} = b_3$ mg

Content of gentio-oligosaccharide(%)=($b_2 + b_3$)mg÷ sample amount mg× dilution factor× 100

(3) Lead

It is tested according to 7.1. Harmful Metal described in 10. General Testing Methods.

11. Processed Meat and Egg Products

1) Definition

Processed meat and egg products refer to products that are manufactured and processed using meat or eggs as its main material (those not specified in the standards for processing of livestock products and specifications for their components).

2) Requirements of Raw Material

(1) For non-domestic animals, raw materials should meet the methods of butchering and the examination criteria as specified in the Processing of Livestock Products Act.

3) Manufacturing and Processing Standards

4) Food type

(1) Meat and Egg Product

Meat and egg product refers to egg, carcass, lean meat, the viscera and other portas of animals reared to eat.

(2) Processed Meat Product

Processed meat product refers to a product that is manufactured and processed by the addition of other foods or food additives using meat as its main material.

(3) Processed Egg Product

Processed egg product refers to a product that is manufactured and processed by the addition of other foods or food additives using egg as its main material.

5) Specifications

(1) Nitrite ion (g/kg) : Not more than 0.07 (Limited to processed meat product)

(2) Volatile basic nitrogen (mg %) : Less than 20 (Limited to meat product)

(3) Tar color : Should not be detected (Limited to processed meat product)

(4) Coliform group : Less than 10 per 1 g (Limited to pasteurized products: in case of processed meat product, it should be negative)

(5) The number of bacteria : Negative (Limited to sterilization: but less than 10,000 per 1 g in case of pasteurization)

(6) Salmonella : Negative (Limited to pasteurized products)

(7) *E.Coli* O157:H7 : Negative (Limited to minced raw products).

(8) Preservatives (g/kg) : Any preservative except the followings should not be detected

Sorbic acid Potassium	Not more than 2.0 (as sorbic acid, limited to meat and processed meat (except seasoned meat, minced meat, processed rib product))

sorbate Calcium sorbate	

6) Test Method

(1) Nitrite ion

① Azo Dye Formation Method(Diazoreaction)

A. Reagent

Ⓐ Ammonium acetate buffer solution

Melt 100 g of ammonium acetate with 900 mL water, the solution is adjusted to pH 9.1 by 10% ammonia water and water is added to it to be 1,000 mL.

Ⓑ Sulfanilamide solution

Heat and melt 0.5 g sulfonilic amid with 100 mL hydrochloric acid (1+1).

Ⓒ Naphthyl ethylene diamine solution

Melt 0.12 g N-(1-naphthyl) ethylene diamine solution to 100 mL Water and filter, if any, impurities.

Ⓓ Nitrite standard solution

The standard solution is made by dissolving 0.150 g sodium nitrate ($NaNO_2$) in 1.000 mL of sterilized water, after drying $NaNO_2$(the highest purity) in a desiccator containing sulfuric acid for 24 hours. 10 mL standard solution is diluted with sterilized water to make the total volume of 100 mL. Take 2 mL of the diluted standard solution and add additional distilled water so that the final volume is 100 mL. The concentration of the final solution should be 0.2 μg $NaNO_2$/ mL (prepare the standard solution prior to use).

Nitrite standard solution 1 mL = 0.2 μg NO^-_2

B. Preparation of test solution

10 g of sample cut finely is weighed precisely and water of about 80℃ is added appropriately. After the solution is well mixed, it is transferred into a 200 mL volumetric flask and the original container is rinsed out several times with warm water to be added to the flask. The total volume of the solution in the flask must be 150 mL.

★ Add 10 mL of 0.5 N NaOH into the flask and mix well by shaking the flask. Then, add 10 mL of 12% zinc sulfate ($ZnSO_4$) into the solution and mix well through the same procedure. Heat the flask in a water bath with a temperature of 80℃ for 20 minutes while occasionally shaking the flask. Place the flask in cool water until the temperature reaches room temperature. Then, add 20 mL ammonium acetate buffer solution and add water until the final volume is 200 mL Thoroughly mix the final solution and rest it for 10 minutes. Filter the solution using dried filter paper. About 20 mL of the initial filtrate is discarded and clear filtrate is taken into an Erlenmeyer flask. This solution is used as the test solution. In addition, 10 mL of water (instead of sample) is treated according to the method described in ★. This solution is used as the blank solution.

C. Test method

1 mL of sulfanilamide solution is added to 20 mL of the test and blank solution respectively. Then, add 1 mL naphthyl ethylene diamine solution. Make the final volume 25 mL by adding more water and mix the solution by shaking. Rest the solution for 20 minutes. Prepare a control solution with 20 mL of water according to the same procedures. Then, test and compare the absorbance Aa and Ab at a wavelength of 540 nm. If the test solution is in colors, measure the absorbance Ac of a mixture made by adding 1 mL of HCl (1+1) and water to 20 mL of the test solution to make the final volume of 25 mL against the water (control). Then, obtain the absorbance difference (Aa - Ab or Aa - (Ab + Ac)) and calculate the amount of nitrite ion (A (μg)) in 20 mL of test solution with use of the previously plotted standard curve. Then, calculate the concentration of nitrite ion in sample according to the following formula.

$$\text{Nitrite Ion (g/Kg)} = \frac{A}{s} \times \frac{1}{100}$$

S = Quantity of sodium nitrate sample (g)

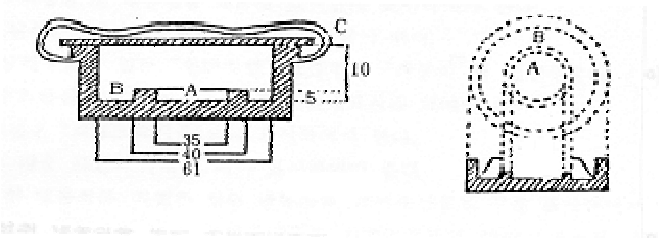
Plot of the calibration curve: Obtain the sodium nitrate standard solution in 25 mL volumetric flasks with a stopper varying the volume in each flask (2 mL, 5 mL, 10 mL, 15 mL, 20 mL). Add 1 mL sulfanilamide solution and 1 mL naphthyl ethylene diamine solution in each flask. Then, add water to make the final volume in all flasks equal to 25 mL. Then, mix all solutions by shaking. Prepare a control solution with 20 mL water through the identical method. Measure the absorbance of all solutions with the water-based control solution. Then, obtain the calibration curve.

(2) Volatile basic nitrogen (VBN)

① Micro-diffusion (Conway) method

A. Devices

Ⓐ Diffuser : As illustrated below, a diffuser has the cover with a multi-layered glass which assembles a Petri dish. The body is divided into two concentric quarters, an inner A(35 mm diameter) and outer B(61 mm diameter). The height of the inner quarter is approximately one half of that of the outer quarter. A diffuser is must be tight-sealed once the cover is properly located and the clip (C) is locked.



B. Reagents

Ⓐ Tight-seal enhancer: Glycerin (white baseline as well as liquid paraffin is also applicable)

Ⓑ K_2CO_3 saturated solution: Dissolve about 60 g of K_2CO_3 (the highest purity) in approximately 50 mL distilled water, while heating the mixture. Then, cool down the solution away from NH_3 gas. Take the top layer only during the experiment.

Ⓒ Brunswick reagent: Dissolve 0.2 g of methyl red and 0.1 g of methylene blue with 300 mL ethanol. Then, keep it in a non-transparent bottle.

C. Preparation of Test solution

In the case of meat, obtaining a universally representative sample is relatively difficult due to the inconsistency in the quality and composition depending on each portion. Hence, several test samples must be collected varying their origins with a bias towards the flesh. In accordance with the size and quantity of samples, a group of samples, collected from several parts of each group out of three to five, which weight approximately 20 g to 50 g, respectively. Cut the samples and blend them. Weigh precisely 10 g and place it into two beakers (two sets of test will be done in order to get the average). Add 50 mL distilled water in each beaker and stir, and then extract through precipitation for 30 minutes. Filter the solution. Prepare the test solution by neutralizing the filtrate to week acid with 5% sulfuric acid and adding proper amount of distilled water.

D. Test

Since it is a micro analysis by neutralization method, acid or alkali gas should not be generated in a lab.

Ⓐ Diffusion

Incline a diffuser slightly and put 1.00 mL of test solution into the bottom of its outer shell by using a pipette accurately and then, put 1.00 mL of 0.01 N-H_2SO_4 into its inner shell A in the same way.

Apply a small quantity of airtight agent evenly around the cover, put 1.00 mL K_2CO_3 saturated solution on the top of the outer shell B, and close it quickly. Then, fix it with clips, incline the diffuser left and right, rotate it silently to mix them(solutions in the outer/inner shell should not be mixed) at 25℃ for 1 hour(120 minutes at 20℃, 140 minutes at 7℃ and, 160 minutes and longer at 10℃) and leave them alone.

Ⓑ Quantitative test

Open the cover, put a drop of Brunswik reagent to H_2SO_4 solution, which is in the inner shell and titrate it with 0.01 N-NaOH by using a micro burette, calculate the average of two attempts(a mL).

Apart from it, execute a blank test by using distilled water, instead of test solution, obtain the average of two tests(b mL) and calculate it according to the following formula.

Volatile basic nitrogen (mg/%) = 0.14 × (b-a) × f/w × 100 × d

W : weight of a sample(g)

f : factor of 0.01N-NaOH

d : dilution factor

(3) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

(4) Coliform group

In order to prepare the test solution, uniformly pulverize coliforms in a grinder. Take 10 g of the grinded coliforms in a sterilized test tube. Then, add sterilized phosphoric acid diluted buffer and sterilized saline solution until the total volume reaches 100 mL. Place the stopper and blend it well by shaking the tube. Dilute the test solution through 10 mL, 1 mL, and 10 time dilution methods. Then, apply 1 mL of each diluted solution on B.G.L,B agar. It is tested according to 3.7 Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(5) The number of bacteria

It is tested according to 3.5.1 The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(6) Salmonella

It is tested according to 3.11 Salmonella, 3. Microorganism described in Article 10. General Testing Methods.

(7) Coliform group O157:H7

It is tested according to 3.16 Coliform group O157:H7, 3. Microorganism described in Article 10. General Testing Methods.

(8) Preservatives

It is tested according to 2.1. Preservatives described in Article 10. General Testing Methods.

12. Fish Products

1) Definition

Fish products refer to fish cake, fish ham, fish sausage half-finished fish, fish flesh, fish paste (surimi) etc. that are manufactured and processed using fish flesh as its main material.

2) Requirements of Raw Material

(1) The freshness of raw materials should be good.

(2) Fish should be stored and handled at below 5℃ and frozen surimi should be stored and handled at below -18℃ in a sanitary manner.

(3)For fish and shellfish, non-edible parts should be removed and handled in a sanitary manner.

3) Manufacturing and Processing Standards

(1) Raw fish fresh (except for refrigerated flesh) should be sufficiently washed by running water for human consumption so that its blood, fat and water-soluble protein etc. are removed.

(2) Any products intended for distribution and marketing should be sealed and packaged.

4) Food Type

(1) Fish Cake

Fish cake refers to a product manufactured and processed by the addition of other foods to fish meat that elute salt-soluble protein.

(2) Fish Sausage

Fish sausage refers to a product manufactured by curing and smoking fish flesh or fish flesh and meat or filling fish flesh or fish flesh and meat into casings and then, heat-treating it. (However, the amount of fish flesh should be more than that of meat.)

(3) Half-finished Fish

Half-finished fish refers to a fish product is manufactured by the addition of other foods or food additives to fish meat that elutes salt-soluble protein without heat process.

(4) Fish Flesh

Fish flesh refers to selected and processed fish flesh free of excipients and preservatives (Excluding Sorbic Acid and Potassium sorbate).

(5) Fish Paste

Fish paste refers to selected and processed fish flesh with added salt, sugar and phosphate.

(6) Other Processed Fish Products

Other processed fish products refer to products not specified in the above (1)~(5).

5) Specifications

(1) Nitrite Ion (g/kg) : Less than 0.05 (Limited to fish sausage)

(2) Tar color : Should not be detected (Excluding fish sausage)

(3) Coliform group : Negative (Excluding non-heated products)

(4) The number of bacteria : Negative (Limited to sterilized products)

(5) Preservatives (g/kg) : Any preservative except the followings should not be detected

Sorbic Acid Potassium sorbate Calcium sorbate	Not more than 2.0(Based on Sorbic acid)

6) Test Method

(1) Nitrite ion

It is tested according to (1) Nitrite ion, 6) Test Method in 11. Processed meat and egg products

(2) Tar color

It is tested according to 2.4. Tar color described in Article 10. General Testing Methods

(3) Coliform group

It is tested according to (4) Coliform group, 6) Test Method in 11. Processed meat and egg products

(4) The number of bacteria

It is tested according to 3.5.1 The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(5) Preservatives

It is tested according to 2.1. Preservatives described in Article 10. General Testing Methods

13. Bean-Curds or Starch Jellies (Mook)

1) Definition

Bean curds refer to products made by using pulses as the main material, solidifying soybean milk, and processing it. They include the bean curd, ground processed bean curd, yuba, and processed bean curd. Starch jelly (Mook) is manufactured using starch or polysaccharides as the main material.

2) Requirements of Raw Material

(1) Raw material should be sufficiently free of soils, sands, straws, and other foreign materials after pretreatment process.

(2) Soybean powder should be vacuum-packed, nitrogen-flushed after vacuum packing, or distributed and stored at cold temperature.

3) Manufacturing and Processing Standards

(1) It is recommended to pack finished products.

(2) Unpacked bean curds should have the manufacturer's company name or trademark imprinted or otherwise identified in order to distinguish them from others made by other companies.

(3) Soy milk used in the manufacture of yuba should be subjected to heat treatment or other equivalent treatment.

(4) For the manufacture of bean curds, the seawater (including underground brine) may be used if it meets the class I requirements as specified in Annex 1-3-D-(1)/(2) of the Enforcement Decree of the Framework Act on Environment Policy.

4) Food Type

(1) Bean Curd

Bean Curd refers to a product made by adding coagulant to soybean solution obtained from soybean (including soy bean powder, 100%, but edible salt excluded).

(2) Ground Processed Bean Curd

Ground processed bean curd refers to a product made by adding coagulant to soybean solution prepared by finely powdered soybean (including soy bean powder, 100%, but edible salt excluded).

(3) Yuba

Yuba refers to film obtained when heating soybean solution at a uniform temperature or processed film product.

(4) Processed Bean Curd

Processed bean curd refers to a product added with other foods when making bean curd/ground processed bean curd. Or it is made by processing a bean curd/ground processed bean curd added with foods or additives. (However, bean curd or ground processed bean curd should be not less than 50%.).

(5) Starch Jelly (Mook)

Jelly refers to a product made by processing starch, seaweeds or devil's-tongue jelly as its main material.

5) Specifications

(1) Heavy metals (mg/kg) : Not more than 3.0

(2) Coliform group :

① Bean Curd and ground Processed bean curd : Not more than 10 per 1 g

(Limited to filled, sealed products)

② Jellies : Negative (Limited to filled, sealed products)

(3) Tar color : Should not be detected

4) Test Method

(1) Heavy Metal

It is tested according to 7.1.2.8. Heavy metals, 7. Harmful Metal described in Article 10. General Testing Methods.

(2) Coliform group

It is tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(3) Tar color

It is tested according to 2.4. Coloring Agents described in 10. General testing methods.

14. Edible Oils and Fats

1) Definition

Edible oil and fat refer to liquid or solid food-grade matter at room temperature gained from plants(including crushed one) and animals or its manufactured and processed products such as soybean oil, corn oil, canola oil, rice bran oil, sesame seed oil, perilla seed oil, safflower oil, sunflower oil, cottonseed oil, peanut oil, olive oil, palm oil, coconut oil, mixed oil, processed fat, shortening, margarine, hot pepper seed oil and flavored oil.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) Crude oil collected through extraction or other processes shall go through degumming, deacidification, bleaching, deodorization, or other equivalent refining processes, or the combination thereof.

(2) Crude oil collected through compression or supercritical fluid extraction (using carbon dioxide) shall go through stationing or filtration to remove any deposits.

(3) Glycerine shall not be used to adjust the acid value during the refining of rice bran oil.

(4) To sesame seed oil or perilla seed oil collected through mechanical compression or supercritical extraction (using carbon dioxide), other edible oil and fat shall not be added.

(5) Solvents for extraction, carbon dioxide, sodium hydroxide, and others used in the manufacturing process for edible oils and fats shall meet the requirements of the Food Additive Code.

4) Food Type

(1) Soybean Oil

Soybean oil refers to oil extracted from soybean and processed to be edible.

(2) Corn Oil

Corn oil refers to oil extracted from embryo bud of corn and processed to be edible.

(3) Rapeseed Oil (Canola Oil)

Rapeseed oil refers to oil extracted from canola and processed to be edible.

(4) Rice Bran Oil (Brown rice oil)

Rice bran oil refers to oil extracted from rice bran and processed to be edible.

(5) Sesame seed Oil

Sesame seed oil refers to oil made by pressing sesame seeds, performing supercritical extraction using carbon dioxide, or purifying crude oil extracted from sesame seeds.

(6) Perilla Oil

Perilla oil refers to oil made by pressing perilla seeds, performing supercritical extraction using carbon dioxide, or purifying crude oil extracted from perilla seeds.

(7) Safflower Oil

Safflower oil refers to oil extracted from safflower and processed to be edible; it includes safflower oil and high oleic acid safflower seed oil.

(8) Sunflower Oil

Sunflower oil refers to oil extracted from sunflower seed and processed to be edible; it includes sunflower oil and high oleic acid sunflower oil.

(9) Cottonseed Oil

Cottonseed oil refers to oil extracted from cottonseed and processed to be edible; it includes cottonseed oil, cottonseed salad oil and cottonseed stearin oil.

(10) Peanut Oil

Peanut oil refers to oil extracted from peanut and processed to be edible; it includes peanut oil and refined peanut oil.

(11) Olive Oil

Olive oil refers to pressed oil obtained by compressing and filtering olive fruits physically or mechanically; it includes refined olive oil refining pressed olive oil and mixed olive oil of pressed olive oil and refined olive oil.

(12) Palm Oil

Palm oil refers to oil extracted from palm, palm oleic oil or palm stearin oil from fractionation of palm oil and palm kernel oil from palm kernel.

(13) Coconut Oil

Coconut oil refers to oil extracted from coconut flesh and processed to be edible.

(14) Mixed Oil

Mixed oil refers to oil made of simple blending of two or more oils mentioned in this oil category (Excluding pressed sesame oil and pressed perilla oil).

(15) Processed fats and Oils

Processed fats and oils refer to edible oil and fat of which physical and chemical properties are changed by hydrogenation, fractionation or ester exchange in order for being edible.

(16) Shortening

Shortening refers to edible fat and oil added with additives to increase properties of plasticity and emulsification in solid or fluid status.

(17) Margarine

Margarine refers to solid or emulsified edible fat and oil(including milk fat) that is made of addition of water, food and additives. It includes margarine and low fat margarine(fat spread). In case of milk fat is used as its raw material, the content should be less than 50%, based on weight proportion of fat content.

(18) Hot Pepper Seed Oil

Hot pepper seed oil refers to oil extracted from hot pepper seed and processed to be edible; it includes pressed hot pepper seed oil and hot pepper seed oil.

(19) Flavored oil

Flavored oil refers to oil made by adding spices, seasoning agents, natural extracts, flavoring, or others into edible oil and fat (except pressed sesame seed oil, sesame seed oil using supercritical extraction, pressed perilla seed oil, perilla seed oil using supercritical extraction) (not less than 50% of edible oil and fat). It is used to improve the taste and flavor of food during cooking or processing.

(20) Other Edible Oils

Other edible oils refer to those made by processing crude oil from a single oil source to be suitable for edible use or by harvesting oil from the residuals after oil extraction through compression and processing it to be suitable for edible use. However, those for which standards and specifications are specified elsewhere shall be excluded.

5) Specifications

Type Category	Soybean oil	Corn oil	Rapeseed Oil	Rice bran oil
(1) Acid value	Not more than 0.6	Not more than 0.6	Not more than 0.6	Not more than 0.6
(2) Iodine value	123 ~ 142	103 ~ 130	95 ~ 127	92 ~ 115

Type Category	Sesame seed oil	Extracted sesame seed oil	Perilla seed oil	Extracted perilla seed oil
(1) Acid value	Not more than 4.0	Not more than 0.6	Not more than 5.0	Not more than 0.6
(2) Iodine value	103 ~ 118	103 ~ 118	192 ~ 209	192 ~ 209
(3) Antioxidants(g/kg)	-	-	Except the followings, any antioxidant shall not be detected.	
			Butylated hydroxyanisole Butylated hydroxytoluene tert-Butylhydroqui	Not more than 0.2(when being used together, the total sum of Butylated hydroxyanisole Butylated hydroxytoluene tert-Butylhydroquinone: should be not more than 0.2)

			none	
	-	-	Propyl Gallate	Not more than 0.1
(4) Linolenic acid (%)*	Not more than 0.5	—	—	—
(5) Erucic acid (%)	Not detected	—	—	—

* Linolenic acid content in Palmitic acid($C_{16:0}$), Stearic acid($C_{18:0}$), Oleic acid($C_{18:1}$), Linoleic acid($C_{18:2}$), Linolenic acid($C_{18:3}$), Arachidonic acid ($C_{20:0}$)

Type Category	Safflower oil	High oleic acid safflower oil	Sunflower oil	High oleic acid sunflower oil
(1) Acid value	Not more than 0.6	Not more than 0.6	Not more than 0.6	Not more than 0.6
(2) Iodine value	140 ~ 150	80 ~ 100	120 ~ 142	75 ~ 88

Type Category	Cottonseed oil	Cottonseed salad oil	Cottonseed stearin oil
(1) Acid value	Not more than 0.6	Not more than 0.6	Not more than 0.6
(2) Iodine value	102 ~ 120	105 ~ 123	83 ~ 105
(3) Cold test	-	Clean and transparent for 5 and half hours	-

Type Category	Peanut oil	Refined peanut oil
(1) Acid value	Not more than 2.0	Not more than 0.6
(2) Iodine value	84 ~ 103	84 ~ 103
(3) Antioxidants(g/kg)	Except the following antioxidants, any antioxidant shall not be detected.	
	Butylated hydroxyanisole Butylated hydroxytoluene tert-Butylhydroquinone	Not more than 0.2(when being used together, the total sum of Butylated hydroxyanisole Butylated hydroxytoluene tert-Butylhydroquinone: should be not more than 0.2)
	Propyl Gallate	Not more than 0.1

Type Category	Pressed olive oil	Refined olive oil	Mixed olive oil
(1) Acid value	Not more than 2.0	Not more than 0.6	Not more than 2.0
(2) Iodine value	75 ~ 94	75 ~ 94	75 ~ 94

Type Category	Palm oil	Palm oleic oil	Palm stearin oil	Palm kernel oil
(1) Acid value	Not more than 0.6	Not more than 0.6	Not more than 0.6	Not more than 0.6
(2) Peroxide value	-	Not more than 5.0	Not more than 3.0	-
(3) Iodine value	44 ~60	-	-	14 ~22

Type Category	Coconut oil	Mixed oil	Processed fats & oils
(1) Acid value	Not more than 0.6	Not more than 0.6	Not more than 0.6
(2) Peroxide value	-	-	Not more than 3.0
(3) Iodine value	7 ~ 11	-	-

(4)Antioxidants(g/kg)	-	Except the following antioxidants, any antioxidants shall not be detected.	
		Butylated hydroxyanisole Butylated hydroxytoluene tert-Butylhydroquinone	Not more than 0.2(when being used together, the total sum of Butylated hydroxyanisole Butylated hydroxytoluene tert-Butylhydroquinone: should be not more than 0.2)
		Propyl Gallate	Not more than 0.1

Type Category	Shortening	Margarine	Low fat margarine (fat spread)
(1) Crude fat (%)	-	Not less than 80.0	Not less than 10.0 ~ less than 80.0
(2) Acid value	Not more than 0.8(using emulsifiers such as lecithin and glycerin esters of fatty acids for industrial or restaurants use, not for retail sale shall be excluded.)	Not more than 1.0(using milk fat, lecithin or glycerin esters of fatty acids shall be excluded)	Not more than 1.0(using milk fat, lecithin or glycerin esters of fatty acids shall be excluded)
(3) Tar color	-	Should not be detected	Should not be detected
(4) Antioxidant(g/kg)	Except the followings, any antioxidant shall not be detected.		
	Butylated hydroxyanisole Butylated hydroxytoluene tert-Butylhydroquinone	Not more than 0.2(when being used together, the total sum of Butylated hydroxyanisole Butylated hydroxytoluene tert-Butylhydroquinone: should be not more than 0.2)	
	Propyl Gallate	Not more than 0.1	
	-	Not more than 0.075 E.D.T.A Calcium Disodium(Calcium Disodium Ethylenediaminetetraacetate)(as E.D.T.A Disodium)	
(5) Preservatives (g/kg)		Except the following preservatives, any preservative shall not be detected.	
		Dehydroacetic acid Sodium dehydroacetate	Not more than 0.5 (as dehydroacetic acid)
		Benzoic acid, Sodium benzoate, Potassium benzoate, Calcium benzoate	Not more than 1.0(as benzoic acid)
		Sorbic acid, Potassium sorbate, Calcium sorbate	Not more than 1.0(sorbic acid; in case of low fat margarine(fat spread), Not more than 2.0)
		When the above preservatives(benzoic acids and sorbic acids) are used together;	Not more than 1.0 (the sum of benzoic acid and sorbic acid; for low-fat margarine (fat spread), the sum of benzoic acid and sorbic acid shall be not more than 2.0 and the content of benzoic acid shall be not more than 1.0]

Type Category	Pressed hot pepper seed oil	Hot pepper seed oil	Flavored oil
(1) Acid value	Not more than 3.0	Not more than 0.6	Not more than 3.0
(2) Iodine value	120 ~ 139	120 ~ 139	-
(3) Tar color	-	-	Should not be detected

Type Category	Other edible fats and oils
(1) Acid value	Not more than 0.6 (Not more than 4.0 if pressed oil)

(2)Antioxidant(g/kg)	Except the followings, any antioxidant shall not be detected.	
	Butylated hydroxyanisole Butylated hydroxytoluene tert-Butylhydroquinone	Not more than 0.2(when being used together, the total sum of Butylated hydroxyanisole Butylated hydroxytoluene tert-Butylhydroquinone: should be not more than 0.2)
	Propyl Gallate	Not more than 0.1

6) Test Method

(1) Acid value

It is tested according to 1.1.5.3.1. Acid value, 1. General composition described in Article 10. General Testing Methods.

(2) Iodine value (Wijs' method)

It is tested according to 1.1.5.3.3. Iodine value, 1. General composition described in Article 10. General Testing Methods.

(3) Cold test

Put a sample into a beaker, heat it at 120 ~ 130℃ for 5 minutes and cool it down approximately to 25℃. Fill it about 80 ~ 90% to a flat bottom bottle (100~120 mL cap.; 50 mm dia.), plug it, wrap the stopper with cellophane paper and fix it with a rubber band. And then, fill crushed ices in a water container or beaker (2~3 L cap.), until ices almost cover the flat bottom bottle, put cold water of 0℃ to maintain the temperature of bottle at 0℃. After a certain time elapses, observe whether the bottle is clean and transparent.

(4) Crude fat

Weigh 1 ~ 1.5 g sample accurately, put it on to a 50 mL beaker, insert a separatory funnel that is washed with ether, add sodium sulfate anhydrous to dehydrate it and filter it in a 250 mL Erlenmyer flask to volatilize ether. Dry it out at 105℃ for 20 minutes or longer until it is constantly weighed, which is used to obtain the content of crude fat.

(5) Antioxidant

It is tested according to 2.3. Antioxidant described Article 10. General Testing Methods.

(6) Tar color

It is tested according to 2.4. Coloring Agents described Article 10. General Testing Methods.

(7) Preservatives

It is tested according to 2.1. Preservatives in Article 10. General Testing Methods.

(8) Peroxide value

It is tested according to 1.1.5.3.5. Peroxide Value, 1. General composition described in Article 10. General Testing Methods.

(9) Linolenic acid

It is tested according to 1.1.5.4. Fatty acid Test, 1. General Composition described in Article 10. General Testing Methods.

(10) Erucic acid

It is tested according to 1.1.5.4. Fatty acid Test, 1. General Composition described in Article 10. General Testing Methods.

15. Noodles

1) Definition

Noodles refer to products made of cereals or starches by heat process or drying and include noodle, naengmyeon(cold noodle), dangmyeon(Chinese noodle), oil-fried noodles, and pasta.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) For alcohol-treated products (not less than 1% of alcohol used), alcohol treatment should be performed in a manner that any residual alcohol does not adversely affect the quality.

4) Food Type

(1) Noodle

Noodle refers to a product manufactured by using the wheat flour or other grain flour as a main material and includes the dough flakes and mandupi(dumpling sheets).

(2) Naengmyeon (cold noodle)

Naengmyeon (cold noodle) refers to a product manufactured by using the buckwheat flour, grain flour, or starch as a main material and processing it through extruding.

(3) Dangmyeon (Chinese noodle)

Dangmyeon refers to a product manufactured by using starch (Not less than 80%) as a main material.

(4) Oil-fried noodle

Oil-fried noodle refers to a product manufactured by cooking the noodles and frying them with oil.

(5) Pasta

Pasta refers to a product manufactured by using durum semolina, durum flour, parana, or wheat flour as a main material and extruding them using a pasta machine. It includes the macaroni and spaghetti.

5) Specifications

(1) Tar color : Should not be detected

(2) Preservatives : Should not be detected

(3) The number of bacteria(gram) : Not more than 1,000,000 (Limited to alcohol-treated products)

Not more than 100,000 (Limited to pasteurized products)

(4) *Escherichia coli* : Negative (Limited to alcohol-treated products)

(5) Coliform group : Negative (Limited to pasteurized products)

6) Test Method

(1) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

(2) Preservatives

It is tested according to 2.1. Preservatives in Article 10. General Testing Methods.

(3) The number of bacteria

Wash the container/packing of sample with cotton of 70% alcohol, open it with pasteurized device, chop the whole content in small size, take 10 g randomly, put it into a homogenizer sterilely and homogenize it by adding 90 mL sterilized phosphate buffered dilution water or sterilized saline. Take it as the sample and it is tested according to 3.5.1. The number of bacteria under 3. Microorganism described in Article 10. General Testing Methods.

(4) *Escherichia coli*

With the above sample(3), It is tested according to 1) Limitation Test, 3.8.1. Qualitative test, 3.8 *Escherichia coli,* 3. Microorganism described in Article 10. General Testing Methods.

(5) Coliform group

With the above sample(3), It is tested according to test by desoxycholate lactose agar, 3.7.1.Quantitative test, 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

16. Teas

1) Definition

Teas refer to the types of favorite food made of vegetable substances and include the leached tea(infused tea), liquid tea, and solid tea.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) Depending on the nature of raw materials, the cold infusion, warm infusion, or other appropriate infusion methods shall be used in extraction process. For this purpose, water, alcohol, or carbon dioxide may be used.

(2) Ssanghwa tea (herb tonic tea) shall be manufactured by using the soluble extracts of baekjakyak, sukjihwang, hedysarum, dangui, cheongung, cinnamon, and licorice after filtration. In addition, ginger, jujube, pine nuts, or others may be added.

4) Food Type

(1) Leached tea(infused tea)

Leached tea(infused tea) refers to a favorite food manufactured by dipping plants sprout, leaves, flowers, stalks fruits, or grains in water and filtering them.

(2) Liquid tea

Liquid tea refers to a favorite food manufactured by treating the plant-derived raw materials through extraction or other methods (extracted solution, concentrated solution, or powder). Sometimes, foods or food additives may be added to such solution to make the syrup or liquid form.

(3) Solid tea

Solid tea refers to a powder or other solid form manufactured by using the plant-derived raw material as a main material.

5) Specifications

(1) Tar color : Should not be detected

(2) Lead (mg/kg) : Not more than 2.0 (Not more than 5.0 for leached tea, not more than 0.3 for liquid tea)

(3) Cadmium(mg/kg) : Not more than 0.1 (Limited to liquid tea)

(4) Tin (mg/kg) : Not more than 150 (Limited to liquefied canned products)

(5) The number of bacteria : Not more than 100 per 1 mL(Limited to liquefied product)

(6) Coliform group : Negative (Limited to liquefied product)

6) Test Method

(1) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

(2) Lead

It is tested according to 7.1. Harmful Metal described in 10. General Testing Methods.

(3) Tin

It is tested according to 7.1. Harmful Metal described in 10. General Testing Methods.

(4) The number of bacteria

It is tested according to 3.5.1. The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(5) Coliform group

It is tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

17. Coffees

1) Definition

Coffees refer to processed coffee beans or roasted coffee, instant coffee, formulated coffee, liquid coffee added with foods or food additives.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) Water, alcohol, or carbon dioxide shall be used for the extraction of coffee beans.

4) Food Type

(1) Roasted Coffee

Roasted coffee refers to a product manufactured by roasting or crushing coffee bean

(2) Instant Coffee

Instant coffee refer to a product manufactured by drying soluble extract from roasted coffee

(3) Formulated Coffee

Formulated coffee refers to roasted or instant coffee added with foods or additives

(4) Liquid Coffee

Liquid coffee refers to a product processed by dissolving extract of roasted coffee, concentrated liquid coffee, or instant coffee into water or a liquefied coffee mixed with sugars, milk components or non-milk cream.

5) Specifications

(1) Lead (mg/kg) : Not more than 2.0

(2) Tin (mg/kg) : Not more than 150 (Limited to liquefied canned products)

(3) Tar color : Should not be detected

(4) The number of bacteria : Not more than 100 per 1 mL(Limited to liquefied products).

(5) Coliform group : Negative (Limited to liquefied products)

6) Test Method

(1) Lead

It is tested according to 7.1. Harmful Metal described in 10. General Testing Methods.

(2) Tin

It is tested according to 7.1. Harmful Metal described in 10. General Testing Methods.

(3) Tar colorant

It is tested according to 2.4. Coloring Agents described in 10. General Testing Methods.

(4) The number of bacteria

It is tested according to 3.5.1. The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(5) Coliform group

It is tested according to test by desoxycholate lactose agar, 3.7.2. Quantitative test, 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

18. Beverages

Beverages refer to food for drinking including fruit and vegetable beverages, carbonated beverages, soymilks, fermented beverages, ginseng/ red ginseng beverages, and other beverages (Excluding alcoholic drinks, teas, drinks containing higher than 3% of non-fat soluble solid content).

18-1 Fruit and Vegetable Beverages

1) Definition

Fruit and vegetable beverages refer to products directly made of fruits or vegetables or processed to be drinkable through dilution and contains concentrated fruit/vegetable juice, fruit/ vegetable juice and fruit/ vegetable beverages.

2) Requirements of Raw Material

(1) The sugar content (Brix°) of 100% extract of fruits or vegetables used in beverages shall be as follows;

① Grape, Western pear : Not less than 11°

② Apple, lime : Not less than 10°

③ Mandarin, grapefruit, papaya : Not less than 9°

④ Pear, guava : Not less than 8°

⑤ Peach, apricot, strawberry, lemon : Not less than 7°

⑥ Plum, melon, Japanese apricot : Not less than 6°

⑦ Others : Based on references

3) Manufacturing and Processing Standards

(1) Fruits and vegetables shall be sufficiently washed with water.

(2) For unheated fruit or vegetable juice, foods or food additives other than the relevant fruits or vegetables shall not be used.

4) Food Type

(1) Concentrated Fruit/ Vegetable Juice (or powdered fruit or vegetable)

Concentrated fruit and vegetable juice (or powdered fruit or vegetable) refers to a product not more than 50% concentrated or powdered one made by mixing the fruit juice, vegetable juice, or both and processing it (however, except those to be used as raw materials).

(2) Fruit/ Vegetable Juice

Fruit and vegetable juice refers to a product obtained from physical treatment (such as compression, grinding, or extraction) of fruits or vegetables (including the concentrated fruit/vegetable juice, fruit/vegetable juice or fruit/vegetable juice reconstituted from fruit powder, vegetable powder, or fruit/vegetable powder, and fruit/vegetable puree．paste) or others made by adding foods or food additives to such juice (not less than 95% of fruit/vegetable juice).

(3) Fruit/Vegetable Beverage

Fruit/ Vegetable Beverage refers to a product made by processing the concentrated fruit/ vegetable juice (or powder) or fruit/vegetable juice (not less than 10% of fruit juice, vegetable juice, or fruit/ vegetable juice).

5) Specifications

(1) Lead (mg/kg) : Not more than 0.3

(2) Cadmium (mg/kg) : Not more than 0.1

(3) Tin (mg/kg) : Not more than 150 (Limited to canned products)

(4) The number of bacteria : Not more than 100 per 1 mL(Not more than 100,000 in case of non-heated products or non-heated content products)

(5) Coliform group : Negative (Excluding non-heated products or non-heated content products)

(6) *Escherichia coli* O157:H7 : Negative (Limited to non-heated products or non-heated content products).

(7) Preservatives (g/kg) :

Sorbic acid Sodium sorbate Potassium sorbate Calcium sorbate	Not more than 0.6 as sorbic acid. (But it should not be detected in non-heat treated products)
Methyl p-hydroxy-benzoate Butyl p-hydroxy-benzoate Propyl p-hydroxy-benzoate Ethyl p-hydroxy-benzoate Isobutyl p-hydroxy-benzoate Isopropyl p-hydroxy-benzoate	Not more than 0.1 as paraoxybenzoic acid. (But it should not be detected in non-heat treated products)
Sorbic acid Potassium sorbate Calcium sorbate	Not more than 1.0 as sorbic acid. (But it is limited to pineapple concentrated juice)

Any preservative except the followings should not be detected.

6) Test Method

(1) Lead and Cadmium

① Preparation of Test Solution

Prepare a 100 g sample (50 g if dry ashing method) [the amount dividing 100 g (or 50 g if dry ashing method) by a multiple to be diluted for drinking in case of diluted refreshing beverage or by a concentration multiple in case of concentrated original fruit juice] and follow 7.1.2.1 1) Preparation of Test Solution in 7.1. Harmful Metal described in 10. General Testing Methods.

② Test Operation

It is tested according to 7.1.2.1 2) Measuring in 7.1. Harmful Metal described in 10. General Testing Methods.

(2) Tin

It is tested according to 7.1. Harmful Metal described in 10. General Testing Methods.

(3) The number of bacteria

Take a sample as packaged in a casing, wash the surface, dry it out naturally, wipe the stopper and bottom up to 5 ~ 10 with cotton containing 70% alcohol, sterilize it with flame, cool it down in a clean bench, open, unseal or release it with a sterilized tool, transfer the content to another sterile container, stir it, take it as the test solution and it is tested according to 3.5.1. The number of bacteria under 3. Microorganism described in Article 10. General Testing Methods. In case of refreshing beverage containing carbonic acid, transfer the content to another sterilized container, stir it for 5 minutes to volatilize carbon dioxide and it is tested.

(4) Coliform group

With the above sample prepared for The number of bacteria (3), it is tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(5) *Escherichia coli* O157:H7

With the above sample prepared for The number of bacteria (3), it is tested according to 3.16. Coliform O157:H7, 3. Microorganism described in Article 10. General Testing Methods.

(6) Preservatives

It is tested according to 2.1. Preservatives described in Article 10. General Testing Methods.

18-2 Carbonated Beverages

1) Definition

Carbonated beverages refer to products for drinking with carbonic acid gas; it contains carbonated beverage and carbonated water.

2)Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

(1) Carbonated Beverage

Carbonated beverage refers to drinking water added foods or additives and carbonic acid gas, or carbonated water added foods or additives

(2) Carbonated Water

Carbonated water refers to water naturally containing carbon dioxide or made by adding carbon dioxide to drinking water.

5) Specifications

(1) Pressure of carbonic acid gas (kg/cm^2)

① Carbonated water : Not less than 1.0

② Carbonated beverage : Not less than 0.5

(2) Lead (mg/kg)：Not more than 0.3

(3) Cadmium (mg/kg)：Not more than 0.1

(4) Tin (mg/kg)：Not more than 150 (Limited to canned products)

(5) The number of bacteria：Not more than 100 per 1 mL

(6) Coliform group：Negative

(7) Preservatives (g/kg)：Any preservative except the followings should not be detected

Sorbic acid Sodium sorbate Potassium sorbate Calcium sorbate	Not more than 0.6 as sorbic acid. (But it should not be detected in carbonated beverage)

6) Test Method

(1) Gas pressure

Put a sample in a constant temperature water bath of 15 ~ 20℃ for half an hour ~ an hour, take it out, attach it on the stopper of a CO_2 Volume Tester, lock the sniffle valve(a valve used to discharge gas inside a bottle) and push it to punch it with a fixed pin.

At the moment, an indicator on the device shows the pressure but it actually does not indicate the accurate pressure in the bottle, so it needs opening sniffle valve to discharge gas and locking it as soon as the indicator is on '0' and then, it should be recorded when the device shows the maximum pressure(the indicator is fixed on a certain position) after shaking it. Then open the valve to discharge gas and measure the temperature of beverage by opening its stopper.

In case otherwise temperature but 20℃ is measured, compensate it according to the following table of absorption coefficient of carbonic acid gas. Temperature is recoded up to one decimal places and gas pressure is recorded up to two decimal places.

[Test Precautions]

① Gas should not be leaked from rubber stopper or valves.

② In case a sample's container is made of glass material, it should be covered with clothes to avoid any breakage.

③A thermometer should be inspected for its accuracy as compared with standard thermometer; when measuring a temperature, it should be inserted in a beverage bottle to restrict any rise.

④ CO_2 Volume Tester should be frequently inspected by Dead Weight Gauge Tester to obtain the compensation values.

(2) Lead and cadmium

It is tested according to (1) Lead and cadmium, 6) Test Method in 18-1 Fruit and vegetable beverages.

(3) Tin

It is tested according to (3) Tin, 6) Test Method in 18-1 Fruit and vegetable beverages.

(4) The number of bacteria

It is tested according to (4) The number of bacteria, 6) Test Method in 18-1 Fruit and vegetable beverages.

(5) Coliform group

It is tested according to (5) Coliform group, 6) Test Method in 18-1 Fruit and vegetable beverages.

(6) Preservatives

It is tested according to 2.1. Preservatives test method described in Article 10. General Testing Methods.

Table of calculation of carbonic acid gas absorption (1)

kg/cm^2	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9

Lb/m² / ℃		1.4	2.8	4.3	5.7	7.1	8.5	10.0	11.4	12.8
0	1.713	1.88	2.04	2.21	2.38	2.54	2.71	2.87	3.04	3.37
1	1.646	1.81	1.96	2.12	2.28	2.44	2.60	2.76	2.92	3.08
2	1.584	1.74	1.89	2.04	2.20	2.35	2.50	2.66	2.81	2.96
3	1.527	1.67	1.82	1.97	2.12	2.27	2.41	2.56	2.71	2.86
4	1.473	1.62	1.76	1.90	2.04	2.19	2.33	2.47	2.61	2.76
5	1.424	1.56	1.70	1.84	1.98	2.11	2.25	2.39	2.53	2.66
6	1.377	1.51	1.64	1.78	1.91	2.04	2.18	2.31	2.44	2.58
7	1.331	1.46	1.59	1.72	1.85	1.98	2.10	2.23	2.36	2.49
8	1.282	1.41	1.53	1.65	1.78	1.90	2.03	2.15	2.27	2.40
9	1.237	1.36	1.48	1.60	1.72	1.84	1.96	2.08	2.19	2.31
10	1.194	1.31	1.43	1.54	1.66	1.77	1.89	2.00	2.12	2.23
11	1.154	1.27	1.38	1.49	1.60	1.71	1.82	1.94	2.05	2.16
12	1.117	1.23	1.33	1.44	1.55	1.66	1.77	1.87	1.98	2.09
13	1.083	1.19	1.29	1.40	1.50	1.61	1.71	1.82	1.92	2.03
14	1.050	1.15	1.25	1.35	1.46	1.56	1.66	1.76	1.88	1.96
15	1.019	1.12	1.22	1.31	1.41	1.51	1.61	1.71	1.81	1.91
16	0.985	1.08	1.18	1.27	1.37	1.46	1.56	1.65	1.75	1.84
17	0.956	1.05	1.14	1.23	1.33	1.42	1.51	1.60	1.70	1.79
18	0.928	1.02	1.11	1.20	1.29	1.38	1.47	1.56	1.65	1.74
19	0.902	0.99	1.08	1.16	1.25	1.34	1.43	1.51	1.60	1.69
20	0.878	0.96	1.05	1.13	1.22	1.30	1.39	1.47	1.56	1.64
21	0.854			1.10	1.18	1.27	1.35	1.43	1.52	1.60
22	0.829				1.15	1.23	1.31	1.39	1.47	1.55
23	0.804					1.19	1.27	1.35	1.43	1.50
24	0.781						1.23	1.31	1.39	1.46
25	0.759							1.27	1.35	1.42

Table of calculation of carbonic acid gas absorption (2)

kg/cm²	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
Lb/m² / ℃	14.2	15.6	17.1	18.5	19.9	21.3	22.8	24.2	25.6	27.0

0	3.37	3.54	3.70	3.87	4.03	4.20	4.37	4.53	4.70	4.86
1	3.24	3.40	3.56	3.72	3.88	4.04	4.19	4.35	4.511	4.67
2	3.12	3.27	3.42	3.58	3.73	3.88	4.04	4.19	4.34	4.50
3	3.00	3.15	3.30	3.45	3.60	3.74	3.89	4.04	4.19	4.33
4	2.90	3.04	3.18	3.33	3.47	3.61	3.75	3.90	4.04	4.18
5	2.80	2.94	3.08	3.22	3.35	3.49	3.63	3.77	3.90	4.04
6	2.71	2.84	2.98	3.11	3.24	3.38	3.51	3.64	3.78	3.91
7	2.62	2.75	2.88	3.01	3.13	3.26	3.39	3.52	3.65	3.78
8	2.52	2.65	2.77	2.90	3.02	3.14	3.27	3.39	3.52	3.64
9	2.43	2.55	2.67	2.79	2.91	3.03	3.15	3.27	3.39	3.51
10	2.35	2.47	2.58	2.70	2.81	2.93	3.04	3.16	3.27	3.39
11	2.27	2.38	2.49	2.61	2.72	2.83	2.94	3.05	3.16	3.28
12	2.20	2.31	2.41	2.52	2.63	2.74	2.85	2.95	3.06	3.17
13	2.13	2.24	2.34	2.45	2.55	2.66	2.76	2.86	2.97	3.07
14	2.07	2.17	2.27	2.37	2.47	2.57	2.68	2.78	2.88	2.98
15	2.01	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.79	2.89
16	1.94	2.03	2.13	2.22	2.32	2.41	2.51	2.61	2.70	2.80
17	1.88	1.97	2.07	2.16	2.25	2.34	2.44	2.53	2.62	2.71
18	1.83	1.92	2.01	2.10	2.19	2.28	2.37	2.45	2.54	2.63
19	1.77	1.86	1.95	2.04	2.12	2.21	2.30	2.39	2.47	2.56
20	1.73	1.81	1.90	1.98	2.07	2.15	2.24	2.32	2.41	2.49
21	1.68	1.76	1.85	1.93	2.01	2.09	2.18	2.26	2.34	2.42
22	1.63	1.71	1.79	1.87	1.95	2.03	2.11	2.19	2.27	2.35
23	1.58	1.66	1.74	1.82	1.89	1.97	2.05	2.13	2.20	2.28
24	1.54	1.61	1.69	1.76	1.84	1.91	1.99	2.07	2.14	2.22
25	1.49	1.57	1.64	1.71	1.79	1.86	1.93	2.01	2.08	2.15

How to read the table of absorption coefficient of carbonic acid gas：'absorption coefficient' indicates gas volume.

When the table is used as a pressure compensation table inside bottle;

For instance, a bottle's pressure is 2.5 kg/cm^2 at 22℃(liquid temp.), its gas volume, 2.83 can be found on a cross point of 2.5 line and 22℃ line. To reset it as the standard temperature at 20℃, go to the number on a column, 2.83 on 20℃ line and take the number on the top, 2.3 kg/cm^2 as the pressure inside a bottle at 20℃.

Table of calculation of carbonic acid gas absorption（3）

kg/cm^2	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0

Lb/m² / ℃	28.4	29.9	31.3	32.7	44.1	35.6	37.6	38.4	39.8	41.2	42.7
0	5.03	5.19	3.36	5.53	5.69	5.86	6.02				
1	4.83	4.99	5.15	5.31	5.47	5.63	5.79	5.95	6.11		
2	4.65	4.80	4.96	5.11	5.26	5.42	5.57	5.72	5.86	6.03	
3	4.48	4.63	4.78	4.93	5.07	5.22	5.37	5.52	5.67	5.81	5.96
4	4.32	4.47	4.61	4.75	4.89	5.04	5.18	5.32	5.46	5.61	5.75
5	4.18	4.32	4.46	4.59	4.73	4.87	5.01	5.15	5.28	5.42	5.56
6	4.04	4.18	4.31	4.44	4.58	4.71	4.48	4.98	5.11	5.24	5.38
7	3.91	4.04	4.17	4.29	4.42	4.55	4.68	4.81	4.94	5.07	5.20
8	2.76	3.89	4.01	4.14	4.26	4.38	4.51	4.63	4.76	4.88	5.00
9	3.63	3.75	3.87	3.99	4.11	4.23	4.35	4.47	4.59	4.71	4.83
10	3.51	3.62	3.74	3.85	3.97	4.08	4.20	4.31	4.43	4.55	4.66
11	3.39	3.50	3.61	3.72	3.83	3.95	4.06	4.17	4.28	4.39	4.50
12	3.28	3.39	3.50	3.60	3.71	3.82	3.93	4.04	4.14	4.25	4.36
13	3.18	3.28	3.39	3.49	3.60	3.70	3.81	3.91	4.02	4.12	4.23
14	3.08	3.18	3.29	3.39	3.49	3.59	3.69	3.79	3.90	4.00	4.10
15	2.99	3.09	3.19	3.29	3.39	3.48	3.58	3.68	3.78	3.83	3.98
16	2.89	2.99	3.08	3.18	3.27	3.37	3.46	3.56	3.65	3.75	3.84
17	2.81	2.90	2.99	3.08	3.18	3.27	3.36	3.45	3.55	3.64	3.73
18	2.72	2.81	2.90	2.99	3.08	3.17	3.26	3.35	3.44	3.53	3.62
19	2.65	2.74	2.82	2.91	3.00	3.08	3.17	3.26	3.35	3.43	3.52
20	2.58	2.66	2.75	2.83	2.92	3.00	3.09	3.17	3.26	3.34	3.43
21	2.51	2.59	2.67	2.76	2.84	2.92	3.00	3.09	3.17	3.25	3.33
22	2.43	2.51	2.59	2.67	2.75	2.83	2.92	3.00	3.08	3.16	3.24
23	2.36	2.44	2.52	2.59	2.67	2.75	2.83	2.90	2.98	2.06	3.14
24	2.29	2.37	2.44	2.52	2.60	2.67	2.75	2.89	2.90	2.97	3.05
25	2.23	2.30	2.38	2.45	2.52	2.60	2.67	2.74	2.82	2.89	2.96

Table of calculation of carbonic acid gas absorption（4）

kg/cm²	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0
Lb/m² / ℃	44.1	45.5	46.9	48.4	49.8	51.2	52.6	54.0	55.5	56.9

0										
1										
2										
3	6.11									
4	5.89	6.04	6.18							
5	5.70	5.83	5.97	6.11						
6	5.51	5.64	5.77	5.91	6.04	6.17				
7	5.32	5.45	5.58	5.71	5.84	5.97	6.10	6.23		
8	5.13	5.25	5.38	5.50	5.62	5.75	5.87	6.00	6.12	
9	4.95	5.07	5.19	5.31	5.43	5.55	5.67	5.79	5.91	6.03
10	4.78	4.89	5.01	5.12	4.24	5.35	5.47	5.59	5.70	5.82
11	4.62	4.73	4.84	4.95	4.06	5.17	5.29	5.40	5.51	5.62
12	4.47	4.58	4.68	4.79	4.90	5.01	5.12	5.23	5.33	5.44
13	4.33	4.44	4.54	4.65	4.75	4.86	4.96	5.07	5.17	5.28
14	4.20	4.30	4.40	4.51	4.61	4.71	4.81	4.91	5.01	5.11
15	4.08	4.17	4.27	4.37	4.47	4.57	4.67	4.77	4.87	4.96
16	3.94	4.04	4.13	4.23	4.32	4.42	4.51	4.61	4.70	4.80
17	3.82	3.02	4.01	4.10	4.19	4.29	4.38	4.47	4.56	4.66
18	3.71	3.80	3.89	3.98	4.07	4.16	4.25	4.34	4.43	4.52
19	3.61	3.70	3.78	3.87	3.96	4.04	4.13	4.22	4.31	4.39
20	3.51	3.60	3.68	3.77	3.85	3.94	4.02	4.11	4.19	4.28
21	3.42	3.50	3.58	3.66	3.75	3.83	3.91	3.99	4.08	4.16
22	3.32	3.40	3.48	3.56	3.64	3.72	3.80	3.88	3.96	4.04
23	3.22	3.29	3.37	3.45	3.53	3.61	3.68	3.76	3.84	3.92
24	3.12	3.20	3.28	3.35	3.43	3.50	3.58	3.65	3.74	3.80
25	3.04	3.11	3.18	3.26	3.33	3.40	3.48	3.55	3.62	3.70

Table of calculation of carbonic acid gas absorption (5)

kg/cm^2	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0
Lb/m^2 ℃	58.3	59.7	61.2	62.6	64.0	65.4	66.8	68.3	69.7	71.1
0										

1										
2										
3										
4										
5										
6										
7										
8										
9	6.15									
10	5.93	6.05								
11	5.73	5.84	5.95	6.07	6.18	6.29	6.40			
12	5.55	5.66	5.77	5.87	5.98	6.09	6.20	6.31	6.41	6.52
13	5.38	5.49	5.59	5.69	5.80	5.90	6.01	6.11	6.22	6.32
14	5.22	5.32	5.42	5.52	5.62	5.72	5.83	5.93	6.03	6.13
15	5.06	5.16	5.26	5.36	5.46	5.56	5.65	5.75	5.85	5.95
16	4.89	4.99	5.08	5.18	5.27	5.37	5.47	5.56	5.66	5.75
17	4.75	4.84	4.93	5.03	5.12	5.21	5.30	5.40	5.49	5.58
18	4.61	4.70	4.79	4.88	4.97	5.06	5.15	5.24	5.33	5.42
19	4.48	4.57	4.66	4.74	4.83	4.92	5.01	5.09	5.18	5.27
20	4.36	4.45	4.53	4.62	4.70	4.79	4.87	4.96	5.04	5.13
21	4.24	4.33	4.41	4.49	4.57	4.66	4.74	4.82	4.90	4.99
22	4.12	4.20	4.28	4.36	4.44	4.52	4.60	4.68	4.76	4.84
23	3.99	4.07	4.15	4.23	4.31	4.38	4.46	4.54	4.62	4.69
24	3.88	3.96	4.03	4.11	4.18	4.26	4.33	4.41	4.48	4.56
25	3.77	3.84	3.92	3.99	4.06	4.14	4.21	4.29	4.36	4.43

18-3 Soymilks

1) Definition

Soymilks refer to beverages made of soybean extract or processed soybean extract added with other foods or additives and sterilized or pasteurized including soybean-based liquid, soymilk, powdered soymilk etc.

2) Requirements of Raw Material

(1) Soybeans shall be subjected to pre-treatment process to remove sufficiently the impurities, soil, sands, straws, or others.

3) Manufacturing and Processing Standards

(1) If soybeans are directly used, sufficient heating shall be conducted to inactivate any quality-deteriorating agents.

(2) Finished products shall be subjected to sterilization processes. After sterilization, finished products shall be cooled down to below 10℃ (except sterilized products the pH of which is lower than 4.5).

4) Food Type

(1) Soybean-based Liquid

Soybean-based Liquid refers to liquid extract from soybean (7% or more solid soybean content)

(2) Soymilk

Soymilk refers to liquefied beverage product by adding foods or additives to soybean-based liquid or processed soybean product (4% or more solid soybean content).

(3) Powdered Soymilk

Powdered soymilk refers to dried and powdered soymilk or formulated soymilk products (50% or more solid soybean content).

(4) Other Soymilk

Other soymilk refers to liquefied, gelled or gelatinized products processed by adding fruit/vegetable juice(including fruit puree) or dairy products/processed dairy products and ground grain to soymilk(1.4% or more solid soybean content).

5) Specifications

ype Category	Soybean-based liquid and Soymilk	Powdered Soymilk	Other Soymilk
(1) The number of bacteria	Not more than 40,000 per 1 mL (Negative in case of sterilized or pasteurized products the pH of which is lower than 4.5)	Not more than 20,000 per 1g (Negative in case of sterilized products)	Not more than 40,000 per 1 mL (Negative in case of sterilized or pasteurized products the pH of which is lower than 4.5)
(2) Coliform group	Not more than 10 per 1 mL (Negative in case of sterilized or pasteurized products the pH of which is lower than 4.5)	Not more than 10 per 1g (Negative in case of sterilized products)	Lower than 10 per 1 mL (Negative in case of sterilized or pasteurized products the pH of which is lower than 4.5)

6) Test Method

(1) The number of bacteria

It is tested according to 3.5.1. The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(2) Coliform group

It is tested according to 나. Desoxycholate Lactose Agar, 3.7.2. Quantitative test, 3.7. Coliform group, 3. Microorganism described in Article 10. General testing Methods.

18-4 Fermented Beverages

1) Definition

Fermented beverages refer to beverages made by fermenting dairy products or vegetable raw materials with microorganisms, such as lactic acid bacteria and yeasts, and processing them.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

(1) Lactic Acid Beverage

Lactic acid drink refers to a drink processed by fermenting dairy-products or vegetable substances (including sterilization process) with lactobacillus.

(2) Yeast Beverage

Yeast drink refers to a drink processed by fermenting dairy-products or vegetable substances (including sterilization process) with yeasts.

(3) Other Fermented Dairy-based Beverage

Other fermented dairy-based drink refers to a drink processed by fermenting dairy-products or vegetable substances (including sterilization process) with microorganism etc.

5) Specifications

(1) The Number of Lactobacillus/yeast : More than 1,000,000 per 1 mL(Limited to lactic acid/yeast drinks; excluding pasteurized products)

(2) The number of bacteria : Not more than 100 per 1 mL(Limited to pasteurized products)

(3) Coliform group : Negative

(4) Preservatives (g/kg) : Any preservative except the followings should not be detected

Sorbic Acid Potassium Sorbate Calcium sorbate	Not more than 0.05(as sorbic acid; none in case of sterilized products)
Benzoic Acid	Not more than 0.05

6) Test Method

(1) The Number of lactic acid bacteria or yeast

Test is according to 3.9 The Number of Lactobacillus or 3.10. The Number of Fungi(The Number of Yeast or Mold), 3. Microorganism described in Article 10. General Testing Methods.

(2) The number of bacteria

It is tested according to 3.5.1. The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(3) Coliform group

It is tested according to 나. Desoxycholate Lactose Agar, 3.7.2. Quantitative test, 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(4) Preservative

It is tested according to 2.1. Preservatives described Article in 10. General Testing Methods.

18-5 Ginseng/Red Ginseng Beverages

1) Definition

Ginseng/ Red ginseng beverages refer to beverages that produced by adding foods or additives to ginseng/red ginseng or soluble ingredients of ginseng/ red ginseng or fresh ginseng/red ginseng (flesh of ginseng/red ginseng).

2) Requirements of Raw Material

(1) Undried ginseng of at least 3 years of age shall be added into the ginseng/red ginseng beverages and any damaged or diseased ones shall not be used.

(2) Dried young ginseng (chunmisam), skin (sampi), and waste ginseng meal shall not be used and, for the diseased ginseng, it may be used only after removal of the diseased parts.

3) Manufacturing and Processing Standards

(1) Any suspended material derived from ginseng and red ginseng shall be removed when manufacturing the ginseng/red ginseng beverages.

(2) Beverage containing 0.15% or more soluble ginseng/red ginseng ingredient (Based on 80 mg/g ginseng saponin, based on 70 mg/g red ginseng saponin) or a root of fresh ginseng/red ginseng of 3 years or older

4) Food Type

5) Specifications

(1) Ginseng/Red ginseng ingredient:Should be detected

(2) Tar color : Should not be detected

(3) Lead (mg/kg):Not more than 0.3

(4) Tin (mg/kg) : Not more than 150 (Limited to canned products)

(5) The number of bacteria : Not more than 100 per 1 mL

(6) *E. Coli* : Negative

(7) Preservatives (g/kg) : Any preservative except the followings should not be detected

Benzoic Acid Sodium benzoate Potassium benzoate Calcium benzoate	Not more than 0.6(as sorbic acid)
Methyl p-hydroxy-benzoate Butyl p-hydroxy-benzoate Ethyl p-hydroxy-benzoate Propyl p-hydroxy-benzoate Isobutyl p-hydroxy-benzoate Isopropyl p-hydroxy-benzoate	Not more than 0.1(as p-hydroxy benzoic acid)

6) Test Method

(1) Ginseng/Red Ginseng ingredient

Put a 60 mL sample into a separatory funnel, extract ether to remove impurities and it is tested according to the following test method.

① Test

Take about 10-50 g of sample into a 300-mL flask, add 100 mL of 70% ethanol, connect a reflux condenser to the flask, perform heat extraction in a water bath, filter the solution, and concentrate it under vacuum. Dissolve the concentrate in water, perform extraction with ether to remove impurities, extract the water layer with unsaturated butanol, and concentrate it under vacuum. Then, dissolve it in a small amount of methanol and use it as test solution.

Apply test solution and standard solution to silica gel plate previously dried at 110℃ for 15 minutes and cooled down at room temperature for 30 minutes. Then, develop it with use of migration solvent, spray 10% sulfuric acid or 50% sulfuric acid in ethanol, and visualize the plate by heating it at 110℃ for 10 minutes. Or, after development, dry the silica gel plate at 110℃ and put it in a tank filled with saturated

iodine solution for visualization. Check the color and position of spots with naked eyes or under ultraviolet (about 365 nm) and compare the spot of test solution with that of standard solution.

② Migration solvent

A. chloroform : methyl alcohol : water = 65 : 35 : 10

B. 1 - butanol : acetic acid : water = 4 : 1 : 5

C. 1 - butanol : ethyl acetate : water = 5 : 1 : 4

(2) Tar color

It is tested according to 2.4. Tar color described in Article 10. General Testing Methods.

(3) Lead

It is tested according to 7.1. Harmful Metal described in 10. General Testing Methods.

(4) Tin

It is tested according to 7.1. Harmful Metal described in 10. General Testing Methods.

(5) The number of bacteria

It is tested according to 3.5.1. The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(6) Coliform group

It is tested according to 3.7.Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(7) Preservatives

It is tested according to 2.1. Preservatives described in 10. General Testing Methods.

18-6 Other Beverages

1) Definition

Other beverages refer to products that are processed by adding foods or additives to drinking water or by liquefying animal/ vegetable substances to drink and that do not belong to the above food types.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

(1) Mixed Beverage

Mixed beverage refers to a drink processed by adding foods or additives to drinking water

(2) Extracted Beverage

Extracted Beverage refers to a drink by liquefying vegetable substances with drinking water through various processing methods, or after then, adding foods or additives to it.

(3) Beverage Base

Beverage base refers to a product processed by using animal/vegetable substances, or after then, adding foods or additives to drink it by mixing with water.

5) Specifications

(1) Oxygen content (mg/L) : Not less than 24 (Limited to products containing oxygen on purpose)

(2) Lead (mg/kg) : Not more than 0.3

(3) Cadmium (mg/kg) : Not more than 0.1

(4) Tin (mg/kg) : Not more than 150 (Limited to canned products)

(5) The number of bacteria : Not more than 100 per 1 mL (except products containing lactic acid bacteria; for powdered products, Not more than 3,000 per 1 g).

(6) Coliform group : Negative

(7) The number of lactic acid bacteria: Not less than the specified count (applicable only to products containing lactic acid bacteria)

(8) Preservatives (g/kg) : Any preservative except the followings should not be detected

Benzoic Acid Sodium benzoate Potassium benzoate Calcium benzoate	Not more than 0.6 (as sorbic acid)
Methyl p-hydroxybenzoate Butyl p-hydroxybenzoate Ethyl p-hydroxybenzoate Propyl p-hydroxybenzoate Isobutyl p-hydroxybenzoate Isopropyl p-hydroxybenzoate	Not more than 0.1 (as p-hydroxybenzoid acid)

6) Test Method

(1) Oxygen content

Fill sample to the full in a 300-mL bottle for measurement of dissolved oxygen (or BOD bottle, Figure 1), add 1 mL of manganese sulfate solution and 1 mL of alkaline potassium iodide-sodium azide solution, seal the bottle with a closure while avoiding any bubble, and mix them well. Allow it to stand for more than 2 minutes and mix them well if there are any fine particles in the upper layer. When clear layer of more than

100 mL is formed, open the bottle and apply 2.0 mL of sulfuric acid to the bottleneck. Close the bottle again and mix it well until brown precipitates are completely dissolved. Take 200 mL of the solution from the bottle and titrate it with 0.025 N sodium thiosulfate solution. Add 1 mL of starch solution and titrate it until the blue color of the solution becomes colorless.

$$\text{Dissolved oxygen (mg/L)} = a \times f \times \frac{V1}{V2} \times \frac{1{,}000}{V1-R} \times 0.2$$

a : amount of 0.025 N sodium thiosulfate solution consumed for titration (mL)

f : factor of 0.025 N sodium thiosulfate solution

V1 : total sample amount (mL)

V2 : amount of sample used for titration (mL)

R : amount of manganese sulfate solution and alkaline potassium iodide-sodium azide solution (mL)

If the amount of dissolved oxygen is expressed as the saturation percentage, use Table 1 to find the value corresponding to the concentration of chlorine ion and the temperature of the sample and calculate the saturation percentage according to the following formula.

$$\text{DO Percentage (\%)} = \frac{DO}{DOt-{}^{B}/_{760}} \times 100$$

DO : amount of dissolved oxygen in sample (mg/L)

DOt : saturation of dissolved oxygen in pure water (mg/L)

B : atmospheric pressure during sampling (mmHg)

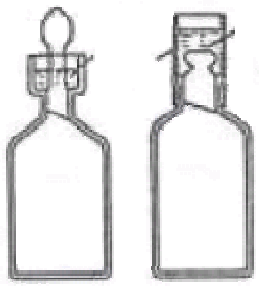


Figure 1. Bottle for Measurement of Dissolved Oxygen

Table 1. The saturation of dissolved oxygen

Temperature(℃)	The saturation of dissolved oxygen (mg/L)	Temperature(℃)	The saturation of dissolved oxygen (mg/L)
0	14.16	18	9.18
1	13.77	19	9.01

2	13.40	20	8.84
3	13.01	21	8.68
4	12.70	22	8.53
5	12.37	23	8.39
6	12.00	24	8.25
7	11.78	25	8.14
8	11.47	26	7.99
9	11.19	27	7.87
10	10.92	28	7.75
11	10.67	29	7.64
12	10.43	30	7.53
13	10.20	31	7.43
14	9.97	32	7.32
15	9.70	33	7.23
16	9.56	34	7.13
17	9.37	35	7.04

(2) Lead and Cadmium

It is tested according to (1) Lead and cadmium, 4) Test Method in 18-1 Fruit and vegetable beverages.

(3) Tin

It is tested according to (3) Tin, 4) Test Method in 18-1 Fruit and vegetable beverages.

(4) The number of bacteria

Take a sample as packaged in a casing, wash the surface, dry it out naturally, wipe the stopper and around stopper with cotton containing 70% alcohol, sterilize it with flame, cool it down in a sterile box, open, unseal or release it with a sterilized tool, transfer the content to another sterile container, stir it, take it as the test solution and It is tested according to 3.5.1.The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods. In case of refreshing beverage containing carbonic acid, transfer the content to another sterilized container, stir it to volatilize carbon dioxide and It is tested.

(5) Coliform group

With the above sample prepared for (3) The number of bacteria, It is tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(6) The number of lactic acid bacteria

It is tested according to 3.9. the number of lactic acid bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(7) Preservatives

It is tested according to 2.1. Preservatives described in Article 10.General Testing Methods.

19. Foods for Special Dietary Uses

Foods for special dietary uses refer to products for people requiring specially nutritional care such as infant, patients, the elderly, obese people, pregnant women and etc as their meal and containing nutrients that may be insufficient for them; such foods are manufactured by combining the nutrients or adding or subtracting specific nutrients and includes infant formula, follow-up formula, cereal based foods for infant and young children, other foods for infant and young children, foods for medical purpose foods and weight-control food.

19-1 Infant Formula

1) Definition

Infant formula refers to a powdered or liquefied product for infants using the isolated soybean protein or other food as its protein source and adding nutrients as minerals and vitamins, suitable for normal growth and development to be replacement for breast milk in case giving the breast is impossible or difficult. However, Infant formula regulated in accordance with the Processing of Livestock Products Act shall be exempted.

2) Requirements of Raw Material

(1) Isolated soybean protein or other plant-derived protein used as raw material shall treated to assure its suitability for consumption by infants. However, gluten shall not be used as protein source.

(2) Raw material shall not be treated by irradiation.

3) Manufacturing and Processing Standards

(1) Product shall be properly pasteurized or sterilized so as not to be damaged by microorganism contamination.

(2) The dried product shall be filled with nitrogen gas, and liquid product shall be sterilized.

(3) In order to add nutrient to be included in breast milk or make it suitable to only nutrition source for infant and toddler, other nutrients can be added in necessity. However, the utility of nutrients shall be scientifically proved and the added quantity be based on breast milk.

(4) Amino acid score of protein within final product shall be more than 85.

* Standard essential amino acid formation for scoring amino acid.

(Unit: mg/g crude protein)

Classification	Histidine	Isoleucine	Leucine	Lysine	Methionine + Cysteine	Phenylalanine + Tyrosine	Threonine	Tryptophan	Valine	Total
Composition of amino acid	19	28	66	58	25	63	34	11	35	339

(5) For ready to use products, the solids content shall be 10-15%. For products ready for use after dilution, the specifications for solids content may be different.

(6) Tin tube shall not be used as container for liquid or paste product.

(7) In case of using honey or maple syrup as raw material, the spore of *Clostridium Botulinum* shall be treated to destroyed.

(8) Cocoa cannot be used to product for infant.

(9) Dried raw materials shall be stored after drying to lower the water content for prevention of microbial growth and other raw materials shall be stored in a place where temperature and humidity are controlled.

(10) In order to prevent microbial contamination or other kinds of contamination, the spray drying equipment used in the manufacture of powdered food for infants shall be periodically cleaned.

(11)Prior to packaging, efficient methods to prevent mixup of foreign materials or metals, such as sieve, trap, magnet, or electric metal detector, shall be used.

4) Food type

5) Specifications

(1) Water (%) : Not more than 5.0(Limited to powdered products)

(2) Crude protein (g/100kcal) : 1.8~4.0

(3) Crude fat (g/100kcal) : 3.3~6.0

(4) Linoleic acid (mg/100kcal) : Not less than 300

(5) Vitamin A (IU/100kcal or μg/100kcal) : 250~500 or 75~150

(6) Vitamin D (IU/100kcal or μg/100kcal) : 40~100 or 1~2.5

(7) Vitamin C (mg/100kcal) : Not less than 8

(8) Vitamin B_1 (μg/100kcal) : Not less than 40

(9) Vitamin B_2 (μg/100kcal) : Not less than 60

(10) Nicotinic acid (μg/100kcal) : Not less than 250

(11) Vitamin B_6 (μg/100kcal) : Not less than 35 (in case 2.3g and more protein, Vitamin B_6 should increase as much as 15μg per additional 1g protein)

(12) Folic acid (μg/100kcal) : Not less than 4.0

(13) Pantothenic acid (μg/100kcal) : Not less than 300

(14) Vitamin B_{12} (μg/100kcal) : Not less than 0.1

(15) Vitamin K_1 (μg/100kcal) : Not less than 4.0

(16) Biotin (μg/100kcal) : Not less than 1.5

(17) Choline (mg/100kcal) : Not less than 7.0

(18) Vitamin E (IU/100kcal) : Not less than 0.7(in case 1.0g and more linoleic acid, Vitamin E should increase as much as 0.7 IU per additional 1g linoleic acid)

(19) Sodium (mg/100kcal) : 20~60

(20) Potassium (mg/100kcal) : 80~200

(21) Chlorine (mg/100kcal) : 55~150

(22) Calcium (mg/100kcal) : Not less than 50

(23) Phosphorus (mg/100kcal) : Not less than 25 (the ratio of calcium to phosphorus should be 1.2~2.0)

(24) Magnesium (mg/100kcal) : Not less than 6.0

(25) Iron (mg/100kcal) : Not less than 1.0

(26) Iodine (μg/100kcal) : Not less than 5.0

(27) Copper (μg/100kcal) : Not less than 60

(28) Zinc (mg/100kcal) : Not less than 0.75

(29) Manganese (μg/100kcal) : Not less than 5.0

(30) Artificial sweetener : Should not be detected.

(31) Tar color : Should not be detected.

(32) The number of bacteria : Not more than 20,000 per 1g(Negative in case of liquefied products)

(33) Coliform group : Negative

(34) *Enterobacter Sakazakii* : Negative (Limited to powdery product among infant formula for infants less than 6 months)

(35) *Bacillus Cereus* : Not more than 100 per 1g (Excluding liquefied products)

(36) Scorched particles : Not more than 7.5 mg/100 g (compared to standard disk A as specified by the US ADPI) (Limited to powdered products)

6) Test Method

(1) Water

It is tested according to 1.1.1. water, 1. General composition described in Article 10. General Testing Methods.

(2) Crude protein

It is tested according to 1.1.3.1. Total Nitrogen and Crude Protein, 1. General composition described in Article 10. General Testing Methods.

(3) Crude fat

It is tested according to 1.1.5.1. Crude fat, 1. General composition described in Article 10. General Testing Methods.

(4) Linoleic acid

It is tested according to 1.1.5.4. Fatty Acid, described in Article 10. General Testing Methods.

(5) Vitamin A

It is tested according to 1.1.2.1. Vitamin A, 1.2. Micronutrient described in Article 10. General Testing Methods.

(6) Vitamin D

It is tested according to 1.2.2.7. Vitamin D, 1.2. Micronutrient described in Article 10. General Testing Methods.

(7) Vitamin C

It is tested according to 1.2.2.4. Vitamin C, 1.2. Micronutrient described in Article 10. General Testing Methods.

(8) Vitamin B_1

It is tested according to 1.2.2.2. Vitamin B_1, 1.2. Micronutrient described in Article 10. General Testing Methods.

(9) Vitamin B_2

It is tested according to 1.2.2.3. Vitamin B_2, 1.2. Micronutrient described in Article 10. General Testing Methods.

(10) Nicotinic acid

It is tested according to 1.2.2.5. Nicotinic acid, 1.2. Micronutrient described in Article 10. General Testing Methods.

(11) Vitamin B_6

It is tested according to 1.2.2.9 Vitamin B_6 (Pyridoxine) or 1.2.2.12.2 Vitamin B_6 , 1.2 Micronutrient described in Article 10. General Testing Methods.

(12) Folic acid

It is tested according to 1.2.2.12.3 Folic acid, 1.2. Micronutrient described in Article 10. General Testing Methods.

(13) Pantothenic acid

It is tested according to 1.2.2.10 Pantothenic acid or 1.2.2.12.4 Pantothenic acid, 1.2 Micronutrient described in Article 10. General Testing Methods.

(14) Vitamin B_{12}

It is tested according to 1.2.2.11 Vitamin B_{12} or 1.2.2.12.5 Vitamin B_{12} , 1.2 Micronutrient described in Article 10. General Testing Methods.

(15) Vitamin K_1

It is tested according to 1.2.2.8 Vitamin K_1, 1.2. Micronutrient described in Article 10. General Testing Methods.

(16) Biotin

It is tested according to 1.2.2.12.7 Biotin, 1.2. Micronutrient described in Article 10.General Testing Methods.

(17) Choline

It is tested according to 1.2.2.12.6 Choline, 1.2. Micronutrient test method described in Article 10.General Testing Methods.

(18) Vitamin E

It is tested according to 1.2.2.6 Vitamin E, 1.2. Micronutrient described in Article 10.General Testing Methods.

(19) Sodium

It is tested according to 1.2.1.6 Sodium, 1.2. Micronutrient described in Article 10. General Testing Methods.

(20) Potassium

It is tested according to 1.2.1.7 Potassium, 1.2. Micronutrient described in Article 10. General Testing Methods.

(21) Chlorine

It is tested according to 1.2.1.5 edible salt, 1.2. Micronutrient described in Article 10. General Testing Methods, dilute chlorine amount in the titration solution to be 5 mg, titrate it with 0.01 N silver nitrate and calculate the chloride ion content according to the following formula.

$$\text{Chloride ion (mg/100g)} = 0.3545 \times a \times f \times \frac{b}{\text{Sample's amount}} \times 100$$

a : consumed 0.01N silver nitrate (mL)

b : dilution factor

f : factor of 0.01N silver nitrate

(22) Calcium

It is tested according to 1.2.1.2 Calcium, 1.2. Micronutrient described in Article 10. General Testing Methods.

(23) Phosphorus

It is tested according to 1.2.1.3 Phosphorus, 1.2. Micronutrient described in Article 10. General Testing Methods.

(24) Magnesium

Prepare a sample according to 나) Dry Ashing Method, 7.1.2.1 1) Preparation of Test Solution, 7.1. Harmful Metal described in Article 10. General Testing Methods and It is tested according to 7.1.2.1 2) test 가) Atomic Absorption Spectrophotometry or 나) ICP Method.

(25) Iron

It is tested according to 1.2.1.4 Iron, 1.2. Micronutrient described in Article 10. General Testing Methods.

(26) Iodine

It is tested according to 1.2.1.9 Iodine, 1.2. Micronutrient described in Article 10. General Testing Methods.

(27) Copper

Prepare a sample according to 나) Dry Ashing Method, 7.1.2.1 1) Preparation of Test Solution, 7.1.. Harmful Metal described in Article 10. General Testing Methods and it is tested according to 7.1.2.1 2) test 가) Atomic Absorption Spectrophotometry or 나) ICP Method.

(28) Zinc

It is tested according to 1.2.1.8 Zinc, 1.2. Micronutrient described in Article 10. General Testing Methods.

(29) Manganese

Prepare a sample according to 나) Dry Ashing Method, 7.1.2.1 1) Preparation of Test Solution, 7.1.. Harmful Metal described in Article 10. General Testing Methods and it is tested according to 7.1.2.1 2) test 가) Atomic Absorption Spectrophotometry or 나) ICP Method.

(30) Artificial Sweetener

It is tested according to 2.2. Artificial Sweetener described in Article 10. General Testing Methods.

(31) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General testing Method.

(32) The number of bacteria

Take a 10 g sample sterilely, put it into a sterilized Erlenmeyer flask, prepare the final sample of 100 mL by adding sterilized phosphate buffered dilution water or sterilized saline and it is tested according to 3.5.1. The number of bacteria under 3. Microorganism test method described in Article 10. General Testing Methods.

(33) Coliform group

It is tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(34) *Enterobacter Sakazakii*

It is tested according to 3.21 *Enterobacter Sakazakii* test method, 3. Microorganism described in Article 10. General Testing Methods.

(35) *Bacillus Cereus*

It is tested according to 3.18.2 Quantitative test 3.18 *Bacillus Cereus,* Microbiological test method, 3. Microorganism described in Article 10. General Testing Methods.

(36) Scorched particles

It is tested according to 바) Ice cream powder, non-sugar condensed milk, sugar-added condensed milk, sugar-added skim milk, whole milk powder, fat-free milk powder, sugar-added milk powder and infant formula, 3) Tests for 9.2.2. Foreign Materials in Foods, 9.2. Foreign Materials described in Article 10. General Testing Methods.

19-2 Follow-Up Formula

1) Definition

Follow-up formula refers to a powdered or liquefied product for infants over 6 months using the isolated soybean protein or other food as its protein source and adding nutrients as minerals and vitamins, suitable for normal growth and development as liquefied weaning diet. However, infant formula regulated in accordance with the Processing of Livestock Products Act shall be exempted.

2) Requirements of Raw Material

(1) Raw material shall not be treated by irradiation.

3) Manufacturing and Processing Standards

(1) Product shall be properly disinfected or sterilized so as not to be damaged by microorganism contamination.

(2) The dried product shall be filled with nitrogen gas, and liquid product shall be sterilized,

(3) In order to add nutrient to be included in breast milk or make it suitable to only nutrition source for infant and young children, other nutrients can be added in necessity. However, the utility of nutrients shall be scientifically proved and the added quantity be based on breast milk.

(4) Amino acid score of protein within final product shall be more than 85.

* For composition table of essential amino acids for calculation of amino acid scores, refers to 19-1-3) (4).

(5) For ready to use products, the solids content shall be 10-15%. For products ready for use after dilution, the specifications for solids content may be different.

(6) Tin tube shall not be used as container for liquid or paste product.

(7) In case of using honey or maple syrup as raw material, the spore of *Clostridium Botulinum* shall be treated to destroyed.

(8)Cocoa may be used in products for young children over 12 months. Its content shall be not more than 1.5% when diluted with water before consumption.

(9) Dried raw materials shall be stored after drying to lower the water content for prevention of microbial growth and other raw materials shall be stored in a place where temperature and humidity are controlled.

(10) In order to prevent microbial contamination or other kinds of contamination, the spray drying equipment used in the manufacture of powdered food for infants and young children shall be periodically cleaned.

(11) Prior to packaging, efficient methods to prevent mixup of foreign materials or metals, such as sieve, trap, magnet, or electric metal detector, shall be used.

4) Food Type

5) Specifications

(1) Water(%) : Not more than 5.0 (Limited to powdered products)

(2) Crude Protein (g/100kcal) : 3.0~5.5

(3) Crude Fat (g/100kcal) : 3.0~6.0

(4) Linoleic Acid (mg/100kcal) : Not less than 300

(5) Vitamin A (IU/100kcal or μg/100kcal) : 250~750 or 75~225

(6) Vitamin D (IU/100kcal) : 40~120

(7) Vitamin C (mg/100kcal) : Not less than 8

(8) Vitamin B_1 (μg/100kcal) : Not less than 40

(9) Vitamin B_2 (μg/100kcal) : Not less than 60

(10) Nicotinic Acid (μg/100kcal) : Not less than 250

(11) Vitamin B_6 (μg/100kcal) : Not less than 45(in case 3.0g and more protein, Vitamin B_6 should increase as much as 15μg per additional 1g protein)

(12) Folic Acid (μg/100kcal) : Not less than 4.0

(13) Pantothenic Acid (μg/100kcal) : Not less than 300

(14) Vitamin B_{12} (μg/100kcal) : Not less than 0.15

(15) Vitamin K_1 (μg/100kcal) : Not less than 4.0

(16) Biotin (μg/100kcal) : Not less than 1.5

(17) Vitamin E (IU/100kcal) : Not less than 0.7(in case 1g and more linoleic acid, Vitamin E should increase as much as 0.7IU per additional 1g linoleic acid)

(18) Sodium (mg/100kcal) : 20~85

(19) Potassium (mg/100kcal) : Not less than 80

(20) Chlorine (mg/100kcal) : Not less than 55

(21) Calcium (mg/100kcal) : Not less than 90

(22) Phosphorus (mg/100kcal) : Not less than 60(the ratio of calcium to phosphorus should be 1.2~2.0)

(23) Magnesium (mg/100kcal) : Not less than 6.0

(24) Iron (mg/100kcal) : Not less than 1.0

(25) Iodine (μg/100kcal) : Not less than 5.0

(26) Zinc (mg/100kcal) : Not less than 0.5

(27) Artificial Sweetener : Should not be detected

(28) Tar color : Should not be detected

(29) The number of bacteria : Not more than 20,000 per 1 g (Negative in case of liquefied products)

(30) Coliform group : Negative

(31) *Bacillus Cereus* : Not more than 100 per 1 g (Excluding liquefied products)

(32) Scorched particles : Not more than 7.5 mg/100 g (compared to standard disk A as specified by the US ADPI) (Limited to powdered products)

6) Test Method

(1) Water

It is tested according to 1.1.1 water, 1. General composition described in Article 10. General Testing Methods.

(2) Crude protein

It is tested according to 1.1.3.1 Total Nitrogen and Crude Protein, 1. General composition described in Article 10. General Testing Methods.

(3) Crude fat

It is tested according to 1.1.5.1. Crude fat, 1. General composition described in Article 10. General Testing Methods.

(4) Linoleic acid

It is tested according to 1.1.5.4. Fatty Acid, 1. General composition described in 10. General Testing Methods.

(5) Vitamin A

It is tested according to 1.1.2.1. Vitamin A, 1.2. Micronutrient described in Article 10. General Testing Methods.

(6) Vitamin D

It is tested according to 1.1.2.7. Vitamin D, 1.2. Micronutrient described in Article 10. General Testing Methods.

(7) Vitamin C

It is tested according to 1.2.2.4. Vitamin C, 1.2. Micronutrient described in Article 10. General Testing Methods.

(8) Vitamin B_1

It is tested according to 1.2.2.2. Vitamin B_1, 1.2. Micronutrient described in Article 10. General Testing Methods.

(9) Vitamin B_2

It is tested according to 1.2.2.3. Vitamin B_2, 1.2. Micronutrient described in Article 10. General Testing Methods.

(10) Nicotinic acid

It is tested according to 1.2.2.5. Nicotinic acid, 1.2. Micronutrient described in Article 10. General Testing Methods.

(11) Vitamin B_6

It is tested according to 1.2.2.9 Vitamin B_6 (Pyridoxine) or 1.2.2.12.2 Vitamin B_6, 1.2. Micronutrient described in Article 10. General Testing Methods.

(12) Folic acid

It is tested according to 1.2.2.12.3 Folic acid, 1.2. Micronutrient test method described in Article 10. General Testing Methods.

(13) Pantothenic acid

It is tested according to 1.2.2.10 Pantothenic acid or 1.2.2.12.4 Pantothenic acid, 1.2. Micronutrient described in Article 10. General Testing Methods.

(14) Vitamin B_{12}

It is tested according to 1.2.2.11 Vitamin B_{12} or 1.2.2.12.5 Vitamin $B_{12,}$ 1.2. Micronutrient described in Article 10. General Testing Methods.

(15) Vitamin K_1

It is tested according to 1.2.2.8. Vitamin K_1, 1.2. Micronutrient described in Article 10. General Testing Methods.

(16) Biotin

It is tested according to 1.2.2.12.7 Biotin, 1.2. Micronutrient described in Article 10. General Testing Methods.

(17) Vitamin E

It is tested according to 1.2.2.6 Vitamin E, 1.2. Micronutrient described in Article 10. General Testing Methods

(18) Sodium

It is tested according to 1.2.1.6. Sodium, 1.2. Micronutrient described in Article 10. General Testing Methods.

(19) Potassium

It is tested according to 1.2.1.7. Potassium, 1.2. Micronutrient described in Article 10. General Testing Methods.

(20) Chlorine

It is tested according to 1.2.1.5. Edible salt, 1.2. Micronutrient described in Article 10. General Testing Methods, dilute chlorine amount in the titration solution to be 5 mg, titrate it with 0.01 N silver nitrate and calculate the chloride ion content according to the following formula.

$$\text{Chloride ion (mg/100g)} = 0.3545 \times a \times f \times \frac{b}{\text{Sample's amount}} \times 100$$

a : consumed 0.01 N silver nitrate (mL)

b : dilution factor

f : activity of 0.01 N silver nitrate

(21) Calcium

It is tested according to 1.2.1.2. Calcium, 1.2. Micronutrient described in Article 10. General Testing Methods.

(22) Phosphorus

It is tested according to 1.2.1.3. Phosphorus, 1.2. Micronutrient described in Article 10. General Testing Methods.

(23) Magnesium

Prepare a sample according to 나) Dry Ashing Method, 7.1.2.1 1) Preparation of Test Solution, 7.1. Harmful Metal described in Article 10. General Testing Methods and It is tested according to 7.1.2.1 2) test 가) Atomic Absorption Spectrophotometry or 나) ICP Method.

(24) Iron

It is tested according to 1.2.1.4. Iron, 1.2. Micronutrient described in Article 10. General Testing Methods.

(25) Iodine

It is tested according to 1.2.1.9. Iodine, 1.2. Micronutrient described in Article 10. General Testing Methods.

(26) Zinc

It is tested according to 1.2.1.8. Zinc, 1.2. Micronutrient described in Article 10. General Testing Methods.

(27) Artificial Sweetener

It is tested according to 2.2. Artificial Sweetener described in Article 10. General Testing Methods

(28) Tar color

It is tested according to 2.4. Coloring Agent described in 10. General Testing Methods.

(29) The number of bacteria

Take a 10 g sample sterilely, put it into a sterilized Erlenmeyer flask, prepare the final sample of 100 mL by adding sterilized phosphate buffered dilution water or sterilized saline and It is tested according to 3.5.1. The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(30) Coliform group

It is tested according to 3.7 Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(31) *Bacillus Cereus*

It is tested according to 3.18.2 Quantitative test, 3.18 Bacillus Cereus, Microbiological test method, 3. Microorganism described in Article 10. General Testing Methods.

(32) Scorched particles

It is tested according to 바) Ice cream powder, non-sugar condensed milk, sugar-added condensed milk, sugar-added skim milk, whole milk powder, fat-free milk powder, sugar-added milk powder and infant formula, 3) Tests for 9.2.2 foreign materials in Foods, 9.2 Foreign Materials, Article 10. General Testing Methods.

19-3 Cereal Based Food for Infants and Young Children

1) Definition

Cereal based food for infants and young children refers to powdered, paste or liquefied product, which is intended to supplement weaning diet nutritionally, is made of grains, soybeans and potatoes (25% or more

solid content in end products) and adds nutrients necessary for growth and development, for babies and infants ready for feeding instantly as it is or by mixing water, milk or other liquids or heating it.

2) Requirements of Raw Material

(1) Raw material shall not be treated by irradiation.

3) Manufacturing and Processing Standards

(1) Product shall be properly pasteurized or sterilized so as not to be damaged by microorganism contamination.

(2) The dried product shall be filled with nitrogen gas, and liquid product shall be sterilized.

(3) In order to add nutrient to be included in breast milk or make it suitable to only nutrition source for infant, toddler and other nutrients can be added in necessity. However, the utility of nutrients shall be scientifically proved and the added quantity be based on breast milk.

(4) Amino acid score of protein within final product shall be more than 85.

* For composition table of essential amino acids for calculation of amino acid scores, refers to 19-1-3) (4).

(5) If saccharides are added to cereal products for infants, they shall not exceed 20% of total calorie and the amount of sugar shall not exceed 50% of total saccharides added.

(6) For ready to use products, the solids content shall be 10-15%. For products ready for use after dilution, the specifications for solids content may be different.

(7) Tin tube shall not be used as container for liquid or paste product.

(8) In case of using honey or maple syrup as raw material, the spore of *Clostridium Botulinum* shall be treated to destroyed.

(9) Cocoa may be used in products for young children over 12 months. Its content shall be not more than 1.5% when diluted with water before consumption.

(10) Dried raw materials shall be stored after drying to lower the water content for prevention of microbial growth and other raw materials shall be stored in a place where temperature and humidity are controlled.

(11) In order to prevent microbial contamination or other kinds of contamination, the spray drying equipment used in the manufacture of powdered food for infants and young children shall be periodically cleaned.

(12) Prior to packaging, efficient methods to prevent mixup of foreign materials or metals, such as sieve, trap, magnet, or electric metal detector, shall be used.

4) Food Type

5) Specifications

(1) Water (%) : Not more than 10.0 (Limited to powdered/solid products)

(2) Crude Protein (%) : Not less than 10.0 (Based on dried products)

(3) Crude Fat (%) : Not less than 5.0 (Based on dried products)

(4) Gelatinization Degree (α) : Not less than 80.0 (Limited to powdered/solid products containing 25% or more grain, soybean, potatoes or the processed ones)

(5) Sodium (mg/100kcal) : Not more than 100

(6) Iron (mg/100kcal) : Not less than 2.0

(7) Vitamin A (IU/100kcal) : Not less than 200

(8) Vitamin B_1 (μg/100kcal) : Not less than 80

(9) Vitamin B_2 (μg/100kcal) : Not less than 130

(10) Vitamin C (mg/100kcal) : Not less than 4

(11) Artificial Sweetener : Should not be detected

(12) Tar color : Should not be detected.

(13) Coliform group : Negative(Excluding bottled/canned products)

(14) *Enterobacter Sakazakii* : Negative (Limited to powdered product among cereal based foods for infants and young children)

(15) *Bacillus Cereus* : Not more than 100 per 1g

6) Test Method

(1) Water

It is tested according to 1.1.1. water, 1. General composition described in Article 10. General Testing Methods.

(2) Crude protein

It is tested according to 1.1.3.1. Total Nitrogen and Crude Protein, 1. General composition described in Article 10. General Testing Methods.

(3) Crude fat

It is tested according to 1.1.5.1. Crude fat, 1. General composition described in Article 10. General Testing Methods.

(4) Gelatinization Degree (α)

In case it contains 3~4% or more fat, remove[degrease] it with petroleum ether, dry it out at 50℃ or lower degree and use it as the sample; if lower than 3~4%, use it as the sample like that. Prepare 5 100 mL-Erlenmeyer flasks and name them A1, A2, A3, A4 and B respectively.

Each 1.00 g of samples should be put in A1 ~ A4 respectively while the samples' weights should be within ± 0.5%. Add 50 mL water into 5 flasks. Heat A1 and A2 to boiling points for 15 minutes, or heat them in

water of 100℃ for 30 minutes and quickly cool them down in iced water or cold water to ambient temperature.

Add 5% diastase solution into A1, A3 and B, shake 5 flasks in constant temperature water bath, maintaining the temperature 37± 1℃ for 90 minutes, add 2 mL 1 N hydrochloric acid to the flasks and add some water to prepare 100 mL solutions. Filter them with dry filter paper and take the 10 mL remaining solution into 5 Erlenmeyer flasks, designating a1, a2, a3, a4 and b each.

Get 10 mL water for blank test in another Erlenmeyer flask and add 10 mL iodine solution to totally 6 flasks. Then, add 18 mL 0.1 N sodium hydroxide solution to 6 flasks in regular sequence and leave them for 15 minutes after sealing up, shaking and mixing.

Once the first flask is passed 15 minutes, remove the stoppers according to order and intervals when 0.1 N sodium hydroxide is added and add 2 mL sulphuric acid to them. Titrate the solutions with 0.1 N sodium thiosulfate, designate the measurements of a1, a4 and b as P1, P4 and q; 'r' for titration of the blank test, and calculate Gelatinization Degree(α) according to the following formula.

$$\text{Gelatinization Degree}(\alpha)(\%) = \frac{(r - p3) - (r - p4) - (r - q)}{(r - p1) - (r - p2) - (r - q)} \times 100$$

The above procedure can be summarized as follows.

Operations	A1	A2	A3	A4	B
1. Prepare samples	○	○	○	○	X
2. Add 50 mL water	○	○	○	○	○
3. Heat up for 15 minutes	○	○	X	X	X
4. Rapid cooling down to ambient temp.	○	○	X	X	X
5. Add 5 mL 5% diastase	○	X	○	X	○
6. Shaking at constant temp.(37℃) for 90 minutes	○	○	○	○	○
7. Add 2 mL 1N hydrochloric acid	○	○	○	○	○
8. Obtain 100 mL(constant weight)	○	○	○	○	○
9. Filter with dry filter paper	○	○	○	○	○
10. Remaining solution(test solution)	a1	a2	a3	a4	b

(5) Sodium

It is tested according to 1.2.1.6. Sodium, 1.2. Micronutrient described in Article 10. General Testing Methods.

(6) Iron

It is tested according to 1.2.1.4. Iron, 1.2. Micronutrient described in Article 10. General Testing Methods.

(7) Vitamin A

It is tested according to 1.2.2.1. Vitamin A, 1.2 Micronutrient described in Article 10. General Testing Methods.

(8) Vitamin B_1

It is tested according to 1.2.2.2. Vitamin B_1, 1.2 Micronutrient described in Article 10. General Testing Methods.

(9) Vitamin B_2

It is tested according to 1.2.2.3 Vitamin B_2, 1.2. Micronutrient described in Article 10. General Testing Methods.

(10) Vitamin C

It is tested according to 1.2.2.4 Vitamin C, 1.2. Micronutrient described in Article 10. General Testing Methods.

(11) Artificial Sweetener

It is tested according to 2.2. Artificial Sweetener described in Article 10. General Testing Methods

(12) Tar color

It is tested according to 2.4. Coloring Agent described in 10. General Testing Methods.

(13) Coliform group

It is tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(14) *Enterobacter Sakazakii*

It is tested according to 3.21 *Enterobacter Sakazakii*, 3. Microorganism test method described in Article 10. General Testing Methods.

(15) *Bacillus Cereus*

It is tested according to 3.18.2 Quantitative test, 3.18 *Bacillus Cereus* in Microbiological test method, 3. Microorganism described in Article 10. General Testing Methods.

19-4 Other Foods for infant and Young children

1) Definition

Other foods for infant and young children refer to powdered, paste or liquefied formula, which are intended to aid infants and babies in development or weaning period to try general food. 19-1 Infant Formula and 19-3 Cereal based foods for infants and young children are excluded.

2) Requirements of Raw Material

(1) Raw material shall not be treated by irradiation.

3) Manufacturing and Processing Standards

(1)Product shall be properly pasteurized or sterilized so as not to be damaged by microorganism contamination.

(2) The dried product shall be filled with nitrogen gas, and liquid product shall be sterilized.

(3) In order to add nutrient to be included in breast milk or make it suitable to only nutrition source for infant and toddler, other nutrients can be added in necessity. However, the utility of nutrients shall be scientifically proved and the added quantity be based on breast milk.

(4) For ready to use products, the solids content shall be 10-15%. For products ready for use after dilution, the specifications for solids content may be different.

(5) Tin tube shall not be used as container for liquid or paste product.

(6) In case of using honey or maple syrup as raw material, the spore of *Clostridium Botulinum* shall be treated to destroyed.

(7) Cocoa may be used in products for young children over 12 months. Its content shall be not more than 1.5% when diluted with water before consumption.

(8) Dried raw materials shall be stored after drying to lower the water content for prevention of microbial growth and other raw materials shall be stored in a place where temperature and humidity are controlled.

(9) In order to prevent microbial contamination or other kinds of contamination, the spray drying equipment used in the manufacture of powdered food for infants and young children shall be periodically cleaned.

(10) Prior to packaging, efficient methods to prevent mixup of foreign materials or metals, such as sieve, trap, magnet, or electric metal detector, shall be used.

4) Food Type

5) Specifications

(1) Water(%) : Not more than 10.0 (Limited to powdered/solid products)

(2) Gelatinization Degree (α) : Not less than 80.0 (Limited to powdered/solid products containing 25% or more grain, soybean, potatoes or the processed ones; excluding food requiring heating-up process for eating)

(3) Sodium (mg/100g) : Not more than 200 (Based on the mixture with water in case taking ingest by mixing water)

(4) Artificial sweetener: Should not be detected

(5) Tar color : Should not be detected

(6) Lead (mg/kg) : Not more than 0.1(Limited to liquefied juices)

(7) Coliform group : Negative.

(8) The number of bacteria : Not more than 100 per 1 mL(Limited to liquefied juices)

(9) *E. Sakazakii* : Negative (Limited to powdered product among other foods for infant and young children less than 6 months)

(10) *Bacillus Cereus* : Not more than 100 per 1g

4) Test Method

(1) Water

It is tested according to 1.1.1. Water, 1. General composition described in Article 10. General Testing Methods.

(2) Gelatinization Degree (α)

It is tested according to (4) Gelatinization Degree (α), 4) Test method described in 19-3 Cereal based foods for infants and young children.

(3) Sodium

It is tested according to 1.2.1.6. Sodium, 1.2. Micronutrient described in Article 10. General Testing Methods.

(4) Artificial Sweetener

It is tested according to 2.2. Artificial Sweetener described in 10. General Testing Methods.

(5) Tar color

It is tested according to 2.4. Coloring Agents described in 10. General Testing Methods.

(6) Lead

It is tested according to 7.1. Harmful Metal described in 10. General Testing Methods.

(7) Coliform group

Take a 10 g sample by using a sterile spoon, put it into an Erlenmeyer flask, prepare the final sample of 100 mL by adding sterilized phosphate buffered dilution water or sterilized saline and it is tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(8) The number of bacteria

It is tested according to 3.5.1 The number of bacteria, 3. Microorganism test method described in Article 10. General Testing Methods.

(9) *Enterobacter Sakazakii*

It is tested according to 3.21 *Enterobacter Sakazakii,*. 3. Microorganism described in Article 10. General Testing Methods.

(10) *Bacillus Cereus*

It is tested according to 3.18.2. Quantity test, 3.18. *Bacillus Cereus,* 3. Microorganism described in Article 10. General Testing Methods.

19-5 Foods for Special Medical Purpose

1) Definition

Foods for special medical purpose refer to those manufactured and processed to provide whole or parts of a meal through oral or tube feeding to patients whose normal consumption, digest, absorption, or metabolism functions are limited or damaged or those who have different nutritional requirements due to diseases or clinical conditions.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) Depending on the nature, the food product shall be manufactured and processed under consideration of consumption, digest, absorption, metabolism, and excretion functions of target population and according to the manufacturer's standards.

(2) Such manufacturer's standards regarding mixing of components, and manufacture and processing of products shall be scientifically based on nutritional, medical, and physiological data.

(3) Balanced nutritional food for patients to be used to provide whole or parts of a meal shall be manufactured to assure that vitamin A, B_1, B_2, B_6, C, D, E, niacin, folic acid, protein, calcium, iron, and zinc per 1000 kcal of the product shall be included at 50% more than the nutrient reference values.

(4) Food for diabetes patients to be used to provide whole or some of meal shall be manufactured to assure that vitamin A, B_1, B_2, B_6, C, D, E, niacin, folic acid, protein, calcium, iron, and zinc per 1000 kcal of the product shall be included at 50% more than the nutrient reference values. Calorie from saturated fat shall be less than 10% of total calorie. The amount of cholesterol shall be not more than 100 mg per 1000 kcal of the product and the calorie from monosaccharides and disaccharides shall be less than 10% of total calorie.

(5) Food for renal patients to be used to provide whole or parts of a meal shall be manufactured to assure that vitamin B_1, B_2, B_6, C, E, niacin, and folic acid per 1000 kcal of the product shall be included at 50% more than the nutrient reference values. However, vitamin A and D shall be included at 20% more than the nutrient reference values. The amount of potassium and phosphorus have to be limited for renal patients and shall be included at below the labelled amount. In addition, food for renal patients without dialysis shall be manufactured to assure that the calorie from protein components shall be not more than 10% of total calorie. For food for renal patients with dialysis, the calorie from protein components shall be not less than 12% of total calorie. Such food for renal patients with dialysis shall be designed to have not less than 1.5 kcal per 1 mL (g) of the product. Sodium content shall be not more than 800 mg per 1000 kcal of the product.

(6) Hydrolyzed food for patients with bowel diseases to be used to provide whole or parts of a meal shall be manufactured to assure that vitamin A, B_1, B_2, B_6, C, D, E, niacin, folic acid, calcium, iron, and zinc per 1000 kcal of the product shall be included at 50% more than the nutrient reference values. In addition, the calorie

from protein components shall be not less than 30% of total calorie. Protein components shall be supplied in the protein hydrolysis or free amino acids.

(7) Food for medical purpose to be used to provide calorie or nutrition shall be manufactured to assure that 1 mL (g) of the product shall have not less than 3 kcal.

(8) If a product falling into one of (3) to (7) is intented to be used in specific population, the nutrient reference values for such target Korean population may be used.

4) Food Type

(1) Balanced nutritional food for patients

Balanced nutritional food for patients refers to a product manufactured and processed to adjust the nutritional components in order to provide whole or parts of a meal containing balanced nutritive substances to patients and it does not include the food falling into one of (2) to (8).

(2) Food for diabetes patients

Food for diabetes patients refers to a product manufactured or processed to adjust the nutritional components in order to provide whole or parts of a meal containing nutritive substances required for diabetes or patients with hyperglycemia.

(3) Food for renal patients

Food for renal patients refers to a product manufactured or processed to adjust the nutritional components in order to provide whole or parts of a meal containing nutritive substances required for patients with chronic renal disorders.

(4) Hydrolyzed food for patients with bowel diseases

Hydrolyzed food for patients with bowel diseases refers to a product manufactured or processed to hydrolyze the nutritional components in order to provide whole or parts of a meal containing nutritive substances required for patients with bowel diseases who have difficulty in digest and absorption of nutritive substances.

(5) Medical-purpose food for providing calorie and nutrition

Medical-purpose food for providing calorie and nutrition refers to a product manufactured or processed to allow patients who require additional calorie and nutrition due to difficult metabolism and malnutrition arising from diseases to take it alone or together with other food for medical purpose.

(6) Food for patients with congenital metabolic disorders

Food for patients with congenital metabolic disorders refers to a product manufactured or processed to remove or restrict certain substances not metabolized in patients with congenital metabolic disorders or to add other essential substances. Congenital metabolic disorders mean congenital genetic diseases arising from biochemical metabolism deficiency that causes accumulation of hazardous substances or lack of essential substances due to incompetent metabolic enzymes or difficulty in transfer of substances

and include the phenylketonuria, hypothyroidism, galactosemia, homocystinuria, maple syrup urine disease, congenital adrenal hyperplasia, and other disorders showing abnormal metabolism of amino acids, organic acids, carbohydrates, lipids and fatty acids, and inorganic matter.

(7) Formula for special medical purpose for infants and young children

Formula for special medical purpose for infants and young children refers to a product specially designed to provide nutritive substances to immature or premature infants who have different nutritive requirements from normal infants and young children (0~36 months). However, those classified as infant formula, follow-up formula, cereal based foods for infants and young children, other foods for infant and young children, and food for patients with congenital metabolic disorders are excluded.

(8) Viscosity-improving food for dysphagia patients

Viscosity-improving food for dysphagia patients refers to a product designed to improve the viscosity of solid or liquid food in order to reduce the risk of aspiration or difficulty in intake.

5) Specifications

Types Items	Balanced nutritional food for patients	Food for diabetes patients
(1) Appearance	Unique color and flavor, no strange taste and odor	Unique color and flavor, no strange taste and odor
(2) Water content (%)	Not more than 10.0% (Limited to powdered products)	Not more than 10.0% (Limited to powdered products)
(3) Crude protein	Not less than the labelled amount	Not less than the labelled amount
(4) Crude fat	Not less than the labelled amount	Not less than the labelled amount (for saturated fat, less than 10%)
(5) Sugars	-	Not more than the labelled amount (Limited to monosaccharides and disaccharides)
(6) Dietary fibers	-	Not less than the labelled amount
(7) Vitamin	Not less than the labelled amount (applicable to vitamin A, B_1, B_2, B_6, C, D, E, niacin, and folic acid)	Not less than the labelled amount (applicable to vitamin A, B_1, B_2, B_6, C, D, E, niacin, and folic acid)
(8) Inorganic matter	Not less than the labelled amount (applicable to calcium, iron, and zinc)	Not less than the labelled amount (applicable to calcium, iron, and zinc)
(9) Coliform group	Negative	Negative
(10) Bacterial count	Not more than 100/ 1 mL (for powdered products, not more than 20,000/1 g)	Not more than 100/1 mL (for powdered products, not more than 20,000/1 g)

(11) Tar color	Not detected	Not detected
(12) Bacillus cereus	Not more than 100/1 g	Not more than 100/1 g

Types Items	Food for renal patients	Hydrolyzed food for patients with bowel diseases
(1) Appearance	Unique color and flavor, no strange taste and odor	Unique color and flavor, no strange taste and odor
(2) Water content (%)	Not more than 10.0% (Limited to powdered products)	Not more than 10.0% (Limited to powdered products)
(3) Calorie	Not less than 1.5 kcal/1 mL (or g) of product (for powdered products, based on standard intake method)	-
(4) Crude protein	Not more than the labelled amount (for products for non-dialysis patients) Not less than the labelled amount (for products for dialysis patients)	Not less than the labelled amount
(5) Crude fat	-	Not less than the labelled amount
(6) Vitamin	Not less than the labelled amount (applicable to vitamin A, B_1, B_2, B_6, C, D, E, niacin, and folic acid)	Not less than the labelled amount (applicable to vitamin A, B_1, B_2, B_6, C, D, E, niacin, and folic acid)
(7) Inorganic matter	Not more than the labelled amount (applicable to sodium, potassium, and phosphorus)	Not less than the labelled amount (applicable to calcium, iron, and zinc)
(8) Coliform group	Negative	Negative
(9) Bacterial count	Not more than 100/1 mL (for powdered products, not more than 20,000/1 g)	Not more than 100/1 mL (for powdered products, not more than 20,000/1 g)
(10) Tar color	Not detected	Not detected
(11) Bacillus cereus	Not more than 100/1 g	Not more than 100/1 g

Types Items	Formula for special medical purpose for infants and young children	Viscosity-improving food for dysphagia patients
(1) Appearance	Unique color and flavor, no strange taste and odor	Unique color and flavor, no strange taste and odor

(2) Water content (%)	Not more than 10.0% (Limited to powdered products)	Not more than 10.0% (Limited to powdered products)
(3) Crude protein	Not less than the labelled amount	-
(4) Crude fat	Not less than the labelled amount	-
(5) Vitamin	Not less than the labelled amount	-
(6) Inorganic matter	Not less than the labelled amount	-
(7) Coliform group	Negative	Negative
(8) Bacterial count	Not more than 100/1 mL (for powdered products, not more than 20,000/1 g)	Not more than 100/1 mL (for powdered products, not more than 20,000/1 g)
(9) Tar color	Not detected	Not detected
(10) Scorched particles	Not more than 7.5 mg/100 g (compared to standard disk A as specified by the US ADPI) (Limited to powdered products)	-
(11) *Enterobacter Sakazakii*	Negative (Limited to powdered special food for infants of less than 6 months old	-
(12) *Bacillus cereus*	Not more than 100/1 g	Not more than 100/1 g

6) Test Method

(1) Water

It is tested according to 1.1.1 water, 1. General composition described in Article 10. General Testing Methods.

(2) Nutrients

It is tested according to 1. General composition, 1.2. Micronutrient described in Article 10. General Testing Methods.

(3) Coliform group

Taken 10 g of sample with a sterilized spoon into Erlenmeyer flask and add sterilized phosphate buffer or sterilized physiological saline to make the final volume of 100 mL. Use this solution as test solution. It is tested according to 3.7 Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(4) The number of bacteria

It is tested according to 3.5.1. The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(5) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

(6) *Enterobacter Sakazakii*

It is tested according to 3.21. *Enterobacter Sakazakii,* 3. Microorganism described in Article 10. General Testing Methods.

(7) *Bacillus Cereus*

It is tested according to 3.18.2 Quantity test, 3.18. *Bacillus Cereus,* 3. Microorganism described in Article 10. General Testing Methods.

(8) Scorched particles

It is tested according to 바) Ice cream powder, non-sugar condensed milk, sugar-added condensed milk, sugar-added skim milk, whole milk powder, fat-free milk powder, sugar-added milk powder and infant formula, 3) Tests for 9.2.2 Foreign Materials in Foods, 9.2. Foreign Materials described in Article 10. General Testing Methods.

19-6 Weight Control Food

1) Definition

Weight control food refers to a product manufactured by adding or deleting some nutritive substances in order to provide whole or some of mean for those who need to increase or decrease his/her weight.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) This food for providing whole or parts of a meal shall be manufactured to assure that vitamin A, B_1, B_2 B_6, C, niacin, folic acid, and vitamin E per one serving shall be included at 25% more than the nutrient reference values and protein, calcium, iron, and zinc per one serving shall be included at 10% more than the nutrient reference values. However, if the product is intented to be used in specific population, the Korean Dietary Reference Intake for such target population may be used.

(2) A formulated food to be used to replace the whole daily meals shall provide the calorie of 800~1200 kcal. Individual servings of such product (3 to 4 times a day) shall have about 1/3 to 1/4 of total daily calorie. For a formulated food to be used to replace one to two meals, each serving shall provide 200~400 kcal. However, the calorie may be calculated based on the labelled intake method.

4) Food Type

5) Specifications

(1) Water(%) : Not more than 10.0 (Limited to powder, granulated, solid dry products)

(2) Crude protein(g) : Above the indication

(3) Vitamins : Not less than the labelled amount [Limited to Vitamin A(μg), B_1(mg), B_2(mg), B_6(mg), C(mg), niacin(mg), folic acid(μg) and Vitamin E(mg)]

(4) Minerals : Not less than the labelled amount (Limited to calcium(mg), iron(mg) and zinc(mg))

(5) Coliform group : Negative

(6) *Bacillus Cereus* : Not more than 100 per 1g

6) Test Method

(1) Water

It is tested according to 1.1.1 water, 1. General composition described in Article 10. General Testing Methods.

(2) Crude protein

It is tested according to 1.1.3.1. Total Nitrogen and Crude Protein, 1. General composition described in Article 10. General Testing Methods.

(3) Vitamins

It is tested according to 1.2.2 Vitamins, 1.2. Micronutrient described in Article 10. General Testing Methods.

(4) Minerals

It is tested according to 1.2.1. Minerals, 1.2. Micronutrient described in Article 10. General Testing Methods.

(5) Coliform group

It is tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(6) *Bacillus Cereus*

It is tested according to 3.18.2. Quantitative test, 3.18. *Bacillus Cereus,* 3. Microorganism described in Article 10. General Testing Methods.

19-7 Food for Pregnant or Lactating Women

1) Definition

Food for pregnant or lactating women refers to a product manufactured or processed to provide whole or parts of a meal to pregnant or lactating women who have different nutritive requirements due to pregnancy, delivery, or lactation.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) Vitamins, inorganic matters, or others added to provide whole or some of meal to pregnant or lactating women shall be uniformly mixed.

(2) Raw materials shall be combined and nutritive substances shall be added on the basis of the Korean Dietary Reference Intake for pregnant or lactating women. The content of nutritive substances to be provided in a day or in a serving shall be adequately adjusted.

4) Food Type

5) specifications

(1) Description : Require to have inherent flavor, color, taste without off-flavor or off-taste

(2) Water (%) : Not more than 10.0 (only to powder or solid dry products)

(3) Nutrient (%) : Not less than the indication

(4) Coliform : Negative

(5) The number of bacteria : Not more than 100 per 1 mL (only to liquid products)

(6) Tar color : Should not be detected

6) Test Method

(1) Water

It is tested according to 1.1.1. water, 1. General composition described in Article 10. General Testing Methods.

(2) Nutrient

It is tested according to 1.2. Micronutrient, 1. General composition described in Article 10. General Testing Methods.

(3) Coliform

It is tested according to 3.7. Coliform, 3. Microorganism described in Article 10. General Testing Methods.

(4) The number of bacteria

It is tested according to 3.5.1. The number of coliform, 3. Microorganism described in Article 10. General Testing Methods.

(5) Tar color

It is tested according to 2.4. Coloring agents described in Article 10. General Testing Methods.

20. Soy Sauces or Pastes

1) Definition

Soy sauces or pastes refer to products manufactured or processed by fermenting raw materials derived from animal or plant source with *Aspergillus* or fermenting or ripening meju (fermented soybeans) with salt and include meju, Korean style soy sauce, brewed soy sauce, acid-hydrolyzed soy sauce, enzyme-hydrolyzed soy sauce, mixed soy sauce, Korean soybean paste, soybean paste, seasoned soybean paste, gochujang (soy paste with red peppers), seasoned soy paste with red peppers, chunjang (black-colored soy paste), cheonggukjang (ground fermented soybean), and mixed paste.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) After fermentation or neutralization, the soy sauce bulk shall be filtered to remove any wastes.

(2) Filtered soy sauce bulk, mixed with seasoning ingredients, food additives, and others, should be handled in a manner to prevent microbial contamination.

(3) Alcoholic ingredient may be used to improve the taste or flavor or remove smells during the manufacture.

(4) Monascus pigment shall not be used in the manufacture of soy paste with red peppers. Citrinin shall not be detected.

4) Food Type

(1) Meju (fermented soybeans)

① Korean style meju

Korean style meju refers to a product made by steaming or boiling soybeans, and molding and fermenting them.

② Improved meju

Improved meju refers to a product made by steaming or boiling soybeans and fermenting them with selected seed culture.

(2) Korean Style Soy Sauce

① Traditional Korean style soy sauce

Traditional Korean style soy sauce refers to soy sauce made by mixing Korean style meju with saline solution, fermenting/ripening it and processing the filtrate.

② Improved Korean style soy sauce

Improved Korean style soy sauce refers to a product made by mixing improved meju with saline solution, fermenting/ripening it and processing the filtrate.

(3) Brewed Soy Sauce

Brewed soy sauce refers to a product made by mixing soybean, defatted soybean and grain with saline solution and fermenting and ripening them with *Aspergillus* and processing the filtrate.

(4) Acid-hydrolyzed Soy Sauce

Acid-hydrolyzed Soy Sauce refers to a product made by hydrolyzing raw materials containing protein or carbohydrate with acid and processing the filtrate.

(5) Enzyme-hydrolyzed Soy Sauce

Enzyme-hydrolyzed soy sauce refers to a product made by hydrolyzing raw materials containing protein or carbohydrate with enzyme and processing the filtrate.

(6) Mixed Soy Sauce

Mixed soy sauce refers to a product made by mixing soy sauce or Korean style soy sauce with acid-hydrolyzed soy sauce or enzyme-hydrolyzed soy sauce, by processing the filtrate after fermenting crude acid-hydrolyzed soy sauce with protein or carbohydrate source or by processing the mixture of crude soy sauce or acid-hydrolyzed soy sauce and the crude solution.

(7) Korean Soybean Paste

Korean soybean paste refers to a product made by adding saline solution to Korean style meju, fermenting it, and separating the filtrate.

(8) Soybean Paste

Soybean paste refers to a product made by mixing soybean, rice, barley, wheat or defatted soybean with edible salt and fermenting/ripening them with *Aspergillus* or fermenting meju in saline solution, separating the filtrate and processing it.

(9) Seasoned soybean paste

Seasoned soybean paste refers to a product made by using the soybean paste (not less than 90%) as a main material and adding foods or food additives.

(10) Gochujang (soy paste with red peppers)

Gochujang(soy paste with red peppers) refers to a product made by using the soybeans or grains as main material, fermenting them with *Aspergillus*, adding powdered red peppers (not less than 6%), salt, and others, fermenting or ripening them, and adding powdered red peppers (not less than 6%), salt, and others.

(11) Seasoned gochujang (seasoned soy paste with red peppers)

Seasoned soy paste with red peppers refers to a product made by adding foods or food additives to gochujang (not less than 90%).

(12) Chunjang (black-colored soy paste)

Black-colored soy paste refers to a product made by fermenting the soybeans, rice, barley, wheat, or fat-free soybeans with *Aspergillus*, and adding salt, caramel colors, and others, then fermenting or ripening, or by adding salt, caramel colors, and others after ripening.

(13) Cheonggukjang (ground fermented soybean)

Ground fermented soybean refers to soybean paste, pill, or powder made by fermenting soybeans with *Bacillus spp*. or adding the powdered red peppers, garlic, and others to such fermented soybeans.

(14) Mixed paste

Mixed paste refers to a product made by mixing the soy sauce, soybean paste, soy paste with red peppers, black-colored soy paste, and/or ground fermented soybean, or adding foods or food additives to such mixture (soy sauces or pastes: not less than 50%).

(15) Others

Soy sauce, soybean paste, or soy paste with red peppers not including one of (2) to (11).

5) Specifications

(1) Total nitrogen(w/v%) : More than 0.8(Limited to soy sauce; for Korean style soy sauce, not less than 0.7)

(2) Tar color : Should not be detected

(3) Aflatoxin (㎍/kg) : Not more than 10 (as B_1; Limited to meju)

(4) Coliform : Negative [Limited to mixed paste (sterilized one)]

(5) *Bacillus cereus* : Not more than 10,000 per 1 g (Excluding meju and soy sauce)

(6) Preservatives (g/kg; for soy sauce, g/L) : Any preservative except the followings should not be detected (for meju, no detection)

Sorbic acid Potassium sorbate Calcium sorbate	Not more than 1.0 (as sorbic acid; except soy sauce; for cheonggukjang, limited to non-dried products)
Benzoic Acid Sodium Benzoate Potassium Benzoate Calcium Benzoate	Not more than 0.6 (as benzoic acid; limited to soy sauce)
Methyl *p*-Hydroxybenzoate Butyl *p*-Hydroxybenzoate Ethyl *p*-Hydroxybenzoate Propyl *p*-Hydroxybenzoate Isobutyl *p*-Hydroxybenzoate Isopropyl *p*-Hydroxybenzoate	Not more than 0.25 (as *p*-Hydroxybenzoate; limited to soy sauce)

6) Test Method

In case of powdered products, a sample should be diluted with distilled water depending on an indicated concentration or dilution factor.

(1) Total Nitrogen

Add water to 10 mL of sample to a total volume of 100 mL and 20 mL out of it is used for the test. It is tested according to 1.1.3.1. Total Nitrogen and Crude Protein, 1. General composition described in Article 10. General Testing Methods.

(2) Tar color

It is tested according to 2.4. Coloring Agent described in Article 10. General Testing Methods.

(3) Aflatoxin

It is tested according to 6.1. Mycotoxin in food in Article 10. General Testing Methods.

(4) Coliform

It is tested according to 3.7. Coliform, 3. Microorganism described in Article 10. General Testing Methods.

(5) Preservatives

It is tested according to 2.1. Preservatives described in Article 10. General Testing Methods.

21. Seasonings

Seasonings refer to ingredients used for stimulating appetite in manufacturing or cooking dishes; they contain vinegars, sauces, tomato ketchup, curry, powdered red pepper or shredded red pepper, spice products, and composite seasonings.

21-1 Vinegars

1) Definition

Vinegar refers to brewed vinegar that is manufactured by fermenting grains, fruits or alcoholic drinks, or by mixing and ripening them with grain-saccharified solution or fruit juice, or synthetic vinegar that is manufactured by diluting glacial acetic acid or acetic acid with drinking water.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) Brewed vinegar and synthetic vinegar shall not be mixed.

4) Food Type

(1) Brewed Vinegar

Brewed vinegar refers to a solution produced by acetic acid fermentation with fruit mash (main) and pressed fruit juice, grain-saccharified solution, spirits and sugars and by addition of grain-saccharified solution or fruit juice to them and ripening them. Specially, the above solution made of mainly persimmon is called persimmon vinegar.

(2) Synthetic Vinegar

Synthetic vinegar refers to a solution produced by diluting glacial acetic acid or acetic acid with drinking water.

(3) Other Vinegars

Vinegars unspecified in the above (1)~(2).

5) Specifications

(1) Total Acid (as acetic acid; w/v%) : 4.0 ~ 29.0 (more than 2.6 in case of persimmon vinegar)

(2) Tar color : Should not be detected

(3) Preservatives (g/L) : Any preservative except the followings should not be detected

Methyl *p*-Hydroxybenzoate Butyl *p*-Hydroxybenzoate Propyl *p*-Hydroxybenzoate Ethyl *p*-Hydroxybenzoate Isobutyl *p*-Hydroxybenzoate Isopropyl *p*-Hydroxybenzoate	Not more than 0.1(as *p*-Hydroxybenzoate)

6) Test Method

(1) Total Acid

Get a 10 mL sample and add some distilled water that is boiling and cooling to a total volume of 100 mL, take the 20 mL out of it and titrate it with 0.1 N sodium hydroxide by using the indicator, phenolphthalein solution.

0.1N sodium hydroxide 1 mL = 0.006 g CH_3COOH

(2) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

(3) Preservatives

It is tested according to 2.1. Preservatives described in Article 10. General Testing Methods.

21-2 Sauces

1) Definition

Sauces refer to seasonings produced by adding spices, fermented pastes, sugars, edible salt and vinegar to animal/ vegetable substances, or by fermenting and ripening the former mixture, which are used to increase tastes before/ after cooking. Products of which specifications are defined otherwise are excluded.

2) Requirements of Raw Material

(1) Alcoholic substances are allowed to use for the purpose of improving the flavors.

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Coliform group : Negative

(2) The number of bacteria : Negative(Limited to pasteurized products)

(3) Tar color : Should not be detected

(4) Preservatives (g/kg) : Any preservative except the followings should not be detected

Methyl *p*-Hydroxybenzoate Butyl *p*-Hydroxybenzoate Propyl *p*-Hydroxybenzoate Ethyl *p*-Hydroxybenzoate Isobutyl *p*-Hydroxybenzoate Isopropyl *p*-Hydroxybenzoate	Not more than 0.2(as *p*-Hydroxybenzoate)

6) Test Method

(1) Coliform group

It is tested according to 3.7. Coliform, 3. Microorganism described in Article 10. General Testing Methods.

(2) The number of bacteria

It is tested according to 3.5.1. The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(3) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

(4) Preservatives

It is tested according to 2.1. Preservatives described in Article 10. General Testing Methods.

21-3 Tomato Ketchup

1) Definition

Tomato ketchup refers to a type of sauce produced by adding sugars, vinegar, edible salt, spices and citric acid to tomato or concentrated tomato (not less than 20% based on 25% of soluble solid content).

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Tar color : Should not be detected

(2) Coliform group : Negative

(3) Preservatives (g/kg) : Any preservative except the followings should not be detected

Sorbic Acid Potassium Sorbate Calcium sorbate	Not more than 0.5(as sorbic acid)

6) Test Method

(1) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

(2) Coliform group

Put 50 g of sample into sterilized diluted solution, add sterilized phosphate buffered dilution water or sterilized saline solution to a total volume of 500 mL. put it into a mixer for 15 minutes and take the homogenized solution as the test solution. After then, the 10 mL, 1 mL and 1 mL of x10 diluted solution are tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(3) Preservatives

It is tested according to 2.1. Preservatives described in Article 10. General Testing Methods.

21-4 Curry

1) Definition

Curry refers to curry powder made of spices or the curry powder added with food or food additives.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

(1) Curry powder

Curry powder refers to a product made of drying and powdering natural spices, such as turmeric, ginger, coriander, or cumin.

(2) Curry

Curry refers to a product made of the curry powder added with food or food additives (5% or more curry powder in case of solid or powdered products; 1% or more curry powder in liquid products).

5) Specifications

(1) Tar color : Should not be detected

(2) The number of bacteria : Negative (Limited to liquid products)

(3) Coliform group : Negative (Limited to liquid products)

6) Test Method

(1) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

(2) The number of bacteria

Wash the container of the sample with cotton of 70% alcohol, open it with a pasteurized tool, take 10 g of sample sterilely into a sterile bottle, add sterilized phosphate buffered dilution water or sterilized saline solution to a total volume of 100 mL and shake it. Take it as the sample and it is tested according to 3.5.1. The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(3) Coliform group

Sample is prepared with the same method for (2), and it is tested according to 3.7.3. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

21-5 Red Pepper Powder or Shredded Red Pepper

1) Definition

Red pepper powder or shredded red pepper refer to chopped/shredded or powdered dried fruits of red pepper or the variants of it belonging to eggplant family.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) Other materials (such as salt, sugars, brans, carbonate, or starch etc.) except red pepper seeds included in the red peppers shall not be added for the manufacture of red pepper powder.

(2) Only red pepper seeds included in red peppers may be used for the manufacture of red pepper powder. Red pepper seeds shall not be separately added for the manufacture of red pepper powder.

(3) Stalks (except calyces) of red peppers shall be removed for the manufacture of red pepper powder. For diseased red peppers, the diseased parts shall be removed.

(4) Red pepper powder shall be packed into packaging materials or containers, such as aluminum-filmed material, PE bottle, and glass material, meeting the standards and specificationss for utensils, containers, and packaging materials. Packing process shall be conducted as soon as possible and finished products shall be protected from humidity and sunlight to prevent deterioration and microbial contamination.

(5) Metal detector shall be installed at the production line.

4) Food Type

(1) Powdered Red Pepper

Powdered red pepper refers to a powdered - dried fruits of red pepper or the variants of it belonging to eggplant family.

(2) Shredded Red Pepper

Shredded red pepper refers to a chopped/shredded - dried fruits of red pepper or the variants of it belonging to eggplant family.

5) Specifications

(1) Water (%) : Not more than 15.0

(2) Ash (%) : Not more than 7.0

(3) Acid-insoluble ash (%) : Not more than 0.5

(4) Adulterant : Should not be detected (such as starch, brans, carbonate and salt etc.)

(5) Mold count (%) : Not more than 20 (Positive ratio, Howard Mold Counting Apparatus; Except shredded red pepper)

(6) Tar color : Should not be detected

6) Test Method

(1) Water

It is tested according to 1.1.1. water, 1. General composition described in Article 10. General Testing Methods.

(2) Ash

Weigh a 2~4 g sample accurately and test it according to 1.1.2. Ash, 1. General Composition described in Article 10. General Testing Methods.

(3) Acid-insoluble ash

Add 25 mL 10% hydrochloric acid to the ash obtained in the above ash test, boil it for 5 minutes, making the insoluble substance as a constant weight, filter it with quantitative filter paper, wash the remaining in a water bath, dry it out, make it ash and take the ash as acid-insoluble ash.

(4) Adulterant

① Starch

Add 10 mL water to a 1 g sample, boil it for 1 ~ 2 minutes silently, cool it down, add 2~3 drops of 0.1 N iodine solution to the supernatant and shake it. Then, showing thick blue ~ purple means starch exists. Otherwise, it can be checked by a microscope.

② Chaff

If xanthogranuloma or stone cells are found when taking a small quantity of sample and observing it with a microscope, it may be suspected that it adulter to chaff.

③ Carbonate

White mass may be observed when observing with a microscope. If the mass is melt with foam by adding 10% hydrochloric acid, it is suspected that it contains carbonate.

④ Salt

It is tested according to 1.2.1.5. salt, 1.2. Micronutrient in Article 10. General Testing Methods.

⑤ Sugar (glucose)

Take 2 g of sample into a round bottom flask with a reflux condenser and perform extraction with 100 mL of 80% ethanol in a water bath (80℃). Conduct the extraction procedure two times. Collect the upper layer and concentrate it under vacuum, add 50 mL of distilled water, and filter it with 0.45 ㎛ membrane filter. Then, analyze it with HPLC. Take 1 g of glucose standard accurately and add water to make the final volume of 100 mL. Use it as standard solution.

. HPLC

— Column : Carbohydrate column

— Column Temp. : 40℃

— Mobile phase : Acetonitrile : Deionized water = 75 : 25(v/v)

— Flow rate : 1.5 mL/min

— Detector : Refractive Index (RI) Detector

(5)The number of Mold

It is tested according to 9.7. the number of mold described in Article 10. General Testing Methods.

(6) Tar color

It is tested according to 2.4. Coloring Agents described in 10. General Testing Methods.

21-6 Spice Products

1) Definition

Spice products refer to the types of spices produced by processing leaves, stems, fruits and roots of flavoring plants used for spices or by adding foods or additives to the former one, which are used to increase taste (Products of which specifications are defined otherwise are excluded.).

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) For natural spice, foods or food additives other than spicing plant parts shall not be added.

(2) Monascus pigment shall not be used in the manufacture of spice products containing red pepper or red pepper powder, Citrinin shall not be detected.

4) Food Type

(1) Natural Spice

Natural spice refers to a spice product produced by powdering or roughly powdering leaves, stems, fruits and roots of flavoring plants.

(2) Spice Formula

Spice formula refers to a spice product produced by mixing foods or additives to the natural spices and processing the mixture.

5) Specifications

(1) Adulterant : Should not be detected (Limited to natural spice)

(2) Tar color : Should not be detected (Excluding processed horseradish or mustard products)

(3) Coliform : Negative (Limited to sterilized products)

(4) *E. Coli* : Negative (Excluding sterilized or dried products)

(5) Mold count (%) : Not more than 10 (positive ratio, Howard Mold Counting Apparatus; limited to red pepper or red pepper containing products)

6) Test Method

(1) Adulterant

① Wheat Flour

When observing it with a microscope, it can be seen that pepper starch is very small and the diameter is about 3 μm but wheat flour is approximately 5~50 μm, which is not proven yet.

② Carbonate

White mass may be observed when observing with a microscope; if the mass is melt by adding 10% hydrochloric acid, it is suspected that it contains carbonate.

③ Indian long pepper(Only to pepper powder)

A. Qualitative analysis by Gas Chromatography

Ⓐ Reagent

ⓐn-Heptadecane standard solution : Prepare 0.5 mg/mL n-Heptadecane standard solution by dissolving n-Heptadecane to n-nucleic acid.

ⓑ Stationary phase : W Chromosorb or Gas Chrome Q (60~100 mesh)

ⓒ Column filler : coat a solid support with 3~5% SP 2100 or 5~10% SE 30

Ⓑ Device

ⓐ Detector : Flame ionization detector(FID)

ⓑ Column : Glass or stainless steel tube (3~4 mm× 1~2 m)

Ⓒ Preparation of Test Solution

Weigh a 10 ~ 20 g sample, put it into an Erlenmeyer flask and extract it by inserting n-nuclear acid as much as a sample could be soaked. Filter the extracted solution and take it as the test solution.

(example of measuring conditions)

- Temperature of inlet : 230~250℃
- Column temperature : 120~150℃
- Detector's temperature : 250℃

Ⓓ Test Procedure

Insert the 1~3 μL of test solution and standard solution each to Gas Chromatography and quantitatively analyze it by comparing the retention time of a peak obtained by the above.

(2) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

(3) Coliform group

It is tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(4) Coliform

It is tested according to 3.8. *Escherichia coli.* 3. Microorganism described in Article 10. General Testing Methods.

(5) The number of Mold

It is tested according to 9.7. The number of mold described in Article 10. General Testing Methods.

21-7 Composite Seasonings

1) Definition

Composite seasonings refer to a product used to give food unique taste and flavor and made by adding sugars, edible salt, spices, protein-hydrolyzed substance, yeast or its extract, food additives and etc. to food and powdering, granulating or drying in solid.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Water(%) : Not more than 8.0

(2) Tar color : Should not be detected

(3) *Escherichia coli* : Negative

6) Test Method

(1) Water

It is tested according to 1.1.1. Water, 1. General composition described in Article 10. General Testing Methods.

(2) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

(3) *Escherichia coli.*

It is tested according to 3.8. *Escherichia coli,* 3. Microorganism described in Article 10. General Testing Methods.

22. Dressings

1) Definition

Dressings refer to products used to improve or increase tastes and flavors of food in manufacturing, processing and cooking food. Edible salt, sugars, spices, eggs and additives are added to oil and vinegar and they are emulsified or manufactured in the form of separate liquid. vegetables, fruits, or others could be added to them. They include dressing and mayonnaise.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

(1) Dressing

It refers to a emulsified and homogenized dressing in semi-solid or liquid status. It does not include mayonnaise.

(2) Mayonnaise

Mayonnaise refers to a dressing made of egg yolk or whole egg, oil (65% or more vegetable oil), vinegar or fruit juice, egg yolk, egg white, protein-hydrolyzed substance, edible salt, sugar, spices, seasoning(amino acid and etc), acidulants, antioxidants and etc.

5) Specifications

Type Category	Dressing	Mayonnaise
(1) Crude fat(%)	Not less than 10	Not less than 65
(2) Coliform	Negative	

6) Test Method

In case of separate liquid type dressing, shake properly and homogenize it for preparing a sample; if dressing with vegetables, homogenize it by using a mixer for 15 minutes.

(1) Crude Fat

It is tested according to 1.1.5.1. Crude fat, 1. General composition described in Article 10. General Testing Methods.

(2) Coliform group

It is tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

23. Kimchies

1) Definition

Kimchi refers to kimchisok, Chinese cabbage Kimchi and etc. that are manufactured through processes of nipping, salting, seasoning with/without fermentation by using Korean cabbages and other vegetables.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) Vegetables to be used in the manufacture of kimchi shall be sufficiently washed to remove foreign materials.

4) Food Type

(1)Kimchisok (seasoned materials for kimchi)

Kimchisok refers to a product made by adding red pepper powder, sugar, and salt to vegetable materials and mixing them. It is the main material for Kimchi..

(2) Chinese Cabbage Kimchi

Chinese cabbage kimchi refers to a product manufactured through processes of salting and seasoning with/without fermentation by using chinese cabbages or its processed one.

(3) Other Kimchi

Other kimchies refer to products manufactured through processes of salting and seasoning with/without fermentation by using vegetables or its processed one, excluding chinese cabbage Kimchi.

5) Specifications

(1) Lead (mg/kg) : Not more than 0.3

(2) Cadmium (mg/kg) : Not more than 0.2

(3) Tar color : Should not be detected.

(4) Preservatives : Should not be detected.

(5) Coliform group : Negative (Limited to sterilized packaged products)

6) Test Method

(1)Lead and Cadmium

It is tested according to 7.1. Harmful Metal described in Article 10. General Testing Methods.

(2) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

(3) Preservatives

It is tested according to 2.1. Preservatives described in Article 10. General Testing Methods.

(4) Coliform group

It is tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

24. Salted and Fermented Seafoods (Jeotkal)

1) Definition

Salted and fermented seafoods refer to seafood products manufactured by fermenting fish, crustacea, Mollusca, Echinodermata etc. partially or wholly with edible salt or by adding other foods or additives to the filtrate of such fermented one; it normally contains salted and fermented seafood, spiced salted and fermented seafood, Joet, spiced/seasoned Jeot and Sikhae.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) Water (including saline solution) shall not be added to increase the weight (except spiced/seasoned jeot).

(2) In the manufacture of changranjeot (salted and fermented pollack tripe), the scrubbing, washing, and light-based inspection (examination of foreign materials) shall be employed.

(3) Utensils shall be treated in a sanitary manner to prevent rust.

4) Food Type

(1) Salted and Fermented Seafood

Salted and fermented seafood refers to a product manufactured by fermenting fish, shells, Mollusca, Echinodermata, and etc(60% or more; based on living animal) partially or wholly with edible salt

(2) Spiced Salted and Fermented Seafood

Spiced salted and fermented seafood refers to a product manufactured by spicing Jeotkal with hot pepper powder, seasonings and others.

(3) Jeot

Jeot refers to a liquid product manufactured by being separated from salted and fermented seafood.

(4) Spiced/Seasoned Jeot

Spiced/seasoned jeot refers to a liquid product manufactured by diluting Jeot and adding salty water or seasonings to it.

(5) Sikhae

Sikhae refers to a liquid product manufactured by adding edible salt, cereals etc. to fish, shells, Mollusca, Echinodermata etc.(60% or more; based on living animal) partially or wholly and fermenting it.

5) Specifications

(1) Total Nitrogen(%) : Not less than 1.0 for Jeot, (not less than 0.8 for Jeot with fermented Mysidacea), not less than 0.5 for spiced/seasoned Jeot

(2) Coliform group : Negative (Limited to Jeot and spiced/seasoned Jeot)

(3) Tar color : Should not be detected

(4) Preservatives (g/kg): Any preservative except the followings should not be detected (Limited to products in which edible salt is contained not more than 8%)

Sorbic Acid Potassium Sorbate Calcium sorbate	Not more than 1.0 (as sorbic acid)

(5) *E. Coli* : Should be Negative (Excluding Jeot and spiced/seasoned Jeot)

6) Test Method

(1) Total Nitrogen

It is tested according to 1.1.3.1. Total Nitrogen, Crude Protein, 1. General composition described in Article 10. General Testing Methods.

(2) Coliform group

It is tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(3) Tar color

It is tested according to 5. Coloring Agents described in Article 10. General Testing Methods.

(4) Preservatives

It is tested according to 2.4. Preservatives described in Article 10. General Testing Methods.

(5) Edible salt

It is tested according to 1.2.1.5. edible salt, 1.2. Micronutrient described in Article 10. General Testing Methods.

(6) *E. Coli*

It is tested according to 3.8. *E.Coli*, 3. Microorganism described in Article 10. General Testing Methods.

25. Pickles

1) Definition

Pickles refer to products manufactured by pickling vegetables, fruits, seasonings, edible wild plants, marine products and others with edible salt, vinegar, sugars or bean pastes or by adding other foods or additives to the former products. Products of which specifications are defined otherwise are excluded.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

(1) Pickled Food

Pickled food refers to a product made by salting main ingredients with salt, soy sauce, or vinegar or mixing them and then treating them with spices. It includes salt-pickled food, soy sauce-pickled food, or vinegar-pickled food etc.

(2) Sugaring Food

Sugaring food refers to a product manufactured by picking the main ingredients with sugars such as honey, sugar and etc or after then, adding other foods or additives to the mixture; If water contents are not more than 10%, it is called dried sugaring products.

5) Specifications

(1) The number of bacteria : Negative (Limited to sterilized products)

(2) Coliform group : Negative (Limited to pasteurized or sterilized products)

(3) Tar color : Should not be detected (Excluding sealed/pasteurized/sterilized pickled cucumber, pickled ginger and pickled Japanese apricot)

(4) Sulfur dioxide (g/kg) : Less than 0.03 (Limited to dried sugaring products)

(5) Preservatives (g/kg) : Any preservative except the followings should not be detected

Sorbic Acid Potassium Sorbate Calcium sorbate	Not more than 1.0 (as sorbic acid; excluding sugaring products and vinegar-preserved products)
	Not more than 0.5 (as sorbic acid; limited to vinegar-preserved products and sugaring products (Excluding dried sugaring products))
Benzoic Acid	Not more than 1.0 (as benzoic acid; limited to pickled cucumber with acetate)

Sodium Benzoate Potassium Benzoate Calcium Benzoate	

6) Test Method

(1) The number of bacteria

It is tested according to 3.5.1.The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(2) Coliform group

It is tested according to 3.7. Coliform group, 3. Microorganism test method described in Article 10. General Testing Methods.

(3) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

(4) Sulfur dioxide

It is tested according to 2.5. Sulfurous, Hyposulfite and the salts in Article 10. General Testing Methods.

(5) Preservatives

It is tested according to 2.1. Preservatives described in Article 10. General Testing Methods.

26. Hard-boiled Foods

1) Definition

Hard-boiled foods refer to products manufactured by adding edible salt, bean paste/sauces, sugars and etc to animal/vegetable ingredients and cooking/ roasting(parching) or processing/ seasoning it.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

(1) Hard-boiled Agricultural Product

Hard-boiled agricultural product refers to a product manufactured by adding edible salt, soy sauce and sugars to agricultural products and boiling or roasting it.

(2) Hard-boiled Marine Product

Hard-boiled marine product refers to a product manufactured by adding edible salt, soy sauce and sugars to marine products and boiling or roasting it.

(3) Hard-boiled Livestock Product

Hard-boiled livestock product refers to a product manufactured by adding salt, soy sauce, or sugar to livestock products and boiling or roasting it.

5) Specifications

(1) The number of bacteria : Negative(Limited to sterilized products)

(2) Coliform group : Negative(Limited to pasteurized or sterilized products)

(3) Tar color : Should not be detected

(4) Preservatives(g/kg) : Any preservative except the followings should not be detected

Sorbic Acid Potassium Sorbate Calcium sorbate	Not more than 1.0(as sorbic acid; only to lees such as red bean etc.)

6) Test Method

(1) The number of bacteria

It is tested according to 3.5.1. The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(2) Coliform group

It is tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(3) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing methods.

(4) Preservatives

It is tested according to 2.1. Preservatives described in Article 10. General Testing Methods.

27. Alcoholic Beverages

Alcoholic beverages refer to alcoholic liquors, which are manufactured by fermenting grain, potatoes, fruits and/or starches, specified in the Liquor Tax Law; they contain brewed alcoholic liquor and spirits distilled alcoholic liquor.

27-1 Takju(Korean Turbid Rice Wine)

1) Definition

Takju (Korean turbid rice wine) refers to a product that is turbidly manufactured of mother brew fermenting raw starchy materials and the Koji as its main materials.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Ethanol (v/v%) : Conform to the Liquor Tax Law.

(2) Total Acid (w/v%) : Not more than 0.5 (as Acetic acid)

(3) Methanol (mg/ mL) : Not more than 0.5

(4) The Number of Fungi : Negative (only to sterilized Takju)

(5) Preservatives (g/L) : Any preservative except the followings should not be detected.

Butyl *p*-Hydroxybenzoate	Not more than 0.05

6) Test Method

(1) Ethanol

Conform to the Liquior Tax Law.

(2) Total Acid

Add 30 mL cooled water after boiling to a 20 mL sample and titrate it with 0.1N sodium hydroxide. For the indicator, use the neutral red/ BTB mixture reagent.

$$\text{Total acid(w/v \%)} = \frac{0.006 \times V \times f}{S} \times 100(\text{as acetic acid})$$

V : consumption of 0.1N NaOH(mL)

f : factor of 0.1N NaOH

S : sample(mL)

(3) Methanol

① Fuchsin(e) sulfite

A. Reagents

Ⓐ Potassium permanganate solution

Add water to 75 mL phosphoric acid to a total volume of 500 mL and melt 15 g potassium permanganate in it

Ⓑ Oxalic acid solution

Add water to the same amount of sulfuric acid, cool it down and melt 25 g oxalic acid to the 500 mL of it.

Ⓒ Fuchsin(s) sulfite solution

ⓐ Melt 0.5 g basic fuchsin(s) to 300 mL water and cool it down.

ⓑ Melt 5 g sodium sulfate anhydrous to 50 mL water.

While stirring ⓑ solution, add it to ⓐ. After then, mix 5 mL hydrochloric acid and stir it. Dilute the mixture with water, obtaining the 500 mL. After leaving it for 5 hours upon the preparation, use it. Store the reagent into a brown bottle and preserve it in a cool and dark place.

B. Test

Add 15 mL water to the 100 mL sample and distill it to get the 100 mL solution, add 40 mL water to 10 mL of it and use it as the test solution.

Put the 5 mL test solution and standard colorimetric methanol solution to two test tubes of which shapes are not different, add 2 mL potassium permanganate and leave the mixture for 15 minutes. After then, add 2 mL oxalic acid solution to them to discolor potassium permanganate.

Once it is discolored completely, add 5 mL fuchsin(s) sulfite solution to each test tube, shake them, leaving them for half an hour at ambient temperature and comparing the color of the sample to that of standard solution, follow by the below table or calculate the content of methanol in a sample by measuring the absorbance at 585 nm. The amount of methanol (mg) contained in 1 mL of the sample is equivalent to the value calculated by multiplying the amount of methanol (mg) in 1 mL of the sample solution by 5.

Standard Colorimetric Methanol Solution

Mixture rate No.	0.1% Methanol (mL)	95% Methanol (mL)	Water (mL)	Methanol contained in 1 mL sample(mL)
1	0.05	0.25	4.70	0.01
2	0.10	0.25	4.65	0.02
3	0.15	0.25	4.60	0.03
4	0.20	0.25	4.55	0.04
5	0.30	0.25	4.45	0.06
6	0.40	0.25	4.35	0.08
7	0.50	0.25	4.25	0.10
8	0.60	0.25	4.15	0.12
9	0.75	0.25	4.00	0.15
10	1.00	0.25	3.75	0.20
11	1.25	0.25	3.50	0.25
12	1.50	0.25	3.25	0.30
13	1.75	0.25	3.00	0.35
14	2.00	0.25	2.75	0.40
15	2.50	0.25	2.25	0.50

② Gas chromatography

A. Reagents

Ⓐ Internal Standard : Prepare n-butyl alcohol to make the final concentration of 10-100 mg/L.

Ⓑ Methanol Standard : Dissolve methanol (special grade) in water to make the final concentration of 10-100 mg/L.

B. Test

Take the sample solution into 100 mL measuring flask calibrated at 15℃, transfer the sample solution to about 300-500 mL flask, wash the measuring flask with water of about 15 mL two times, add the water to the flask, connect it to a condenser, and distilled it with use of the measuring flask for collection. When 70 mL of water is left (about 20 minutes), stop the distillation, add the internal standard to make the final concentration of 10-100 mg/L, add water to the measuring flask calibrated at 15℃ to the full, and shake it. This solution is used as test solution. Inject 1-5 μL of test solution into a gas chromatograph, obtain the height or area of the methanol peak from the chromatogram, and calculate the content of methanol with use of a standard curve previously made according to the same procedures with methanol standard solutions.

C. Operating conditions

Ⓐ Instrument : Gas chromatograph/ FID

Ⓑ Column : capillary column coated with polyethylene glycol, 50 m× 0.2 mm × 0.3 ㎛,
or other equivalent column

Ⓒ Column Temp. : 60~150℃

Ⓓ Injector Temp. : 150~200℃

Ⓔ Detector Temp. : 150~200℃

Ⓕ Carrier gas : N_2 or He

Ⓖ Flow rate of carrier gas : 1 mL/min

(4) The Number of Fungi

It is tested according to 3.10. The Number of Fungi, 3. Microorganism described in Article 10. General Testing Methods.

(5) Preservatives

It is tested according to 2.1. Preservatives described in Article 10. General Testing Methods.

27-2 Yakju (Korean Cleared Rice Wine)

1) Definition

Yakju(Korean cleared rice wine) refers to a product that is filtered and manufactured of mother brew fermenting raw starchy materials and the Koji as its main materials.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Ethanol (v/v%) : Conform to the Liquor Tax Law.

(2) Total Acid (w/v%) : Not more than 0.7(as Acetic acid)

(3) Methanol (mg/mL) : Not more than 0.5

(4) The Number of Fungi : Negative (Limited to sterilized products)

(5) Preservatives (g/L) : Any preservative except the followings should not be detected.

Para-oxy-butyl benzoic acid	Not more than 0.05

6) Test Method

(1) Ethanol

Conform to the Liquor Tax Law.

(2) Total acid

It is tested according to (2) Total acid, 6) Test method in 27-1 Takju.

(3) Methanol

It is tested according to (3) Methnol, 6) Test method in 27-1 Takju.

(4) The Number of Fungi

It is tested according to 3.10. The number of fungi, 3. Microbiological method in Article 10. General Testing Methods.

(5) Preservatives

It is tested according to 2.1. preservatives in Article 10. General Testing Methods.

27-3 Sake

1) Definition

Sake refers to a product that is filtered and manufactured of mother brew fermenting raw starchy materials and the Koji as its main materials or may add alcoholic beverages etc. during manufacturing procedure.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Ethanol (v/v%) : Conform to the Liquor Tax Law.

(2) Total Acid (w/v%) : Not more than 0.3 (as succinic acid)

(3) Methanol (mg/mL) : Not more than 0.5

6) Test Method

(1) Ethanol

Conform to the Liquor Tax Law.

(2) Total Acid

It is tested according to (2) Total Acid, 6) Test Method in 27-1 Takju(Korean turbid rice wine).

Note that 1 mL 0.1 N sodium hydroxide solution = 0.0059 g succinic acid.

(3) Methanol

It is tested according to (3) Methanol, 6) Test Method in 27-1 Takju(Korean turbid rice wine).

27-4 Beer

1) Definition

Beer refers to a product manufactured by fermenting malt or malt & raw starchy materials and hop and filtering them.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Ethanol (v/v%) : Conform to the Liquor Tax Law.

(2) Methanol (mg/mL) : Not more than 0.5

6) Test Method

(1) Ethanol

Conform to the Liquor Tax Law.

(2) Methanol

It is tested according to (3) Methanol, 6) Test Method in 27-1 Takju(Korean turbid rice wine).

27-5 Fruit Wine

1) Definition

Fruit wine refers to a product manufactured by fermenting fruits or fruit juices and filtering mother brew, or during fermentation, adding fruit, sugars or other alcoholic liquor to it.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Ethanol (v/v%) : Conform to the Liquor Tax Law.

(2) Methanol (mg/ mL) : Not more than 1.0

(3) Preservatives (g/L) : Any preservative except the followings should not be detected .

Sorbic Acid Potassium Sorbate Calcium sorbate	Not more than 0.2(as sorbic acid)
Butyl *p*-Hydroxybenzoate	Not more than 0.05

6) Test Method

(1) Ethanol

Conform to the Liquor Tax Law.

(2) Methanol

It is tested according to (3) Methanol, 6) Test Method in 27-1 Takju(Korean turbid rice wine).

(3) Preservatives

It is tested according to 2.1. Preservatives described in Article 10. General Testing Methods.

27-6 Soju (Korean Distilled Liquor)

1) Definition

Soju(Korean distilled liquor) refers to a product which is manufactured by filtering mother brew after fermenting raw starchy materials and the Koji or is manufactured with distillation, by diluting the alcohol with water or by adding alcoholic liquor or grain alcohol to it.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Ethanol (v/v%) : Conform to the Liquor Tax Law.

(2) Methanol (mg/ mL) : Not more than 0.5

(3) Aldehyde (mg/100 mL) : Not more than 70.0

6) Test Method

(1) Ethanol

Conform to the Liquor Tax Law.

(2) Methanol

It is tested according to (3) Methanol, 6) Test Method in 27-1 Takju(Korean turbid rice wine).

(3) Aldehyde

Add 45 mL water to a 5 mL sample, put the mixture in a bottle, add 0.01 N sodium bisulfite corresponding to 10 mL 0.01 N iodine solution, shake it and plug it with a stopper. After then, leave it for half an hour, put 10 mL 0.01 N iodine solution, add 2 ~3 drops of starch solution and titrate it with 0.01 N sodium thiosulfate until the blue purple color disappears.

$$\text{Content of aldehyde in a 100 mL sample (mg)} = a \times f \times 0.22 \times \frac{100}{5}$$

a: Amount of 0.01 N sodium thiosulfate(mL) in titration

f: factor of 0.01 N sodium thiosulfate solution

1 mL 0.01 N sodium thiosulfate = 0.22 mg aldehyde

27-7 Whiskey

1) Definition

Whiskey refers to spirits manufactured by distilling germinated grain or fermented mother brew with grain, then ripening it in a wooden container or adding alcoholic liquor.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Ethanol (v/v %) : Conform to the Liquor Tax Law.

(2) Methanol (mg/ mL) : Not more than 0.5

(3) Aldehyde (mg/100 mL) : Not more than 70.0

6) Test Method

(1) Ethanol

Conform to the Liquor Tax Law.

(2) Methanol

It is tested according to (3) Methanol, 6) Test Method in 27-1 Takju(Korean turbid rice wine).

(3) Aldehyde

It is tested according to (3) Aldehyde, 6) Test Method in 27-6 Soju(Korean distilled liquor).

27-8 Brandy

1) Definition

Brandy refers to spirits manufactured by distilling fruit wine (including fruit residues) or mother brew that is fermented with fruit(including fruit juice) or sugars with it and then ripening it in a wooden container or adding alcoholic liquor to them.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Ethanol (v/v%): Conform to the Liquor Tax Law.

(2) Methanol (mg/ mL): Not more than 1.0

(3) Aldehyde (mg/100 mL): Not more than 70.0

6) Test Method

(1) Ethanol

Conform to the Liquor Tax Law.

(2) Methanol

It is tested according to (3) Methanol, 6) Test Method in 27-1 Takju(Korean turbid rice wine).

(3) Aldehyde

It is tested according to (3) Aldehyde, 6) Test Method in 27-6 Soju(Korean distilled liquor).

27-9 General Distilled Liquor

1) Definition

General distilled liquor refers to spirits manufactured by fermenting and distilling starchy substances or sugars or mixing spirits, which do not belong to alcohol, Soju, Whiskey and Brandy, and that are specified in the Liquor Tax Law.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Ethanol (v/v%) : Conform to the Liquor Tax Law.

(2) Methanol (mg/ mL) : Not more than 0.5

(3) Aldehyde (mg/100 mL) : Not more than 70.0

6) Test Method

(1) Ethanol

Conform to the Liquor Tax Law.

(2) Methanol

It is tested according to (3) Methanol, 6) Test Method in 27-1 Takju(Korean turbid rice wine).

(3) Aldehyde

It is tested according to (3) Aldehyde, 6) Test Method in 27-6 Soju(Korean distilled liquor).

.

27-10 Liquor

1) Definition

Liquor refers to alcoholic liquors manufactured by leaching ginseng, fruits(Excluding fruits to be fermented such as grapes) and etc into fermented or distilled alcoholic beverage that is made of starchy substances or sugars, or adding extracts of ginseng, fruits(Excluding fruits to be fermented such as grapes) and etc or substances that are specified in the Liquor Tax Law during fermentation, distillation process.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Ethanol(v/v%): Conform to the Liquor Tax Law.

(2) Methanol(mg/ mL): Not more than 1.0

6) Test Method

(1) Ethanol

Conform to the Liquor Tax Law.

(2) Methanol

It is tested according to (3) Methanol, 6) Test Method in 27-1 Takju(Korean turbid rice wine).

27-11 Other Liquors

1) Definition

Other liquors refer to alcoholic beverages of which specifications and standards are not established, but specified as alcoholic beverages in the Liquor Tax Law.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Ethanol(v/v%) : Conform to the Liquor Tax Law.

(2) Methanol(mg/ mL): Not more than 1.0

6) Test Method

(1) Ethanol

Conform to the Liquor Tax Law.

(2) Methanol

It is tested according to (3) Methanol, 6) Test Method in 27-1 Takju(Korean turbid rice wine).

28. Dried Fish/Shellfish Fillets

1) Definition

Dried fish/shellfish fillets refer to dried shellfish and dried fish(fish fillet) or the processed one with spices and seasonings and contains dried seasoned fish fillet, fish fillet and other dried fish fillet/shellfish.

2) Requirements of Raw Material

(1) Raw fish and shellfish shall be preserved at lower than 5℃.

(2) Raw fish and shellfish shall not contain any natural toxin that may be harmful to human body.

3) Manufacturing and Processing Standards

(1) If necessary, appropriate pasteurization or sterilization shall be conducted and products shall be packed in clean and sanitary containers or packaging materials.

4) Food Type

(1) Seasoned dried Fish Fillet/Shellfish

Seasoned dried fish fillet/shellfish refers to processed fish filet/shellfish that is seasoned and dried

(2) Dried Fish Fillet/Shellfish

Dried fish meat/shellfish refers to dried fish meat/shellfish or the chopped ones

(3) Other dried Fish /Shellfish Fillet

Dried Fish fillet/shellfish refers to those unspecified in the above (1)~(2).

5) Specifications

(1) Sulfur dioxide (g/kg) : Less than 0.03

(2) *Escherichia coli.* : Negative (Limited to seasoned dried shellfish/fish fillet)

(3) *Staphylococcus aureus* : Not more than 100/ g (Limited to seasoned dried Fish Fillet/Shellfish)

6) Test Method

(1) Sulfur dioxide

It is tested according to 2.5. Sulfurous, Hyposulfite and their salts in Article 10. General Testing Methods.

(2) *Esherichia coli.*

It is tested according to 3.8. *Escherichia coli,* 3. Microorganism described in Article 10. General Testing Methods.

(3) *Staphylococcus aureus*

It is tested according to 3.12.2. Quantitative test, 3.12. *Staphylococcus aureus,* 3. Microorganism described in Article 10. General Testing Methods.

29. Other Foods

Other foods refer to other food unspecified in the above 1. Confectionaries ~ 28. Dried Shellfish and Fish Fillet and includes the following foods.

29-1 Processed Peanut and Nut Products

1) Definition

Processed peanut and nut products refer to products produced by simply processing peanuts and nuts or adding other foods or additives to them; it includes peanut butter and processed nut products.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

(1) Peanut Butter

Peanut butter refers to a product processed by roasting peanut, crushing and adding food and food additives to them

(2) Processed Nut Product

Processed nut product refers to a product, whose main ingredient is nuts, processed by adding sugar, edible oil and etc or food additives to nuts and/or peanuts

5) Specifications

(1) Aflatoxin (μg/kg) : Not more than 10 (as B1)

6) Test Method

(1) Aflatoxin

It is tested according to 6.1.. Mycotoxin described in Article 10. General Testing Methods.

29-2 Capsule

1) Definition

Capsule refers to a type of food produced by formulating food additives such as gelatine, glycerine and etc and food material.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Disintegration test : Should be suitable.

(2) pH : 3.0~7.5

(3) Arsenic (mg/kg) : Not more than 1.5

(4) Heavy metals (mg/kg) : Not more than 50

(5) Preservatives (g/kg) : Any preservative except the followings should not be detected.

Methyl *p*-Hydroxybenzoate Butyl *p*-Hydroxybenzoate Propyl *p*-Hydroxybenzoate Ethyl *p*-Hydroxybenzoate Isobutyl *p*-Hydroxybenzoate Isopropyl *p*-Hydroxybenzoate	Not more than 1.0(as *p*-Hydroxybenzoate)

6) Test Method

(1) Disintegration test

It is tested according to 9.6. Disintegration described in Article 10. General Testing Methods.

(2) pH

Take a 2 g sample, put it in a 100 mL Erlenmeyer flask, add 50 mL water into the flask, maintaining it at 37± 2℃, melt it by shaking and measure it with pH meter.

(3) Arsenic

It is tested according to 7.1. Harmful Metal described in Article 10. General Testing Methods.

(4) Heavy Metal

It is tested according to 7.1.2.8. Heavy metals, 7.1. Harmful Metal described in Article 10. General Testing Methods.

(5) Preservatives

It is tested according to 2.1. Preservatives described in Article 10. General Testing Methods.

29-3 Starches

1) Definition,

Starches refer to powder products made by processes of grinding, screening and separation of raw starch.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) Other kind of starch shall not be mixed at all.

4) Food Type

(1) Starch

Starch refers to a powder product made of starchy substances from potatoes or sweet potatoes produced by processes of grinding, screening and separation.

(2) Other Starch

Food types unspecified in the above (1).

5) Specifications

(1) Water (%)

① Potato starch : Not more than 20.0

② Sweet potato starch : Not more than 18.0

③ Other starch : Not more than 15.0

(2) Ash(%) : Not more than 0.4

(3) Acidity(consumption of 0.02 N sodium hydroxide) : Not more than 3 mL

6) Test Method

(1) Water

It is tested according to 1.1.1. water, 1. General composition described in Article 10. General Testing Methods.

(2) Ash

Weigh a 3~5 g sample and It is tested according to 1.1.2. Ash,1. General composition described in Article 10. General Testing Methods.

(3) Acidity

Weigh a 5 g sample accurately, add 20 mL distilled water to it and titrate the turbid solution with 0.02 N sodium hydroxide solution. For the indicator, use BTB(Brome-Thimol-Blue) reagent and the end point is when it turns blue.

29-4 Processed Fruit/Vegetable Products

1) Definition

Processed fruits and vegetables products refer to processed products, purèe, and pastes made by manufacturing or processing fruits or vegetables or adding food or food additives to fruits or vegetables. (However, food for which standards and specifications is specified otherwise, conform to the standard)

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

(1) Processed Fruit/ Vegetable Product

Fruit/ vegetable product refers to a product manufactured by using the simply-processed fruits/vegetables or fruits/vegetables as main raw material and adding food or food additives to them.

(2) Fruit/ Vegetable Puree and Paste

Fruit/ vegetable puree and paste refers to a product manufactured by squashing or concentrating vegetables or fruits.

5) Specifications

Type Category	Processed fruit/vegetable product	Fruit/vegetable puree and paste
(1) Soluble solid content excepting free salt (%)	-	8 ~24(24 and more in case of fruit & vegetable paste)
(2) Coliform	Negative	Negative

(3) Tar color	Not be detected	Not be detected

6) Test Method

(1) Soluble solid content excepting free salt

The content(%) refers to the value indicated when adjusting a refractometer and sample to be 20℃ and taking a sample on prism of the refractometer. Apart from it, take a 2 ~ 5 g sample and It is tested according to 1.2.1.5. edible salt, 1.2. Micronutrient described in Article 10. General Testing Methods. Considering the amount(%) of edible salt from above the soluble solid content(%), calculate Soluble solid content excepting free salt.

(2) *Escherichia coli*

It is tested according to 3.8. *Escherichia coli,* 3. Microorganism described in Article 10. General Testing Methods.

(3) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

29-5 Seasoned Laver

1) Definition

Seasoned laver refers to a laver product produced by processing dry laver(including rare-roasted laver) with seasonings or edible salt.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Acid value : Not more than 4.0 (Limited to laver treated with oil)

(2) Peroxide value : Not more than 60.0 (Limited to laver treated with oil)

(3) Tar color : Should not be detected

6) Test Method

(1) Acid Value

It is tested according to (2) Acid Value, 6) Test Method in 1. Confectionaries.

(2) Peroxide Value

The same fat prepared for the analysis of Acid value is used for the measurement of Peroxide Value. 1-5 g of fat is weighed to be tested according to 1.1.5.3.5. Peroxide Value, 1. General composition described in Article 10. General Testing Methods.

(3) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

29-6 Fried Foods

1) Definition

Fried foods refers to fried or oil-treated food that is not specified otherwise in the food code.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Acid Value : Not more than 5.0

(2) Peroxide Value : Not more than 60.0

(3) Unallowable Tar color : Should not be detected

6) Test Method

(1) Acid Value

It is tested according to (1) Acid Value, 6) Test Method in 1. Confectionaries.

(2) Peroxide Value

The same fat prepared for the analysis of Acid value is used for the measurement of Peroxide Value. 1-5 g of fat is weighed to be tested according to 1.1.5.3.5. Peroxide Value, 1. General composition described in Article 10. General Testing Methods.

(3) Unallowable Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

29-7 Honey

1) Definition

Honey refers to a product collected from honeycomb in which honeybees collect honey; especially, it designates pure honey without any addition of pollen, royal jelly, sugars, sweeteners and so on.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Water (%) : Not more than 21.0

(2) Water insoluble solids (%)**:** Not more than 0.5

(3) Acid Value (meq/kg) : Not more than 40.0

(4) Invert Sugar (%) : Higher than 65.0

(5) Saccharose (%) : Not more than 7.0

(6) Hydroxymethylfurfural (mg/kg) : Not more than 80.0

(7) Tar color : Should not be detected.

(8) Artificial Sweetener : Should not be detected

(9) Isomerized Sugar : Negative

6) Test Method

(1) Water

In case honey does not contain any crystal, stir it well; otherwise, put it into an airtight container, heat it up at 60 ~ 65℃ for half an hour to melt it down completely, rapidly cool it down and take the well-stirred one as the sample. (It is not allowed that a sample is heated up in hydroxymethylfurfural test). In the below relating to honey, a sample refers to the above formula.

Measure the refraction index of a sample around 20℃ and calculate the water amount according to the following water conversion table.

Temperature compensation : above 20°……add 0.00023 per 1°.

: below 20°……subtract 0.00023 per 1°.

Water Conversion Table

RI(20°)	water(%)	RI(20°)	water(%)	RI(20°)	water(%)
1.5044	13.0	1.4935	17.2	1.4830	21.4
1.5038	13.2	1.4930	17.4	1.4825	21.6
1.5033	13.4	1.4925	17.6	1.4820	21.8
1.5028	13.6	1.4920	17.8	1.4815	22.0
1.5023	13.8	1.4915	18.0	1.4810	22.2
1.5018	14.0	1.4910	18.2	1.4805	22.4
1.5012	14.2	1.4905	18.4	1.4800	22.6
1.5007	14.4	1.4900	18.6	1.4795	22.8
1.5002	14.6	1.4895	18.8	1.4790	23.0
1.4997	14.8	1.4890	19.0	1.4785	23.2
1.4992	15.0	1.4885	19.2	1.4780	23.4
1.4987	15.2	1.4880	19.4	1.4775	23.6
1.4982	15.4	1.4875	19.6	1.4770	23.8
1.4976	15.6	1.4870	19.8	1.4765	24.0
1.4971	15.8	1.4865	20.0	1.4760	24.2
1.4966	16.0	1.4860	20.2	1.4755	24.4
1.4961	16.2	1.4855	20.4	1.4750	24.6
1.4956	16.4	1.4850	20.6	1.4745	24.8
1.4951	16.6	1.4845	20.8	1.4740	25.0
1.4946	16.8	1.4840	21.0		
1.4940	17.0	1.4835	21.2		

(2) Water insoluble solids

Take 3 g of sample accurately, dissolve it in 200 mL of water (80℃), filter it with a glass filter (15~40 ㎛) previously dried at 135℃ to constant mass, and wash the filter with water (80℃) until any sugar is detected. Transfer the washed water into a test tube and add phloroglucinol solution. Drip a small amount of concentrated sulfuric acid to the wall side of the test tube. If the contact surface becomes discolored, wash it completely until no discoloration occurs. Then, dry the glass filter completely washed at 135℃ for 1 hour and cool it down in a desiccator before weighing. The amount of water insoluble solids is calculated according to the following formula.

$$\text{Water insoluble solids}(\%) = \frac{W_2 - W_1}{W_0} \times 100$$

W_0 = sample (g)

W_1 = weight of glass filter dried to constant mass (g)

W_2 = weight of dried glass filter and water insoluble solids after filtration (g)

[Test solution]

Phloroglucinol solution: Dissolve 1 g of phloroglucinol in 100 mL of ethanol.

(3) Acidity

Weigh a 10.0 g sample, melt it with 75 mL water and titrate it with 0.1 N sodium hydroxide as taking phenolphthalein for the indicator until it turns light red and maintains for 10 seconds.

$$\text{Acidity (meq/kg)} = \frac{A \times f \times 100}{S}$$

a : amount of the 0.1 N sodium hydroxide solution consumed for titration (mL)

f : factor of 0.1 N sodium hydroxide solution

s : sample (g)

(4) Invert sugar and saccharose

① Lane-Eynone Method

A. Invert sugar

Weigh a 26 g sample, melt it in water, transfer it to a 250 mL volumetric flask, add 5 mL alumina cream reagent, fill water up to the indication line and filter it. After then, take the 10 mL remaining solution and dilute it to 250 mL to prepare a test solution. Take Fehling reagent A and B, each 5 mL and 10 mL water to two 200 mL Erlenmeyer flasks respectively. At the moment, add 15 mL sample to it and boil it on asbestos centered iron gauze within two minutes, reduce the thermal power slightly and add 4 drops of 1% methylene blue reagent if the color of copper sulfate fades away and increase it while boiling the solution for a while until the blue color of methylene blue reagent disappears.

Add it by each drop around the end point of titration and be cautious of excessive insertion. The titration should be ended within 3 minutes after it starts boiling. Knowing the estimated titration amount, execute the preliminary test and meet the amount of test solution to 1 ~ 2 mL that is added at the end of the titration.

According to the table of Lane-Eynone invert sugar amount, obtain the amount(A) of invert sugar contained in a 100 mL sample from the total titration amount and calculate the content according to the following formula.

$$\text{Invert sugar}(\%) = A \times f \times \frac{250}{100} \times \frac{250}{10} \times \frac{100}{S} \times \frac{1}{1{,}000}$$

f: factor of Fehling reagent A

S: sample (g)

B. Sucrose

Weigh a 26 g sample accurately, melt it with a small quantity of water, move it to a 100 mL volumetric flask and add 1 mL alumina cream reagent to it. Fill water to the indication line and filter it. Add 25 mL water and 10 mL 20% hydrochloric acid to the 50 mL, transform it to invert sugar at 67℃, neutralize it with sodium carbonate and add some water, preparing the 100 mL. Dilute the 10 mL solution in a volumetric flask to the 250 mL, taking it as the test solution. It is tested according to the above A to get the amount of invert sugar. Invert Sugar to get the amount of invert sugar and finally calculate the amount of Sucrose by subtracting the amount of invert sugar in the above from this amount.

② Liquid Chromatography

A. Reagent

Ⓐ Mobile phase: acetonitrile: water(75:25)

Ⓑ Standard Sugar Solution: weight 1 g glucose, 1 g fructose and 0.1 g Sucrose and put them in a 100 mL volumetric flask and fill water to the indication line.

B. Devices

Ⓐ Detector : Refractive Index (Rl)

Ⓑ Column : Carbohydrate

Ⓒ Solvent filter : solvent clarification kit or similar one

C. Preparation of Test Solution

Weigh 1 g sample accurately and melt it with 25 mL water in a 100 mL volumetric flask, fill acetonitrile to the indication line, filter it with 0.45 μm filter paper and take it as the test solution.

D. Test Operation

(Example of Measurement Conditions of Liquid Chromatography)

o Flow rate : 1.0~1.5 mL/min

o Injection of test solution : 10~20 μL

o Attenuation : 8×

As in the above conditions, inject each 10~20 μL test solution and standard sugar solution, to Liquid Chromatography and calculate the amount of invert sugar(glucose + fructose) and sucrose in a sample according to the height or area of peak.

$$\text{Sugar}(\%) = \frac{pH}{pH'} \times \frac{V}{V1} \times \frac{W1}{W} \times 100$$

pH, pH': Height or area of a test solution and standard solution

V, V1: Total amounts of test solution and standard solution (mL)

W, W1: Collected amounts of a sample an standard sugar (g)

(5) Hydroxymethylfurfural

① Spectrophotometry

A. Preparation of a test solution

Weigh a 5 g sample accurately, melt it with 25 mL water and move it to a 50 mL volumetric flask. Put 0.5 mL 15% potassium ferrocyanide to it, add 0.5 mL 30% zinc acetate solution to it, mix them well, fill some water up to the indication line(add a drop of alcohol once it foams), filter it, throw out the first 10 mL and take the remaining solution as the test solution.

B. Test Operation

Put each 5 mL test solution into two test tubes, add 5 mL water and 5 mL 0.2% sodium hydrogen sulfite solution for a blank test tube, respectively, mix two tubes and measure the absorbance of both tubes at 284 nm and 336 nm as taking water and 0.1% sodium hydrogen sulfite for the control solutions respectively.

C. Calculation

$$\text{Hydroxymethylfurfural (mg/kg)} = \frac{(A_{284} - A_{336}) \times 149.7 \times 5}{S}$$

A_{284} ad A_{336}: absorbance of each wavelength (substract blank test sol. from test sol.)

S: sample (g)

① Quantitative test by Liquid Chromatography

A. Preparation of standard solution

Prepare HMF(hydroxymethylfurfural) 1 mg/100 mL(10 ppm) solution and dilute it into 10, 5, 2.5, 1 and 0.5 ppm solutions(corresponding to x10 amount of the content in honey).

B. Preparation of test solution

Weigh the 5 g honey, melt it with 50 mL water in a volumetric flask, filter it with 0.45 μm filter paper and take it as the test solution.

C. Test Operation

o Detector : UV detector

o Column : C_{18} column or the similar one

o Insertion : 20 μL

o Mobile phase : Water: Methanol = 90 : 10

o Flow rate : 1.0~1.5 mL/min

o Wavelength : 280 nm

D. Calculation

HMF(mg/kg) =

$$\text{concentration of standard solution} \times \frac{\text{Area of test solution}}{\text{Area of standard solution}} \times \frac{\text{volume of test solution}}{\text{weight of a sample}}$$

(6) Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

(7) Artificial Sweetener

It is tested according to 2.2. Artificial Sweetener described in Article 10. General Testing Method.

(8) Isomerized sugar

① Apparatus

Insert 2 g celite(No. 545) to the column of which outer dia. is 22 mm and length is 370 mm and put 12 g absorbent(activated carbon Darco-G 60 : Celite No. 545 = 1:1) on it, disperse it with 150 mL water. Sediment the absorbent by using an absorption device, put 2 g celite on it, flow 250 mL water to wash it and flow it out until a little of water remains on the supernatant.

② Preparation of test solution

Melt 1 g sample into 10 mL water, put it in a column by using an absorption device, wash it with 300 mL 7% ethanol and flow it out with 100 mL 50% ethanol. Move the discharged solution to a beaker, flow it out with air or nitrogen in a evaporation bath or concentrate it with the similar way. Wash the residues with 1 mL water, move it to a test tube (13 x 100 mm), concentrate it by flowing it out with air or nitrogen while being soaking in a water bath of 60℃, melt the residues with 0.1~0.2 mL water and take it as the test solution.

③ Determination (Thin Layer Chromatography)

As the mixed honey of pure honey, Isomerized sugar and test solution on a straight line away from 2 cm of bottom of silica gel G thin layer, take the 2~6 μL solution that is prepared in the similar way and develop it in a developing solvent. Dry it out after the development, spray out the chromogen, volatilize the solvent, put it in a dryer of 90~95℃ for 15 minutes and colored.

Pure honey shows 1 ~ 2 large spots at 0.35 or more Rf but mixed honey with isomerized sugar or molasses shows a spot from above the starting point. If a sample shows a spot within 0.35 Rf from the starting point, it is determined to be positive.

<Migration solvent>

n-butanol: acetate: water (2 : 1 : 1)

<Chromogen>

Dissolve 1 mL aniline(redistilled with zinc dust before use) and 1 g dipheylamine hydrochloride with 50 mL acetone and add 5 mL 85% phosphoric acid to it. Keep it at 0℃ or prepare it just before use.

29-8 Imitation Cheese

1) Definition

Imitation cheese refers to a kind of food processed by adding food and food additives to vegetable oils and vegetable protein or the processed products and then, emulsifying them.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food type

5) Specifications

(1) Coliform group : Negative

(2) Unallowable Tar color : Should not be detected

6) Test Methods

(1) Coliform group

It is tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(2) Unallowable Tar color

It is tested according to 2.4. Coloring Agents described in Article 10. General Testing Methods.

29-9 Vegetable Cream

1) Definition

Vegetable cream refers to a creamy product processed by adding food or food additives to vegetable oils to be used for filling and decorating cake or bread and increasing tastes of coffee and food.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Water(%) : Not more than 8.0 (Limited to powdered products)

(2) Coliform group : Negative (Excluding dried products)

6) Test Method

(1) Water

It is tested according to 가. Drying under atmospheric heating, 1.1.1.1. Weight reduction by drying, 1.1.1. water described in Article 10.General Testing Methods. Drying time is an hour at 105℃.

(2) Coliform group

It is tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

29-10 Processed Extract Products

1) Definition

Processed extract products refer to those extracted by water from animal/ vegetable substances or processed by adding foods or additives to them. Products of which specifications are defined otherwise are excluded.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) Appropriate filtration is necessary for extraction process.

(2) In case of liquefied, syrup or paste products, they should be sterilized by appropriate methods depending on the characteristics.

4) Food type

(1) Extract product

Extracted product refers to a product from single or mixed raw material or the mixed product from the extracts.

(2) Processed extract product

Processed extracted product refers to a product processed by adding foods or additives to extract products.

5) Specifications

(1) Tar color : Should not be detected

(2) The number of bacteria : Not more than 100 per 1 mL(Limited to products for directly drinking)

(3) Coliform group : Negative(Limited to sterilized products or products for directly drinking)

(4) *Escherichia coli* : Negative(Limited to sterilized products or products for directly drinking)

6) Test Method

(1) Tar color

It is tested according to 2.4. Coloring Agents described in 10. General Testing Methods.

(2) The number of bacteria

It is tested according to 3.5.1. The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(3) Coliform group

It is tested according to 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

(4) *Escherichia coli*

It is tested according to 3.8. *Escherichia coli,* 3. Microorganism described in Article 10. General Testing Methods.

29-11 Processed Corn Products for Popcorn

1) Definition

Processed corn products for popcorn refers to a product processed by adding edible salt, edible fats and oils, butter and additives to popped corn.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

5) Specifications

(1) Unallowable Tar color : Should not be detected

(2) Aflatoxin (μg/kg) : Not more than 10.0(as B1)

6) Test Method

(1) Tar color

It is tested according to 2.4. Coloring Agents described in 10. General Testing Methods.

(2) Aflatoxin

It is tested according to 6.1. Mycotoxin described in 10. General Testing Methods.

29-12 Edible Salts

1) Definition

Edible salts refer to salts processed by reprocessing crystallized sodium chloride obtained from the seawater or rock-salt and refining/ crystalizing seawater.

2) Requirements of Raw Material

(1) Solar sea salt imported for use in food shall be categorized or authorized as an edible salt by the country of origin and shall be produced in a sanitary manner meeting the definition of the sun-dried salt.

(2) Solar sea salt shall not contain any food additives or others.

3) Manufacturing and Processing Standards

4) Food Type

(1) Solar sea salt

Solar sea salt refers to crystal of sodium chloride made through natural distillation of sea water at a salt field.

(2) Reworked salt

Processed salt refers to a product made by dissolving raw salt (100%) in purified water, sea water, or concentrated sea water, and processing it through filtration, precipitation, recrystallization, dehydration, and adjustment of salt degree.

(3) Burnt/melted salt

Burnt/melted salt refers to a product made by modifying raw salt (100%) through burning, melting, or other methods. However, processing of raw salt through washing, grinding, or compression is not included.

(4) Refined salt

Refined salt refers to a product made by dissolving the sun-dried salt, rock salt, or concentrated brine purified through electrodialysis of sea water through ion exchange membrane and processing it in a vacuum evaporator.

(5) Processed salt

Processed salt refers to a product made by adding foods or food additives to sun-dried salt, reworked salt, refined salt, or burnt . melted salt (not less than 50%) and processing it.

5) Specifications

Category / Type	Solar sea salt (Sun-dried unrefined salt)	Reworked salt	Burnt . melted salt	Refined salt	Processed salt
(1) Sodium chloride (%)	NLT 70.0	NLT 88.0	NLT 88.0	NLT 95.0	NLT 35.0
(2) Total chloride(%)	NLT 40.0	NLT 54.0	NLT 50.0	NLT 58.0	NLT 20.0
(3) water(%)	NMT 15.0	NMT 9.0	NMT 4.0	NMT 4.0	NMT 5.5

(4) Insoluble substances(%)	NMT 0.15	NMT 0.02	NMT 3.0	NMT 0.02	-
(5) Sulfate ion(%)	NMT 5.0	NMT 0.8	NMT 1.5	NMT 0.4	NMT 2.5
(6) Sand powder(%)	NMT 0.2	-	NMT 0.1	-	-
(7) Arsenic (mg/kg)	NMT 0.5	NMT 0.5	NMT 0.5	NMT 0.5	NMT 0.5
(8) Lead (mg/kg)	NMT 2.0	NMT 2.0	NMT 2.0	NMT 2.0	NMT 2.0
(9) Cadmium (mg/kg)	NMT 0.5	NMT 0.5	NMT 0.5	NMT 0.5	NMT 0.5
(10) Mercury(mg/kg)	NMT 0.1	NMT 0.1	NMT 0.1	NMT 0.1	NMT 0.1
(11) Ferrocyanide ion (g/kg)	ND	NMT 0.010	NMT 0.010	NMT 0.010	NMT 0.010

NLT : Not Less Than, NMT : Not more than, ND : not detected

6) Test Method

(1) Preparing Sample

Crush the sample that passes through a sieve of 0.84 mm but rarely passes into that of 0.177 mm and mix it well.

(2) Sodium Chloride

It is tested according to 1.2.1.5. edible salt, 1.2. Micronutrient described in Article 10. General Testing Methods.

(3) Total Chloride

Take a 25 mL sample from insoluble substance, neutralize it[1)], move it into a 250 mL volumetric flask and dilute it up to the scale. Take the 25 mL into a beaker accurately, put 1 ~ 2 drops of potassium chromate solution and titrate it with 0.1 N silver nitrate[2)] solution until it sediments in red, calculating the total chloride according to the following formula.

$$\text{Total chloride(Cl)(\%)} = \frac{\text{Consumption of 0.1 N silver nitrate solution (mL)} \times 35.45 \times f}{\text{Sample's Wt.(g)}}$$

f : Concentration coefficient of 0.1 N silver nitrate solution

1) Neutralize it with nitric acid if a sample is alkali; if acid, use ammonia water

2) Preparing 0.1 N silver nitrate solution: melt 17 g silver nitrate into 1,000 mL water as taking potassium chromate solution as the indicator, titrate it with 0.1 N sodium chloride standard solution and determine the concentration coefficient.

(4) Water

It is tested according to 1.1.1. water, 1. General composition described in Article 10. General Testing Methods.

(5) Insoluble Substance

Weight a 10 g sample, put it into a beaker, melt it with 200 mL water, filter it with glass filter which is dried to be a constant weight at 100 ~ 110℃ and wash it until chloride ion does not appears in the solution. The glass filter washed in the above is weighed to calculate the weight of residue after being dried at 100 ~ 110℃. The remaining solution is moved to a 250 mL volumetric flask and diluted up to the scale; it is used for the reagent solution for total chloride and sulfate ion test.

(6) Sulfate Ion

Put a 25 mL sample from insoluble substance into a beaker, add diluted hydrochloric acid(1:1) to 50 mL, boil the sample, add 5% barium chloride gradually to it and heat it up in a water bath. After heating it for 2 hours, filter it with filter paper for quantitative analysis. Wash the residue with hot water until any chloride reaction does not happen and dry it out with filter paper. Put it in a melting pot to carbonize it, heat strongly,incinerate, and cool it down and weigh it, calculating the sulfate ion according to the following formula.

$$\text{Sulfate ion}(SO_4)(\%) = \frac{\text{Weight. of residues (g)} \times 0.4115}{\text{Sample's weight (g)}} \times 1000$$

(7) Sand Powder

Take a 2 ~ 5 g sample, melt it in 100 mL water, add 10 mL hydrochloric acid to it and heat it for an hour on a heating plate. Cool it down to ambient temperature, filter it with filter paper(5C) and wash the insoluble substance until chloride ion is not detected. Move the filter paper and insoluble substance to a melting pot that becomes a constant weight beforehand(being cooled down after strongly heating at 850℃), incinerate it at 850℃, cool it down to ambient temperature and measure the weight of a pot, calculating the content.

(8) Arsenic

It is tested according to 7.1. Harmful metal test method described in Article 10. General Testing Methods.

(9) Lead

It is tested according to 7.1. Harmful metal test method described in Article 10. General Testing Methods.

(10) Cadmium

It is tested according to 7.1. Harmful metal test method described in Article 10. General Testing Methods.

(11) Mercury

It is tested according to 7.1.2.4. Mercury, 7.1. Harmful Metal described in Article 10. General Testing Methods.

(12) Ferrocyanide ion

① Reagents

A. Mobile phase: 150 mM sodium cyanide (NaCN) solution : 40 mM sodium hydroxide solution (1:1)

B. Standard solution: Dissolve specified amount of potassium ferrocyanide, sodium ferrocyanide, or calcium ferrocyanide in 0.01 M sodium hydroxide solution to make the final volume of 100 mL (100 ㎍/ mL as ferrocyanide ion).

② Instrument

A. Detector: UV, 218 nm

B. Column: Shodex IC IF-424 or equivalent

C. Solvent filter: Solvent Clarification Kit or equivalent

③ Preparation of Test Solution

Take 2-5 g of sample, dissolve it in 0.01 M sodium hydroxide solution to make the final volume of 50 mL, and filter it through 0.45 ㎛ filter. Use it as test solution. Take a specific amount of standard stock solution and dissolve it in 0.01 M sodium hydroxide solution to make 0.1, 1, 5, and 10 ㎍/mL as ferrocyanide ion. Use them as standard solutions.

④ Test Operation (e.g., high-performance liquid chromatography)

- Flow : 0.8~1.2 mL/min
- Injection volume : 2~10 μL

Inject the test solution and standard solution into HPLC according to the abovementioned conditions. Compare retention times of peaks and prepare the standard curves with peak heights or areas. Then, calculate the content of ferrocyanide ion in test solution.

29-13 Wheat Flours

1) Definition

Wheat flours refer to powder obtained from sieving, grinding, separation, and other processes of edible wheat or addition of foods or food additives to them.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food type

(1) Wheat flour

① Strong flour : Wheat flour made by using hard wheat

② Medium flour : Wheat flour made by using hard and soft wheat

③ Weak flour : Wheat flour made by using soft wheat

(2) Nutrition-enriched wheat flour

Nutrition-enriched wheat flour refers to wheat flour made by adding foods or food additives for the purpose of providing nutritive substances

(3) Other wheat flours

Whole wheat flour, mixed wheat flour, semolina, or others not specified in the above (1) and (2)

5) Specifications

Types / Items	Wheat Flour (Strong, Medium, and Weak)			Nutrition-Enriched Wheat Flour	Other Wheat Flours
	Grade 1	Grade 2	Grade 3		
(1)Appearance	Powder with unique color, no strange taste and odor			Powder with unique color, no strange taste and odor	Coarse particles or powder with unique color, no strange taste and odor
(2)Water content (%)	Not more than 15.5				
(3) Ash (%)	NMT 0.6	NMT 0.9	NMT 1.6	NMT 2.0	NMT 2.0
(4) Sand powder (%)	NMT 0.03				

6) Test Method

(1) Water

It is tested according to 1.1.1. Water, 1. General composition described.

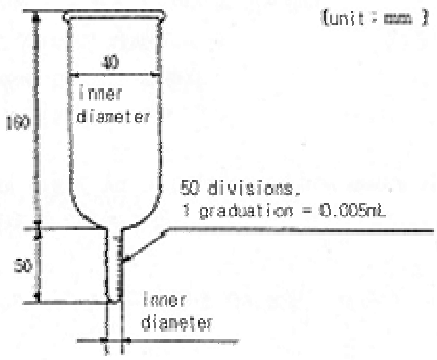
(2) Ash

Weigh a 3~5 g sample and It is tested according to 1.1.2. Ash, 1. General composition described in Article 10. General Testing Methods (water 14% basis).

(3) Sand powder

Take 25 g of sample according to the carbon tetrachloride gravity separation method and mark its weight percentage. A glass bottle (inner diameter - 40 mm, length - 160 mm; fine glass tube at the bottom of 40 mm in length and 3.5 mm in inner diameter; total volume - 0.25 mL; 0.005 mL graduations) is used for measurement of sand powder. Put carbon tetrachloride in the fine glass tube, add 30 mL of carbon tetrachloride, mix it well for 2 minutes with a glass rod, and allow it to stand for 30 minutes. Stir it for 1 minute and allow it to stand for 30 minutes. Then, read the value (mL) of precipitated sand powder (1 mL = 1.25 g) and calculated the content according to the following formula.

$$\text{Sand powder}(\%) = \frac{\text{No. of mL [sand powder]} \times 1.25}{\text{weight of sample}} \times 100$$



[Figure] Bottle for Measurement of Snad powder

※ Actual Bottle for Measurement of Sand Powder

- Bottom length : 50mm
- Inner diameter : 25mm
- Volume = $3.14 \times 0.125^2 \times 5cm$
  $= 0.2453cm^3$
- 1 graduation of 50 divisions
  $= 0.2453 \div 50$
  $= 0.0049ml$
  $\fallingdotseq 0.005ml$
- Sand powder $\Rightarrow$ 0.025%

29-14 Steamed Rice

1) Definition

Steamed rice refers to a product made by steaming, drying and milling of rice seeds or steaming and drying previously milled rice.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food type

5) Specifications

(1) Aflatoxin (μg/kg) : Not more than 10.0 (as B_1)

(2) Sulfur dioxide (mg/kg) : Less than 30.0

(3) Lead (mg/kg) : Not more than 0.2

(4) Cadmium (mg/kg) : Not more than 0.2

6) Test method

(1) Aflatoxin

It is tested according to 6.1. Mycotoxin test described in 10. General Testing method .

(2) Sulfur dioxide

It is tested according to 2.5. Sulfite, thiosulfate test described in 10. General Testing method .

(3) Lead and Cadmium

It is tested according to 7.1.2.1. Lead, 7.1.2.2. Cadimium, 7.1. Harmful Metal described in Article 10. General Testing Methods.

29-15 Uncooked Foods (Saeng-Sik)

1) Definition

Uncooked foods refer to powder, granule, bar, paste, gel, liquid, or other forms of food made of animal or plant derived materials, usually processed by drying, to be used as it is or after mixing with water or others. However, if an uncooked food has the applicable standard and specifications, it shall meet the relevant standard and specifications.

2) Requirements of Raw Material

(1) Raw materials shall be free of foreign materials and shall be in a good quality without deterioration.

(2) Any food or food additives to be used shall be stored in a manner appropriate to prevent deterioration or contamination.

3) Manufacturing and Processing Standards

(1) Raw Materials for uncooked food shall be dried through freeze-drying, natural drying, or ventilated drying at below 60℃ to minimize the destruction of nutritive substances, inactivation of enzymes, or gelatinization of starch.

(2) Grinding process shall be performed to prevent the introduction of foreign materials, such as iron fillings, and minimize the destruction of nutritive substances due to frictional heat.

4) Food type

(1) Uncooked food

Uncooked food refers to a product made by drying animal or plant derived raw materials in a manner to minimize the destruction of nutritive substances, inactivation of enzymes, or gelatinization of starch and to contain not less than 80% of such dried raw materials.

(2) Uncooked materials containing food

Uncooked materials containing food refers to a product made by drying animal or plant derived raw materials in a manner to minimize the destruction of nutritive substances, inactivation of enzymes, or gelatinization of starch and to contain not less than 50% of such dried raw materials.

5) Specifications

(1) Water(%) : Not more than 8.0 (Excluding paste, liquid, gel)

(2) *Clostridium Perfurigence* : Not more than 100/1g

(3) *Bacillus Cereus* : Not more than 1,000/g

(4) *E. Coli* : Negative

6) Test method

(1) Water

It is tested according to 1.1.1 water, 1. General composition described in Article 10. General Testing Methods.

(2) *Clostridium perfringence*

It is tested according to 3.14.2. Quantitative test, 3.14. *Clostridium perfringence,* 3. Microorganism described in Article 10. General Testing Methods.

(3) *Bacillus cereus*

It is tested according to 3.18.2. Quantitative test, 3.18. *Bacillus cereus,* 3.Microorganism described in Article 10. General Testing Methods.

(4) Coliforms

It is tested according to 3.8. Coliforms, 3. Microorganism described in Article 10. General Testing Methods.

29-16 Toasted Cereal Flakes

1) Definition

Cereals refers to a product made by processing grains, such as corn, wheat, or rice and adding vitamins and inorganic matters. If necessary, vegetables, fruits, and nuts may be added. However, if a cereal product has the applicable standard and specifications, it shall meet the relevant standard and specifications.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

(1) Toasted cereal flakes shall be manufactured to assure that vitamin A, B_1, B_2, B_6, C, niacin, folic acid, and vitamin E per one serving shall be included at 25% more than the recommended daily allowances and iron and zinc per one serving shall be included at 10% more than the recommended daily allowances.

However, if a product is intended for a specific age group, the nutritive substances contained in the product shall be based on the Korean Dietary Reference Intakes.

4) Food type

5) specifications
(1) Vitamins : Not less than the amount specified in the label

(2) Minerals : Not less than the amount specified in the label

(3) Coliform group : Negative

6) Test method
(1) Vitamins

It is tested according to 1.2.2. Vitamins, 1.2. Micronutrient described in Article 10. General Testing Methods.

(2) Minerals

It is tested according to 1.2.1. Minerals, 1.2. Micronutrient described in Article 10. General Testing Methods.

(3) *Escherichia coli*

It is tested according to 3.7. *Escherichia coli,* 3. Microorganism described in Article 10. General Testing Methods.

29-17. Ices

1) Definition

Ices refer to frozen water to eat directly or to use for manufacturing, processing, cooking or storing food.

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

(1) Edible Ice

Edible ice refers to frozen water to eat directly or to use for manufacturing, processing, cooking or storing food

(2) Ice for Fishery

Ice for fishery refers to ice used to store or keep fish and shellfish

5) Specifications

Type Category	Edible ice	Ice for fishery
(1) Chloride Ion(mL/L)	Not more than 250	-
(2) Nitrate Nitrogen(mL/L)	Not more than 10.0	-
(3) Ammoniacal Nitrogen(mL/L)	Not more than 0.5	-
(4) Consumption of Potassium Permanganate(mL/L)	Not more than 10.0	-
(5) pH	5.8~8.5	5.8~8.5
(6) Nonvolatile Residues (mL/L)	-	Not more than 1,500
(7) The number of bacteria	Not more than 100 per 1 mL	Not more than 100 per 1 mL
(8) Coliform group	Negative in the 50 mL	Negative in the 50 mL

6) Test Method

(1) Collection and Preparation of a sample

Cut ice in 12 ~ 14 cm thick from its opaque part, divide it equally into four and take one as the sample. Put the sample in a melter that is washed with clean water, leave it alone and throw away the first melted water, which is one-fifth of the sample volumetrically. Then, put the remaining into a new melter, leave it alone again, melt it completely, shake it and wait for a while and then take it as the sample; in case of 5 kg or lighter ice, a sample is taken by melting the required amount.

(2) Chloride Ion

Put a 200 mL sample into a beaker, evaporate one-fifth, concentrate it and cool it down. After then, add 3 drops of potassium chromate reagent to it and titrate it with 0.01 N silver nitrate solution until it turns reddish brown. The end point is determined by comparing it with the color of a solution prepared by adding 3 drops of potassium chromate reagent to 40 mL water.

From the mL of silver nitrate used for the above titration, calculate the amount of chloride ion according to the following formula.

$$\text{Chloride ion (mg/L)} = 0.3545 \times a \times \frac{1{,}000}{200}$$

(3) Nitrate Nitrogen

① Reagents

A. Sodium Salicylate

Melt 1 g sodium salicylate in sodium hydroxide(0.01 N), preparing the 100 mL.

B. Sodium Chloride

Melt 0.2 g sodium chloride in distilled water, preparing the 100 mL.

C. Ammonium Sulfamate

Melt 0.1 g ammonium sulfamate in distilled water, preparing the 100 mL.

D. Sodium hydroxide (2→5)

Melt 40 g Sodium hydroxide in distilled water, preparing the 100 mL.

E. Nitrate nitrogen standard solution

Dry it out at 105 ~ 110℃ for four hours beforehand and melt potassium nitrate cooled in a desiccator in distilled water, preparing the 1 L, add 2 drops of chloroform and preserve it in a brown bottle (the 1 mL solution contains 0.1 mg nitrate nitrogen).

F. Nitrate nitrogen standard solution

Dilute nitrate nitrogen standard solution with distilled water as x100, which should be prepared just before using (the 1 mL solution contains 0.001 mg nitrate nitrogen).

② Test

A. Analysis

Put an appropriate amount of sample (it should contain 0.001 ~ 0.2 mg) into a 100 mL beaker, add sodium salicylate, sodium chloride and ammonium sulfamate, each 1 mL to it and dry it out in a water bath.

Then, cool it down, put 2 mL sulfuric acid, leave it for 10 minutes while stirring(after heating it for ten minutes and cooling it down in case nonvolatile residues are not small), add 10 mL distilled water to it and move it to a Nestler tube. Slowly cool it down again and add 10 mL sodium hydroxide reagent(2→5) and distilled water, preparing the 25 mL.

Put the part of the solution into absorption cell(10 mm), measure the absorbance around 410 nm wavelength with a photoelectric spectrophotometer or photoelectric photometer according to the examination method as taking the blank test solution as the control solution, calculate the amount of nitrate nitrogen in the test solution from the standard curve prepared according to B. and determine the concentration of nitrate nitrogen.

B. Preparing a standard curve

Put 0 ~ 20 mL standard solution into a beaker gradually, It is tested according to the above A and determine the correlation between the amount of nitrate nitrogen and absorbance.

(4) Ammoniacal Nitrogen

① Reagents

A. Phenol-sodium nitroprusside solution

Melt 5 g phenol and 25 mg sodium nitroprusside into water, preparing the 500 mL. store it in a cool and dark place and should be used it within a month.

B. Sodium hypochlorite solution

Melt sodium hypochlorite solution(100/c) mL(c indicates % of effective chlorine concentration) and 15 g sodium hydroxide in water, preparing the 1L; it should be prepared just before use.

C. Ammoniacal nitrogen standard solution

Melt 0.3819 g ammoniacal nitrogen in distilled water, preparing the 1 L(the 1 mL contains 0.1 mg ammoniacal nitrogen).

D. Ammoniacal nitrogen standard solution

Dilute ammoniacal nitrogen standard solution with distilled water as x100, which should be prepared just before use(the 1 mL solution contains 0.001 mg nitrate nitrogen).

② Test

A. Analysis

Put a 10 mL sample(containing 0.01 mL and lower ammoniacal nitrogen or being preparing by adding distilled water to contain the same amount/content) into a test tube with stopper, add 5 mL phenol-sodium nitroprusside solution to it, plug it with the stopper and mix them by shaking. Then, put 5 mL sodium hypochlorite solution to it, plug it again, mix them by shaking silently and leave the mixture at 25 ~ 30℃ for 60 minutes.

Put the part of the solution into absorption cell(10 mm), measure the absorbance around 640 nm wavelength with a photoelectric spectrophotometer or photoelectric photometer according to the examination method as taking the blank test solution as the control solution, calculate the amount of nitrate nitrogen in the test solution from the standard curve prepared according to B. and determine the concentration of nitrate nitrogen.

B. Preparing a standard curve

Put 0 ~ 20 mL ammoniacal nitrogen standard solution into a beaker gradually, It is tested according to the above A. and determine the correlation between the amount of ammoniacal nitrogen and absorbance.

(5) Consumption of Potassium Permanganate

① Reagent

A. Diluted sulfuric acid (1 + 2)

Put 100 mL sulfuric acid gradually into 200 mL distilled water while stirring it, increase the temperature in a water bath and add potassium permanganate reagent by each drop until the light red color of potassium permanganate does not disappear.

B. Sodium hydroxide solution (0.01 N)

Dry it at 150 ~ 200 ℃ for 1 ~ 1.5 hours, melt 0.670 g sodium hydroxide that is cooled in a desiccator in distilled water, preparing the 1L, store it in a brown bottle; it should be used within a month.

C. Potassium permanganate solution (0.01 N)

Melt 0.31 g potassium permanganate with distilled water, preparing the 1L and store it in a brown bottle.

Standardization: as the first step, put 100 mL distilled water into an Erlenmyer flask with several boiling stone, add 5 mL diluted sulfuric acid (1+2) and 5 mL potassium permanganate solution (0.01 N) to it, boil it for 5 minutes, check the discoloration and titrate it with potassium permanganate solution (0.01 N) until the light red does not disappear. Then, in the 2nd step, add 5 mL diluted sulfuric acid (1+2) and 5.0 mL potassium permanganate solution (0.01 N) to the titrated solution, boil the mixture for 5 minutes, titrate it with potassium permanganate solution(0.01 N) until the light red does not disappear. After then, from the mL(a) of potassium permanganate consumed in the 2nd step, calculate f(factor) according to the following formula.

$$f = \frac{10}{a + 5}$$

D. Boiling stone

Use a boiling stone that does not consume potassium permanganate.

② Test

Put a 100 mL sample into an Erlenmyer flask with several boiling stone, add 5 mL diluted sulfuric acid(1+2) and 5 mL potassium permanganate solution(0.01 N) to it, boil it for 5 minutes, check the discoloration and titrate it with potassium permanganate solution(0.01 N) until the light red does not disappear.

From the mL(a) of potassium permanganate consumed, calculate the consumption of potassium permanganate according to the following.

$$\text{Consumption of potassium permanganate (mg/L)} = (a-b) \times f \times \frac{1{,}000}{100} \times 0.316$$

b : the consumption of potassium permanganate(0.01N) as the same examination method using distilled water (mL)

f : factor of potassium permanganate calculated C. in ①.

(6) pH

Measure it by Glass Electrode Method (pH measuring instrument).

(7) Non-volatile Residues

Take an appropriate amount of the solution prepared in the above, evaporate and dry it out in a water bath, cool it down after drying it at 105℃, weigh it and calculate the difference between weights. Then, calculate the nonvolatile residues (ppm).

$$\text{Non-volatile residues (mg/L)} = a \times \frac{1{,}000}{\text{Sample (mL)}}$$

(8) The number of bacteria

Wash the sample obtained in the above (1) with pasteurized distilled water, put it into a pasteurized container and mix it in warm water lower than 40℃ and prepare the crude solution, x10, x100 and x1000 diluted solutions and test them according to 3.5.1. The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(9) Coliform group

Inoculate each 10 mL of the above crude solution to 5 ionized brilliant green agars and It is tested according to 가. Brilliant Green ionization Method, 3.7.1. Quantitative test, 3.7. Coliform group, 3. Microorganism described in Article 10. General Testing Methods.

29-18 Ready-to-eat Foods

1) Definition

Ready-to-eat foods refer to ready-to-eat food, ready-to-cook food, or fresh ready-to-eat food manufactured, processed, and packed to allow consumers to use it as it is or after simple cooking (However, if a product has the applicable standard and specifications, it shall meet the relevant standard and specifications.).

2) Requirements of Raw Material

3) Manufacturing and Processing Standards

4) Food Type

(1) Ready-to-eat food

Ready-to-eat food refers to gimbap (rice rolled in dried laver), hamburger, seonsik (dried plant materials), and others manufactured and processed by adding foods or food additives to animal or plant derived raw materials to allow consumers to use it without further cooking process.

(2) Ready-to-cook food

Ready-to-cook food refers to Korean-style soup, broth, soup, and others manufactured and processed by adding foods or food additives to animal or plant derived raw materials to allow consumers to use it after simple cooking process.

(3) Fresh ready-to-eat food

Fresh ready-to-eat food refers to salad, sprouts, and others made by processing agricultural or forest products through washing, removal of skin, cutting, or fine cutting, or adding foods or food additives to allow consumers to use it without further cooking process.

5) Specifications

(1) *E. Coli* : Negative (Limited to ready-to-eat food and fresh ready-to-eat food)

(2) The number of bacteria : Not more than 100,000/g (Limited to ready-to-cook food)

(3) *Staphylococcus aureus* : Negative

(4) *Salmonella* ssp.: Negative

(5) *Vibrio paraphaemolyticus* : Negative

(6) *Bacillus Cereus* : Not more than 1,000/g (Limited to ready-to-eat food and fresh ready-to-eat food except fermented food and food containing lactic acid bacteria))

6) Test Method

(1) *Escherichia coli.*

It is tested according to 3.8. *Escherichia coli.* 3. Microorganism described in Article 10. General Testing Methods.

(2) The number of bacteria

It is tested according to 3.5.1. The number of bacteria, 3. Microorganism described in Article 10. General Testing Methods.

(3) *Staphylococcus aureus*

It is tested according to 3.12.2. Quantity Test, 3.12. *Staphylococcus aureus.* 3. Microorganism described in Article 10. General Testing Methods.

(3) *Salmonella* ssp.

It is tested according to 3.11. *Salmonella* ssp.3. Microorganism described in Article 10. General Testing Methods.

(4) *Vibrio paraphaemolyticus*

It is tested according to 3.13. *Vibrio paraphaemolyticus.* 3. Microorganism described in Article 10. General Testing Methods.

(5) *Bacillus cereus*

It is tested according to 3.18. *Bacillus cereus.* 3. Microorganism described in Article 10. General Testing Methods.