

**Appended Table 2 (Re: Art. 2)****1. General Rules for Feed Additives**

(1) Propriety of feed additive is evaluated by a prescription of standard components for each feed additive, and standards for manufacturing method or others (Hereinafter referred to as "the monographs"), and general rules and general testing methods for feed additive (Hereinafter referred to as "general testing method"). However, Smell and taste of physical and chemical properties, crystal form, solubility, solution, stability, absorption, freezing point, refractive index, optical rotation, viscosity, specific gravity and melting point are subjected to reference, and do not indicate a criterion of adequacy. In addition, in order to increase validity and stability of feed additive, stabilizers, lubricants, bonds, wetting agents, emulsifiers, coatings, dispersants, disintegrators, preservatives and solubilizers specified in the monographs are utilized.

(2) Those with a molecular formula ( ) next to material names mean chemical pure substance.

(3) For units of the main measurement, I use the following symbols.

Meter	M	Centimeter	cm
Millimeter	mm	Micrometer	μm
Nanometer	nm	Square Centimeter	cm <sup>2</sup>
Liter	L	Milliliter	mL
Microliter	μL	Ton	t (1,000 kg)
Kilogram	Kg	Gram	g
Milligram	mg	Microgram	μg
Kilopascal	kPa	Mol	mol
Micromol	μmol	Mol per liter	mol/L
Celsius Scale	°C		

(4) % is used to indicate mass percentage. However, to indicate the substance content (g) as 100 mL of solution, w/v% is used, to indicate the substance as content (mL) of 100 mL of solution, w/w% is used, and to indicate the substance content (mL) as 100 g of solution, v/w% is used.

(5) The amount of antibiotic and enzyme are indicated with titer in antibiotic and enzymatic activity unit in enzyme.

(6) The standard temperature is 20 °C, Normal temperature is 15~25 °C, room temperature is 1~30 °C, lukewarm temperature is 30~40 °C. Cool place is under 15 °C except otherwise specified. Cold water is under 10 °C, lukewarm water is 30~40 °C, warm water is 60~70 °C, hot water is 100 °C. Heating in or on a water bath describes to heat by using boiled water bath or steam bath at about 100 °C except otherwise specified.

(7) Testing water for feed additive is purified water except otherwise specified.

- (8) For measuring drop numbers, when dropping of 20 of purified water, a device is utilized such that the mass becomes 0.90~1.10 g.
- (9) To make n decimal place by organizing numbers, round the value of (n + 1) digit.
- (10) Atomic weight is assumed by the international atomic weight table in 2007. The molecular weight is organized up to two decimal places after being calculated according to this table.
- (11) Reduced pressure is below 2.0 kPa except otherwise specified.
- (12) To indicate liquid as acidic, alkaline, or neutra, except otherwise specified, tests are performed by using litmus paper. To show specifically the liquid, a pH value is used.
- (13) Those listed as "solution" to the next name of the solute and that the solvent names are not particularly described indicate water solution.
- (14) Those indicated the strength of solution as "(1 → 3)", "(1 → 10)" and "(1 → 100)", etc show the percentage in the case of 3 mL, 10 mL, 100 mL each as a whole amount by melting 1 g of solid and 1 mL of liquid in solvent. In addition, a mixture of 1 volume and 10 volumes of liquid indicates "(1:10)", and a mixture of 5 volumes, 3 volumes and 1 volume indicate "(5:3:1)".
- (15) Testing of feed additive is performed at room temperature except otherwise specified, and observed right after the performance. However, the evaluation having some influences of temperature is based on the conditions under the standard temperature.
- (16) Those described white or almost white indicate "white", and colorless or almost white indicates "colorless" in the section of physics and chemistry. In order to test the color tone, except otherwise specified, solid feed additives is observed by placing 1 g of feed additive on white paper or on a watch glass on white paper, and liquid feed additive is observed by placing in colorless test tube of 15 mm inside diameter and using 30 mm liquid layer on white background. To test clear nature of the liquid feed additive, the method described above is utilized by using a background of black or white. To observe fluorescence of the liquid feed additive, black background is used, not by white background.
- (17) In the section of physics and chemistry, those described "no odor or odorless" indicates no odor or little odor. In order to test the odor, solid or liquid feed additives are performed by taking 1 g into a beaker of 100 mL, except otherwise specified.
- (18) In the section of physics and chemistry, terms that refer to the solubility are as follows. Except otherwise specified, after solid feed additive is powdered and contained in solvent, the solubility refers to the solubility within 30 minutes, when the powders are shaken vigorously for 30 seconds every five minutes at  $20 \pm 5$  °C.

Terms	Solvent amount required dissolving in 1 g or 1 mL of solute	
Easy to extremely dissolve		less than 1 mL
Easy to dissolve	more than 1 mL	less than 10 mL
Easy to slightly dissolve	more than 10 mL	less than 30 mL
Hard to slightly dissolve	more than 30 mL	less than 100 mL
Hard to dissolve	more than 100 mL	less than 1,000 mL
Hard to extremely dissolve	more than 1,000 mL	less than 10,000 mL
Hardly to dissolve	more than 10,000 mL	

(19) In the test of feed additive, the feed additive dissolved and mixed by the solvent means to melt or mix clearly. However, there is no problem even if dust or fibers are recognized.

(20) A confirmation test is a test performed to confirm feed additive or principal components contained in feed additive.

(21) Purity test is performed in order to test inclusion in feed additive, and is a prescribed purity test for feed additive with other test items of the monographs. The types and the quantities for the inclusion usually are prescribed. The inclusions for this test are defined as contaminants in which being expected while producing or saving the feed additive or harmful contaminants of, for example, heavy metals, arsenic or others. In addition, this test is performed when using and adding foreign materials are expected.

(22) "Clear", "almost clear", "delicately slight cloudness", or "slightly cloudness" and "opacity" are prescribed as following standards.

Turbidity Standard Stock Solution: Create 50 mL by adding water into 14.1 mL of 0.1 mol/L hydrochloric acid. 1 mL of this solution contains Cl 1 mg.

Turbidity Standard Solution: Create 1,000 mL by adding water into 10 mL of turbidity standard stock solution. 1 mL of this solution contains Cl 0.01 mg.

A. Clear: Create 20 mL by adding water into 0.2 mL of the turbidity standard solution, and add 1 mL (1 → 3) nitric acid, 0.2 mL of 2 w/v% dextrin solution and 1 mL of 2 w/v% silver nitrate solution. And less turbidity is defined when it is left for 15 minutes. However, little contamination of foreign substances such as floating substances or others must not almost found.

B. Almost Clear: Create 20 mL by adding water into 0.5 mL of the turbidity standard solution, and add 1 mL (1 → 3) of nitric acid, 0.2 mL of 2 w/v% dextrin solution, and 1 mL of 2 w/v% silver nitrate solution. And turbidity is defined when it is left for 15 minutes. However, little contamination of foreign substances such as floating substances or others are not found.

- C. Delicately Slight cloudiness: Create 20 mL by adding water into 1.2 mL of the turbidity standard solution, and add 1 mL (1 → 3) of nitric acid, 0.2 mL of 2 w/v% dextrin solution, and 1 mL of 2 w/v% silver nitrate solution. And turbidity is defined when it is left for 15 minutes.
- D. Slightly Cloudiness: Create 20 mL by adding water 6 mL of into the turbidity standard solution, and add 1 mL (1 → 3) of nitric acid, 0.2 mL of 2 w/v% dextrin solution, and 1 mL of 2 w/v% silver nitrate solution 1 mL. And turbidity is defined when it is left for 15 minutes.
- E. Opacity: Create 20 mL by adding water into 0.2 mL of the turbidity standard stock solution, and add 1 mL (1 → 3) nitric acid, 0.2 mL of 2 w/v% dextrin solution, and 1 mL of 2 w/v% silver nitrate solution. And turbidity is defined when it is left for 15 minutes.
- (23) A constant weight by heating strong and drying is the case of which, except otherwise specified, weight difference between before and after of heating subsequently for one hour or further is under less 0.10 % of mass of the residue in which strongly heated or dried material weighted previously. However, if the weight difference is 0.5 mg or less by using chemical scales, 0.05 mg or less by using semicro chemical scales, and 0.005 mg or less by using micro chemical scales, the weight difference is determined as the constant weight.
- (24) Quantification method is a test method to measure composition of feed additive, contents of component, or containing units by a physical, chemical or biological process.
- (25) Those with "about" in sample subjected to given quantity or collection amount of standard refers to a range of  $\pm 10$  % of the amount listed. In addition, simply "dry" in standard or sample is heated under the same conditions as in the chapter of dryness loss of standard or in the monographs. Simply "Heat strength" in sample is defined under the same conditions as the chapter of heat loss in the monographs.
- (26) For values of ingredient contents obtained by quantitative methods in the monographs, % and more is simply shown, and 101.0 % is shown as the upper limit in the case of the upper limit is not indicated. Also, in the section of content, for example, to prescribe as "Containing pure substance corresponding 90 % to 110 % of the labeled amount" is to prepare to contain 100 % of chemically pure substance or the corresponding, quantify this, and indicates within the range of the above-mentioned. And to prescribe as "Comprising 85 % to 125 % of label potency" is to prepare to keep the label potency valid period, quantify this, and indicates within the range of the above-mentioned.
- (27) In the alternative to the test method specified in general tests and prescribed tests in the monographs, it is possible to use the method if there is a precision and accuracy more than the method above prescribed. However, final evaluation is performed by using the prescribed method in the case of suspicious results.
- (28) A container is intended to contain feed additive, and including those for which are used as a part of the configuration of containers such as stoppers, covers, or others.

- (29) A capped container, in daily handlings or normal storage conditions, means a container that can prevent solid foreign substance from mixing, and protect contents of feed additive to prevent loss. If the capped container is prescribed, an airtight container or a sealed container can be utilized.
- (30) In an airtight container, in daily handlings or normal storage conditions, means a container that can prevent foreign substances of solid or liquid, or water from mixing, and protect contents of feed additive to prevent loss, construction in air, deliquescence and evaporation. If the airtight container is prescribed, a sealed container can be utilized.
- (31) A sealed container, in daily handlings or normal storage conditions, means a container with impossibilities of gas or microbial invasion.
- (32) A container protected from light means a container that is packed or wrapped to prevent transmission of light.

## **2. Standard prescribed components of feed additive**

In the case of including feed additive that is manufactured by using organisms obtained by recombinant DNA technology, for their safety, as prescribed by the Minister of Agriculture, Forestry and Fisheries, the feed additive needs to be confirmed with Minister of Agriculture, Forestry and Fisheries.

## **3. Basics of general production method for feed additive**

- (1) A. In the case of determining prescribed feed additive as raw materials regarding standard component, that fits the standard concerned (When a certification test of Article 5, paragraph 1 of the Act is required, limited to those that passed the test.) needs to be used.
- B. The formulation of a raw material for producing drug substance that does not meet a standard for component is not defined as a raw material for feed additive.
- (2) Feed additive must not be produced by using two or more feed additives in identical articles of a table C of (2) of 1 in a separate table 1.
- (3) In the case of producing feed additive by using feed additive of two or more, the effect of each feed additive must not be inhibited, and also, a quantitative test for each component of the feed additive, a confirmation test or others must be prevented from becoming difficult.
- (4) Liquid feed additive, other than those prescribed in the monographs must not be produced.
- (5) Those used for preparation of feed additive such as excipient materials, diluting materials and others must satisfy all of the following requirements.
- A. Do not contain harmful substances or not contaminated by pathogenic microorganisms, and that there are no doubt of these.

- B. Do not inhibit the effect of the feed additive.
- C. The quantitative test of feed additive components, the confirmation test, and others are not difficult.
- D. Calcium lignosulfonate and Sodium lignosulfonate must meet all of the following requirements.

(a) Calcium Lignosulfonate: pulp solution obtained during a production of pulp from wood, and brown powder obtained by performing boiled pressurized steam and drying of those in that calcium hydrogen sulphite being added.

Sulfonic acid sulfur	5.0 % or less
Calcium	7.0 % or less
Consistency of solution in 50 %	3,000 centipoise or less
Lead	1 mg/kg or less
Reducing sugar	30.0 % or less
Loss on drying	10.0 % or less
Residue on ignition	20.0 % or less

(b) Sodium Lignosulfonate: pulp solution obtained during a production of pulp from wood, and brown powder obtained by performing boiled pressurized steam and drying of those in that sodium hydrogen sulphite being added.

Sulfonic acid sulfur	5.0 % or less
Sodium	10.0 % or less
Consistency of solution in 50 %	3,000 centipoise or less
Lead	1 mg/kg or less
Reducing sugar	30.0 % or less
Loss on drying	10.0 % or less
Residue on ignition	20.0 % or less

(6) Excipient material and diluted material (Hereinafter referred to as "excipient substances") are used as listed below, and others used for producing feed additive prescribed in the monographs. However, the liquid feed additive other than those prescribed in the monographs must not be used.

Gum arabic, albumin, Cellulose, Kaolin, Casein, Gluten Activity, Carrageenan, Caramel, Carnauba Wax, Hydrated Silicon Dioxide, Hydrated Amorphous Silicon Oxide, Liver Powder, Agar, Xanthan Gum, Chitosan, Soybean Flour, Guar Gum, Glycerin, Glucomannan, Gluten , Gluten Meal, Silicic Acid, Calcium Silicate, Magnesium Silicate, Light Anhydrous Silicic Acid, Light Liquid Paraffin, Diatomaceous Earth, Hydrogenated Oils, Higher Saturated Fatty Acids, Flour, Wheat Middlings, Rice Bran, Rice Bran Oil Cake, Corn Grits, Corn Gluten Feed, Corn

Cob Meal, Corn Starch, Shiitakehoda Wood Powder, Distillers Grains, Distillers Grain Soluble, Fatty Acids, Fatty Acid Calcium, Salt, Vegetable Oil, Calcium Stearate, Zeolite , Gelatin, Cellulose, Soybean Mill Run, Sorbitol, Defatted Fish Meal, Skim Milk Powder, Calcium Carbonate, Soybean Meal, Soybean Hulls, Soy Flour, Tamarind Seed Polysaccharide, Talc, Sodium Carbonate, Dextran, Dextrin, Natural Aluminum Silicate, Starch,  $\alpha$ -starch, Animal Fats, Corn Flour, Torakantogamu, Torula Yeast, Lactose, Concentrated Soy Protein, Maltose, White Sugar, Vermiculite, Baker's Yeast, Brewer's Yeast, Furcellaran, Bran, Glucose, Pullulan, Pectin, Modified Food Starch, Bentonite, Potato Pulp, White Fish Meal, D-mannitol, Silicic Anhydride, Anhydrous Tricalcium Silicates, Rice Hulls, Rice Hull Powder, Calcium Lignosulfonate, Sodium Lignosulfonate, Liquid Paraffin, Calcium Hydrogen Phosphate, Calcium Phosphate, Calcium Dihydrogen Phosphate, Lecithin, Locust Bean Gum

- (7) In the case of using the ingredients or the materials of two or more, the feed additive prepared by the ingredients or the materials must be made to be as homogeneous.
- (8) In the case of producing feed additive by using a microorganism obtained by recombinant DNA techniques, it must be prepared in a manner to obtain a confirmation from the Minister of Agriculture based on the Minister of Agriculture, Forestry and Fisheries.

#### **4. Standard of a general storage method for feed additive**

- (1) Those that contain hazardous substances or are contaminated by pathogenic microorganisms must not be stored where they are suspected. Also, those that contain hazardous substances or are contaminated by pathogenic microorganisms must not be stored by using suspected packaging materials or containers.
- (2) Feed additive indicated with attention in preservation based on the standard of indicating, it must be preserved by following the attention in the preservation listed.

#### **5. Standard of a general indication for feed additive**

- (1) The feed additive for export or research purposes, letters of “for export” or “for research purposes” are required to indicate.
- (2) Feed additive must indicate the following items.
  - A. Names of feed additive (general names or brand names).
  - B. Letters of "feed additive".
  - C. Manufacturing numbers or serial numbers.
  - D. Names and addresses of sellers or manufacture (import) suppliers.

- E. Names and locations of manufacturing sites (importing country names and manufacturer's names for those relating to import).
- F. Names of active ingredients, contents, excipients, and others. (However, names of the active ingredients and the contents are not required to indicate in flavoring, and in terms of the contents of feed additive (except the flavoring) which are not defined as assay in the monographs, the content rate of preparation for drug substance is indicated with mass percentage.
- G. Manufacturing dates (import) and expiring periods (however, indication of expiring periods is limited according to the definition in the monographs.).
- H. Feed types and amount that can be used.
- I. Notes in the preservation.

Notes

1. The attention in the preservation to preserve by the following standards for the preservation method being specified for feed additive must be indicated.
  2. In the case of selling feed or feed additive to only manufacturers, and it is possible to indicate letters of " for exclusive use for manufacturers " by receiving an approval from the Minister of Agriculture, Forestry and Fisheries, and omit the indication of the matters above partially.
- (3) The indications need to be performed according to the indication standards based on the provisions of Article 32, paragraph 1 of the Act.