

**MINISTRY OF
AGRICULTURE AND
RURAL DEVELOPMENT**

SOCIALIST REPUBLIC OF VIETNAM
Independence – Freedom – Happiness

No. 21/2019/TT-BNNPTNT

Hanoi, November 28, 2019

CIRCULAR

**ELABORATING TO A NUMBER OF ARTICLES OF LAW ON ANIMAL
HUSBANDRY REGARDING ANIMAL FEED**

Pursuant to Decree No. 15/2017/ND-CP dated February 17, 2017 of the Government administering functions, tasks, powers and organizational structures of the Ministry of Agriculture and Rural Development;

Pursuant to Law on Animal Husbandry dated November 19, 2018;

At request of Director General of Department of Livestock Production,

Minister of Agriculture and Rural Development promulgates Circular on elaborating to a number of Articles of Law on Animal Husbandry regarding animal feed.

Chapter I

GENERAL PROVISIONS

Article 1. Scope

This Circular elaborates some regulations specified in Clause 4 Article 37, Clause 2 Article 46, Point d Clause 2 Article 48, Point c Clause 2 Article 79 of Law on Husbandry on animal feed, including:

1. Quality indicators in animal feeds that need publicizing in the declared and applied standards;
2. Labeling of animal feed;
3. Report on manufacture of animal feed;
4. List of chemical substances, biological and microorganism products prohibited in animal feed; List of ingredients permitted for use in animal feed.

Article 2. Regulated entities

This Circular applies to domestic organizations and individuals and foreign organizations and individuals whose operation involves animal feed in Vietnam territory.

Chapter II

PROVISIONS

Article 3. Quality indicators in animal feeds that need publicizing in declared and applied standards

Quality indicators in animal feeds that need publicizing in the declared and applied standards are specified in Annex I attached to this Circular.

Article 4. Labeling of animal feed

1. Details to be displayed on labels of animal feed are specified under Annex II attached to this Circular.
2. Animal feed that is bulk cargo while in circulation is required to have documents attached thereto specified under Annex III attached to this Circular, except for traditional animal feed that is not processed and is sold directly to persons conducting animal husbandry activities.
3. Packaged animal feed by order and animal feed for internal use while in circulation are not required to be labeled as specified in Clause 1 of this Article but the package must be marked to identify and avoid confusion, and attach documents specified under Annex III attached to this Circular.
4. Animal feed containing veterinary drugs with antibiotics to prevent and cure diseases of domestic animals must fully specify name and contents of antibiotics, use instruction and dosing interval on the labels or attached documents while in circulation.

Article 5. Report on manufacture of animal feed

Facilities manufacturing commercial animal feed shall report on manufacture of animal feed using the form under Annex IV attached to this Circular and submit to Department of Livestock Production, local Departments of Agriculture and Rural Development online or via postal services on a monthly basis in the first week of the following month or on an irregular basis at request of competent authorities.

Article 6. List of chemical substances, biological and microorganism products prohibited in animal feed; List of ingredients permitted for use in animal feed

1. List of chemical substances, biological and microorganism products prohibited in animal feed is specified under Annex V attached to this Circular.

2. List of ingredients permitted for use in animal feed is specified under Annex VI attached to this Circular.

3. Department of Livestock Production is responsible for:

a) consolidating and requesting Minister of Agriculture and Rural Development to consider and update the lists specified in Clauses 1 and 2 of this Article on a yearly basis;

b) updating and publicizing traditional feed and single commercial ingredients on website of Ministry of Agriculture and Rural Development.

Traditional feed products that are not publicized according to regulations in this Point shall be manufactured only for trade and exchange among smallholdings, households and household business.

Chapter III

IMPLEMENTATION

Article 7. Entry into force

1. This Circular comes into force from January 14, 2020.

2. This Circular hereby supersedes following documents:

a) Circular No. 28/2014/TT-BNNPTNT dated September 04, 2014 of Minister of Agriculture and Rural Development on lists of chemicals and antibiotics prohibited from import, manufacture, trade and use in livestock and poultry feed in Vietnam;

b) Circular No. 42/2015/TT-BNNPTNT dated November 16, 2015 of Minister of Agriculture and Rural Development on revised lists of chemicals and antibiotics prohibited from import, manufacture, trade and use in livestock and poultry feed in Vietnam;

c) Circular No. 01/2017/TT-BNNPTNT dated January 16, 2017 of Minister of Agriculture and Rural Development on revised lists of chemicals and antibiotics prohibited from import, manufacture, trade and use in livestock and poultry feed in Vietnam;

d) Circular No. 02/2019/TT-BNNPTNT dated February 11, 2019 of Minister of Agriculture and Rural Development on list of animal feed by tradition and single ingredients permitted for circulation in Vietnam;

Article 8. Transition clauses

1. Labels of animal feed according to Circular No. 20/2017/TT-BNNPTNT dated November 10, 2017 of Minister of Agriculture and Rural Development on elaborating to Decree No. 39/2017/ND-CP dated April 4, 2017 of Government on management of animal and fishery feed printed before the effective date hereof shall be used until December 31, 2021 inclusively.

2. Animal feed permitted for circulation in Vietnam according to Decree No. 39/2017/ND-CP dated April 4, 2017 of Government on animal and fishery feed before the effective date hereof containing ingredients that have not be publicized as specified in Point b Clause 3 Article 6 of this Circular shall be in circulation until December 31, 2021 inclusively.

Article 9. Responsibility for implementation

Difficulties that arise during the implementation of this Circular should be reported to Ministry of Agriculture and Rural Development for consideration and revision./.

**PP. MINISTER
DEPUTY MINISTER**

Phung Duc Tien

ANNEX I

QUALITY INDICATORS OF ANIMAL FEED THAT NEED PUBLICIZING IN DECLARED AND APPLIED STANDARDS

(Attached to Circular No. 21/2019/TT-BNNPTNT dated November 28, 2019 of Minister of Agriculture and Rural Development)

1. Compound feed and concentrates

No.	Indicators	Unit	Form of publicizing
1	Visual: Shape, color	-	Description
2	Moisture	%	No greater than
3	Crude protein	%	No less than
4	Metabolizable energy (ME)	Kcal/kg	No less than

5	Crude fiber	%	No greater than
6	Calcium	%	From ... to ...
7	Total phosphorus	%	From ... to ...
8	Total lysine	%	No less than
9	Methionine + Total Cystine*	%	No less than
10	Total threonine	%	No less than
11	Total minerals	%	No greater than
12	Grit (insoluble minerals in hydrochloric acid)	%	No greater than
13	Live insects	-	None

*Including substitutions of Methionine

2. Compound feed for pets*

No.	Indicators	Unit	Form of publicizing
1	Visual: Shape, color	-	Description
2	Moisture	%	No greater than
3	Crude protein	%	No less than
4	Crude fat	%	No less than
5	Crude fiber	%	No greater than
6	Total minerals	%	No greater than

*Pets refer to animals raised not for human consumption

3. Compound supplement

No.	Indicators	Unit	Form of publicizing
1	Visual: Shape, color	-	Description
2	Moisture or water content	%	No greater than
3	Quality indicators determining nature and use of products*	Weight/weight or weight/volume	No less than or no greater than or from ... to ...
4	Native element minerals (if any)	Weight/weight or weight/volume	From ... to ...
6	Grit (insoluble minerals in hydrochloric acid)**	%	No greater than

**Choose indicators and forms of publicizing based on the products (E.g. Form of publicizing shall be no less than with respect to vitamin, amino acid indicators)*

***Does not apply to products in liquid form*

4. Traditional feed and single ingredient

No.	Indicators	Unit	Form of publicizing
1	Visual: Shape, color	-	Description
2	Moisture or water content	%	No greater than
3	Quality indicators determining nature and use of products*	Weight/weight or weight/volume	No less than or no greater than or from ... to ...
4	Grit (insoluble minerals in hydrochloric acid)**	%	No greater than

**Choose indicators and forms of publicizing based on the products (E.g. Form of publicizing shall be no less than with respect to vitamin, amino acid indicators)*

***Does not apply to products in liquid form*

5. Declared and applied standards include:

- a) Name, address and phone number of organizations and individuals declaring the standards
- b) Name of address, commercial name (if any)
- c) Declared and applied standards No.
- d) Scope of the standards
- dd) Referencing documents (methods of collecting specimens, methods of testing quality and safety indicators of animal feed)
- e) Quality indicators or nutrition value

Animal feed containing veterinary drugs with antibiotics to prevent and cure pets is not required to publicize antibiotic information in the quality indicator schedule but is required to be labeled according to Clause 4 Article 4 of this Circular.

Animal feed manufactured in water containing active ingredients which have not been tested by a designated laboratory or a recognized laboratory is not required to publicize content of the active ingredients in the quality indicator schedule but is required to specify components and quantity of ingredients containing the active ingredients and name of the active ingredients.

- g) Safety indicators

h) Component of ingredients

i) Use instruction

k) Expiry date

Expiry date of a product is not required to be specified in the declared and applied standards when update product information on the website of Ministry of Agriculture and Rural Development but rather during processes of manufacturing and circulation of the products.

l) Preservation instruction

m) Date of standard publication

n) Confirmation of entities publicizing the standards

ANNEX II

DETAILS TO BE DISPLAYED ON LABELS OF ANIMAL FEED
(Attached to Circular No. 21/2019/TT-BNNPTNT dated November 28, 2019 of Minister of Agriculture and Rural Development)

1. Compound feed and concentrates

PRODUCT NAME	NUTRITION FACTS OR QUALITY INDICATORS
(E.g. Compound feed for broilers 21 to 42 days old)	Moisture (%) max:
COMMERCIAL NAME (if any)	Crude protein (%) min:
Quantification:	ME (Kcal/kg) min:
Declared standards No.	Crude fiber (%) max:
Date of manufacture:	Ca (%) min-max:
Expiry date*:	Total P (%) min-max:
Preservation instruction:	Total lysine (%) min:
Name, address and phone number of registering organization or individual	Methionine + Total Cystine (%) min**:

(Ensure traceability of the product).	Antibiotic information *** (if used): Remarks (if any): <p style="text-align: center;">INGREDIENTS</p> (Specify name of primary ingredients mixed together) <p style="text-align: center;">USE INSTRUCTION</p>
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- Apart from compulsory details above, the facility may specify other details (E.g. Product batch, symbol, code, illustration, advertisements, etc.), as long as they comply with regulations and law on product labeling.

- With respect to animal feed for export, the labeling shall follow request of the importing countries.

- With respect to import animal feed, the labeling must comply with regulations in Decree No. 43/2017/ND-CP dated April 14, 2017 of Government on product labeling and those in this Circular.

* Expiry date of a product is not required to be specified in details on the label when publicize product information on the website of Ministry of Agriculture and Rural Development but rather during processes of manufacturing and circulation of the products.

** Including substitutions of Methionine.

*** Not required to be specified in details on the label when publicize product information on the website of Ministry of Agriculture and Rural Development but rather during processes of manufacturing and circulation of the products according to Clause 4 Article 4 of this Circular.

2. Compound feed for pets

<p style="text-align: center;">PRODUCT NAME</p> <p style="text-align: center;">COMMERCIAL NAME (if any)</p> <p>Quantification:</p> <p>Declared standards No.</p>	<p style="text-align: center;">NUTRITION FACTS OR QUALITY INDICATORS</p> <p>Moisture (%) max:</p> <p>Crude protein (%) min:</p>
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Date of manufacture:	Crude fat (%) min:
Expiry date*:	Crude fiber (%) max:
Preservation instruction:	Total minerals (%) max:
Name, address and phone number of registering organization or individual (Ensure traceability of the product).	Antibiotic information ** (if used):
	Remarks (if any):
	INGREDIENTS
	(Specify name of primary ingredients mixed together)
	USE INSTRUCTION

- Apart from compulsory details above, organizations and individuals may specify other details (E.g. Product batch, symbol, code, illustration, advertisements, etc.) as long as they comply with regulations and law on product labeling.

- With respect to animal feed for export, the labeling shall follow request of the importing countries.

- With respect to import animal feed, the labeling must comply with regulations in Decree No. 43/2017/ND-CP dated April 14, 2017 of Government on product labeling and those in this Circular.

*Expiry date of a product is not required to be specified in details on the label when publicize product information on the website of Ministry of Agriculture and Rural Development but rather during processes of manufacturing and circulation of the products.

**Not required to be specified in details on the label when publicize product information on the website of Ministry of Agriculture and Rural Development but rather during processes of manufacturing and circulation of the products according to Clause 4 Article 4 of this Circular.

3. Supplement and traditional feed

PRODUCT NAME	NUTRITION FACTS** OR QUALITY INDICATORS
COMMERCIAL NAME (if any)	

Quantification:	1. Primary substances: ...
Declared standards No.	2. Other substances: ...
Date of manufacture:	
Expiry date*:	Remarks (if any):
Preservation instruction:	
Name, address and phone number of registering organization or individual (Ensure traceability of the product).	INGREDIENTS (Specify name of ingredients of the product)
	USE INSTRUCTION

- Apart from compulsory details above, organizations and individuals may specify other details (E.g. Functions, product batch, symbol, code, illustration, advertisements, etc.) as long as they comply with regulations and law on product labeling.

- With respect to animal feed for export, the labeling shall follow request of the importing countries.

- With respect to import animal feed, the labeling must comply with regulations in Decree No. 43/2017/ND-CP dated April 14, 2017 of Government on product labeling and those in this Circular.

-If ingredients of traditional feed and single ingredients used for consumption in Vietnam according to regulations and law on food safety have been labeled according to regulations and law on food, labeling according to this Circular is not required.

*Expiry date of a product is not required to be specified in details on the label when publicize product information on the website of Ministry of Agriculture and Rural Development but rather during processes of manufacturing and circulation of the products.

**Contents of the primary substances and other substances must be publicized according to declared and applied standards. In case primary substances are not specified, quality indicators displayed on the labeled shall be considered as primary substances.

4. In case animal feed contains a quality indicator whose designated or recognized testing methods are not available

Animal feed manufactured in water containing active ingredients which have not been tested by a designated laboratory or a recognized laboratory is not required to publicize content of the active ingredients on the label or attached documents but is required to

specify components and quantity of ingredients containing the active ingredients and name of the active ingredients.

ANNEX III

DETAILS TO BE DISPLAYED IN DOCUMENTS ATTACHED TO ANIMAL FEED
(Attached to Circular No. 21/2019/TT-BNNPTNT dated November 28, 2019 of Minister of Agriculture and Rural Development)

1. Name of manufacturing facility
2. Address of manufacturing facility
3. Name of products and commercial name (if any)
4. Declared and applied standards No.
5. Quality indicators
6. Antibiotic information (if used) according to Clause 4 Article 4 of this Circular
7. Component of ingredients
8. Date of manufacture
9. Expiry date
10. Quantification
11. Use instruction (if any)
12. Preservation instruction (if any)

ANNEX IV

FORM FOR REPORT ON MANUFACTURE OF ANIMAL FEED
(Attached to Circular No. 21/2019/TT-BNNPTNT dated November 28, 2019 of Minister of Agriculture and Rural Development)

(Entity):.....

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slaughtered)											
2.2.1. Ducks raised for eggs											
Started stock											
Breeder											
3. Quail											
4. Buffalo, cow											
Dairy cattle											
Buffalo and cow raised for meat											
5. Pets											
6. Other domestic animals (e.g. bees, silkworms, deer, etc.)											

* Average price during the reporting period (VND/kg)

** Started stock of poultry starts from 1 day of age to date of laying the first egg

2. Supplement (kg)

No.	Type of feed	Total throughput	Commercial	Upon order placement	Toll manufacturing for other entities	Internal use
1	Mineral supplements					
2	Vitamin supplements					
3	Amino acid supplements					
4	Beneficial bacteria supplements					
5	Others					
Total amount						

3. Traditional feed (kg)

No.	Type of animal feed	Total throughput	Commercial	Upon order placement	Toll manufacturing for other	Internal use
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					entities	
1	Animal origin (specify each product)					
2	Plant origin (specify each product)					
3	Others (specify each product)					

II. List of entities entering into toll manufacturing agreements with the reporting entity

No.	Name and address of entities entering into toll manufacturing agreements with reporting entity	Type of animal feed*	Throughput (kg)
1			
2			

* Specify any of following: Compound feed, concentrates, supplements or traditional feed

III. Antibiotics used in animal feed (if used)

No.	Name of antibiotics	Amount* of antibiotics used in animal feed** (kg)					
		Antibiotic gross weight	Used in pig feed	Used in poultry feed	Used in cattle feed	Used in pet feed	Used in feed for other domestic animals
1	...						
2							
3							

* Amount of antibiotics shall equal amount of veterinary drugs used in animal feed x content of antibiotics in the veterinary drugs.

** Animal feed includes commercial feed, feed upon order placement, feed under toll manufacturing agreements for other entities or feed for internal use.

Company's representative
(Signature and stamp)

ANNEX V

LIST OF CHEMICAL SUBSTANCES, BIOLOGICAL AND MICROORGANISM
PRODUCTS PROHIBITED IN ANIMAL FEED
(Attached to Circular No. 21/2019/TT-BNNPTNT dated November 28, 2019 of Minister
of Agriculture and Rural Development)

No.	Name of chemical substances
1	Carbuterol
2	Cimaterol
3	Clenbuterol
4	Chloramphenicol
5	Diethylstilbestrol (DES)
6	Dimetridazole
7	Fenoterol
8	Furazolidon and Nitrofurán derivatives
9	Isoxsuprin
10	Methyl-testosterone
11	Metronidazole
12	19-Nortestosterone
13	Salbutamol
14	Terbutaline
15	Stilbenes
16	Melamine (Provided that Melamine content in animal feed exceeds 2.5 mg/kg)
17	Bacitracin zinc
18	Carbadox
19	Olaquinox
20	Vat Yellow 1 (other names: flavanthrone, flavanthrene, sandothrene); molecular formula $C_{28}H_{12}N_2O_2$; nomenclature: benzo[h]benz[5,6]acridino[2,1,9,8-klmna]acridine-8,16- dione.
21	Vat Yellow2 (other name: Indanthrene); molecular formula: $C_{28}H_{14}N_2O_2S_2$; nomenclature: 2,8-diphenylanthra[2,1-d:6,5-d']bisthiazole-6,12-dione.
22	Vat Yellow3 (other name: Mikethrene); molecular formula: $C_{28}H_{18}N_2O_4$;

	nomenclature: N,N'-1,5-Anthraquinonylenebisbenzamide.
23	Vat Yellow 4 (other name: Dibenzochrysenedione, Dibenzpyrenequinone); molecular formula: C ₂₄ H ₁₂ O ₂ ; nomenclature: 7,14-Dibenzpyrenequinone.
24	Auramine (other name: yellow pyoctanine; glauramine); molecular formula: C ₁₇ H ₂₁ N ₃ ; nomenclature: 4,4'-Carbonimidoylbis[N,N-dimethylbenzenamine] and Auramine derivatives.
25	Cysteamine

ANNEX VI

LIST OF INGREDIENTS PERMITTED TO BE MADE INTO ANIMAL FEED
(Attached to Circular No. 21/2019/TT-BNNPTNT dated November 28, 2019 of Minister of Agriculture and Rural Development)

I. List of traditional feed ingredients*

No.	Ingredients
1	Ingredients of animal origin
1.1	Ingredients of fishery origin: Fish, shrimp, crab, crustacean, molluscs and other fishery; fishery products and by-products
1.2	Ingredients of terrestrial animal origin: Bone meal, meat meal, meat and bone meal, hydrolyzed feather meal, poultry meal, egg, insect, invertebrates, milk and products of milk; other by-products from terrestrial animals
1.3	Other ingredients of animal origin
2	Ingredients of plant origin
2.1	Grains and grain products
2.1.1	Cereal: Maize, rice, wheat, malt, millet and other cereal; cereal products and by-products
2.1.2	Bean: soya-bean, green bean, lupine, pigeon pea and other beans; bean products and by-products

	Oilseeds:
2.1.3	Bean, cottonseed, linseed, sesame, cashew and other oilseeds; oilseed products and by-products
2.1.4	Other bean
	Oil cake:
2.2	Soybean meal, peanut meal, palm kernel meal, rapeseed meal, sesame meal, sunflower meal, linseed meal, coconut meal, cottonseed meal, lupine meal and other oil cakes
	Root, trunk, bulb and fruit:
2.3	Root, trunk, bulb, fruit (e.g. potato, cassava, carrot, taproot, arrowroot, banana, sugarcane, vegetables, etc.) and products thereof.
	Gluten:
2.4	Corn gluten meal, wheat gluten meal, animal feed gluten and other gluten
2.5	Products and by-products from food manufacturing and processing
	Products and by-products of sugarcane and confectionery manufacturing and processing:
2.5.1	Molasses, crumbs, other products and by-products of sugarcane and confectionery manufacturing and processing
	By-products of alcohol, wine and beer manufacturing and processing:
2.5.2	Distillers grains, wheat and by-products of distillers grains, wheat, brewer yeast, dried distillers grains with solubles (DDGS) and other by-products of alcohol, wine and beer manufacturing and processing
	Products and by-products from other food manufacturing and processing:
2.5.3	Pineapple wastes, peanut wastes, cassava wastes and bagasse; other products and by-products from other food manufacturing and processing
	Starch:
2.5.4	Rice starch, corn starch, tapioca, wheat starch and other types of starch
2.6	Forage
	Terrestrial plants and weed:
2.6.1	Natural grass, planted grass, Poaceae plants, leguminous plants, other terrestrial plants and weed and products thereof

	Aquatic plants:
2.6.2	Alga, moss, seaweed, water fern, other aquatic plants and products of aquatic plants
	By-products of plants:
2.6.3	Straw, thatch, rice husk, corncob, ear of corn, leaves and trunk of plants, and other by-products of plants
2.7	Other ingredients of plant origin
3	Oil and fat of terrestrial and aquatic plant and animal origin
	Sugar:
4	Glucose, lactose, maltose and other sugars
5	Urea used as feed for cattle ruminants, table salt (NaCl), calcium carbonate, chippings and granules of natural stones
6	Other traditional feed ingredients

**In simple and natural or processed form, with or without technical substances.*

II. List of single ingredients

1. Nutrients for domestic animals

No.	Name of the active ingredient
1	<p>Vitamins, provitamins and substances with similar functions to vitamins:</p> <p>Vitamin A (Vitamin A, Retinyl acetate, Retinyl palmitate, Retinyl propionate, beta carotene)</p> <p>Vitamin B1 (Thiamine, Thiamine hydrochloride, Thiamine mononitrate)</p> <p>Vitamin B2 (Riboflavin, Riboflavin-5'-phosphate ester monosodium salt, Riboflavin sodium phosphate)</p> <p>Vitamin B3 (Niacin, Niacinamide, Acid nicotinic, Nicotinamide).</p> <p>Vitamin B5 (Pantothenic acid, Calcium-D-pantothenate, Calcium-DL-pantothenate, Calcium-L-pantothenate)</p> <p>Vitamin B6 (Vitamin B6, Pyridoxamine, Pyridoxal, Pyridoxine hydrochloride)</p> <p>Vitamin B12 (Cyanocobalamin)</p>

Vitamin C (Ascorbic acid, Sodium ascorbyl phosphate, Sodium calcium ascorbyl phosphate, Calcium L-ascorbate, 6-Palmitoyl-L-ascorbic acid, Ascorbyl monophosphate calcium sodium, Ascorbyl monophosphate sodium, Sodium ascorbate, Sodium-Calcium-L-ascorbic acid-2-phosphate ester, L-Ascorbate monophosphate, L-Ascorbic acid-2-phosphoestermagnesium)

Vitamin D (25- hydroxycholecalciferol) Vitamin D2 (Ergocalciferol)

Vitamin D3 (Vitamin D3, Cholecalciferol, 25-hydroxy cholecalciferol)

Vitamin E (Vitamin E, all-rac-alpha-tocopheryl acetate, RRR-alpha-tocopheryl acetate, RRR alpha tocopherol)

Vitamin K3 (Menadione sodium bisulphite, Menadione nicotinamide bisulphite, Acetomenaphthone menadione dimethylpyrimidinol bisulfite)

Other types: Betaine anhydrous, Betaine hydrochloride, [Glycine betaine](#), Biotin, Choline chloride, Carnitine, L- Carnitine hydrochloride, D-panthenol, Folate, Folic acid, Inositol, L-carnitine, L-carnitine L-tartrate, Omega-3 Essential Unsaturated Fatty acids, Omega-6 Essential Unsaturated Fatty acids (as octadecadienoic acid), Para-amino benzoic acid (PABA), Taurine, Orotic acid

2 Minerals

Micro minerals:

Cobalt (Co): Cobalt(II) acetate tetrahydrate, Cobalt(II) carbonate hydroxide (2:3) monohydrate, Cobalt(II) carbonate, Cobalt(II) sulphate heptahydrate, Cobalt chloride, Cobalt chloride citrate complex, Cobalt glucoheptonate, Cobalt gluconate, Cobalt oxide, Cobalt proteinate, Cobalt chelate

2.1 **Copper(Cu):** Basic copper carbonate monohydrate, Copper acetate monohydrate, Copper chelate of amino acids hydrate, Copper chelate of glycine hydrate, Copper chloride dehydrate, Copper methionate, Copper oxide, Copper sulphate pentahydrate, Copper(II) diacetate monohydrate, Coppe(II) carbonate dihydroxy monohydrate, Copper(II) chloride dehydrate, Copper(II) chelate of protein hydrolysates, Copper chloride dehydrate, Copper chelate of glycine hydrate, Dicopper chloride trihydroxide, Copper chelate of hydroxy analogue of methionine, Copper bilysinate, Copper oxychloride, Copper hydrogen phosphate, Copper proteinate, Tribasic Copper Chloride **Chrome (Cr):** Chromium chloride, Chromium picolinate, Chromium tripicolinate, Chromium methionine Complex, Cr-Amino acid chelate, Chromium propionate, Chromium glycine chelate, Chromium yeast inactivated

Iodine (I): Calcium iodate anhydrous, Potassium iodide, Calcium iodate monohydrate, Ethylenediamine dihydroiodide (EDDI), Iodine amino acid chelate

Zinc (Zn):Zinc carbonate, Zinc chloride monohydrate, Zinc lactate trihydrate, Zinc acetate dehydrate, Zinc chloride anhydrous, Zinc oxide, Zinc sulphate heptahydrate, Zinc sulphate monohydrate, Zinc chelate of amino acids hydrate, Zinc chelate of glycine hydrate, Zinc chloride hydroxide monohydrate, Zinc chelate of hydroxy analogue of methionine, Zinc chelate of methionine, Zinc chelate of protein hydrolysates, Zinc bislysinate, Zinc proteinate, Zinc hydroxychloride, Basic Zinc Chloride

Manganese (Mn):Manganese chelate of amino acids hydrate, Manganese chelate of glycine hydrate, Manganese chloride tetrahydrate, Manganese oxide, Manganomanganic oxide, Manganese hydrogen phosphate trihydrate, Manganese sulphate monohydrate, Manganese chelate of protein hydrolysates, Dimanganese chloride trihydroxide, Manganese chelate of hydroxy analogue of methionine, Manganese sulphate tetrahydrate, Manganeseproteinate, Manganese chloride, Manganese gluconate dehydrate, Manganese chloride tetrahydrate, Manganese amino acid complex, Manganese carbonate, Manganese polysaccharide complex, Manganese sulphate

Molybdenum (Mo):Ammonium molybdate, Sodium molybdate, Disulfua molypten

Iron (Fe):Iron(II) carbonate, Iron(III) chloride hexahydrate, Iron(II) sulphate monohydrate, Iron(II) fumarate, Iron(II) chelate of amino acids hydrate, Iron(II) chelate of protein hydrolysates, Iron(II) chelate of glycine hydrate, Iron dextran, Iron oxide, Iron chelate of amino acids, Iron chelate of glycine, Iron(II) chloride tetrahydrate, Iron(III) citrate hexahydrate, Ferrous fumarate, Ferrous lactate trihydrate, Ferrous sulphate heptahydrate, Iron Proteinate

Selenium (Se):Sodium selenite, Selenised yeast inactivated, Hydroxy analogue of selenomethionine, L-selenomethionine, Zinc-L-selenomethionine

Aluminum (Al): Aluminum hydroxide, Aluminum oxide.

Macro minerals:

2.2

Calcium carbonate (limestone), Calcareous marine shells, (Gizzard) Redstone, Attapulgit, Bone ash, Calcium and magnesium carbonate, Calcium carbonate-mag- nesium oxide, Calcium chloride, Calcium dihydrogen diphosphate, Calcium gluconate, Calcium hydroxide, Calcium oxide, Calcium pidolate, Calcium L- Pidolate, Calcium polyphosphate, Calcium salts of organic acids, Calcium sodium phosphate, Calcium sodium polyphosphate, Calcium sulphate anhydrous, Calcium sulphate dihydrate, Calcium sulphate hemi-hydrate, Calcium sulphate/carbonate, Calcium-magnesium, Cristobalite, Defluorinated phosphate, Degelatinised bone meal, Diammonium phos- phate (Diammonium hydrogen orthophosphate), Dicalcium phosphate (calcium hydrogen orthophosphate), Dicalcium pyrophosphate (Dicalcium diphosphate), Dipotassium phosphate (Di-potassium hydrogen orthophosphate), Disodium dihydrogen diphosphate, Disodium

	<p>phosphate (Disodium hydrogen orthophosphate), Lithothamn, Hydrated Sodium Calcium Aluminosilicates, Feldspar, Klnio, Mica, Calcium Montmorillonite Clay, Lanthanide, Maerl, Magnesium acid pyrophosphate, Magnesium carbonate, Magnesium chloride, Magnesium gluconate, Magnesium hydroxide, Magnesium hypophosphite, Magnesium oxide, Magnesium phosphate, Magnesium pidolate, Magnesium potassium sulphate, Magnesium propionate, Magnesium salts of organic acids, Magnesium sulphate anhydrous, Magnesium sulphate heptahydrate, Magnesium sulphate monohydrate, Monoammonium phosphate (Ammonium dihydrogen orthophosphate), Monocalcium phosphate (calcium tetrahydrogen diorthophosphate) Monocalcium phosphate, Monopotassium phosphate (Potassium dihydrogen orthophosphate), Monosodium phosphate (Sodium dihydrogen orthophosphate) Pentapotassium triphosphate, Potassium bicarbonate (potassium hydrogen carbonate), Potassium carbonate, Potassium chloride, Potassium pidolate, Potassium polyphosphate, Potassium salts of organic acids, Potassium sulphate, Sodium bicarbonate (sodium hydrogencarbonate), Sodium carbonate, Sodium chloride, Sodium magnesium phosphate, Sodium polyphosphate (Sodium hexametaphosphate), Sodium pyrophosphate (Tetrasodium diphosphate), Sodium salts of organic acids, Sodium sesquicarbonate (trisodium hydrogencarbonate), Sodium sulphate; Sodium tripolyphosphate (Penta sodium triphosphate), Sodium/ammonium (bi) carbonate (sodium/ammonium (hydrogen) carbonate), Sodium-calcium-magnesium phosphate, Tetrapotassium di-phosphate, Tricalcium phosphate (tricalcium orthophosphate), Tripotassium phosphate, Trisodium diphosphate, Trisodium Phosphate (Trisodium orthophosphate), Magnesium chelate, Magnesium amino acid chelate, Magnesium stearate, Magnesium chloride hexahydrate</p>
3	<p>Amino acid, amino acid salts and isomers:</p> <p>Guanidinoacetic acid, L-arginine, L-arginine monohydrochloride, L-cystine, Cystine HCL, L-histidine, L-histidine monohydrochloride monohydrate, L-leucine, L- isoleucine, L-threonine, L-tryptophan, DL-tryptophan, L-tyrosine, L-valine, Lysine and Lysine salt compounds (Concentrated liquid L-lysine, L-lysine monohydrochloride, L- Lysine sulphate, Concentrated liquid L-lysine monohydrochloride), Methionine, Methionine salt compounds and Methionine isomers (DL-methionine, Sodium DL- methionine, L-methionine, DL-methionyl-DL-methionine, Hydroxy analogue of methionine, Calcium salt of hydroxy analogue of methionine, Isopropyl ester of the hydroxylated analogue of methionine), L-Glutamic acid, Monosodium glutamate, Glycine, Glycine salt compounds, Glycine isomers, Taurine, L-Arginine, DL-Arginine, Arginine Hydrochloride, 2-Hydroxy-4-(Methylthio) butanoic acid –isopropyl ester (HBMI), Carnitine, Glutamate (Mono sodium L-glutamate), Glutamate, Serine, Phenylalamin, Proline</p>

2. Aids for domestic animals

No.	Name of active ingredients and microorganisms
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1	<p>Digestive aid substances:</p> <p>Endo-1,4-beta-mannanase, 3-phytase, 6-phytase, alpha-amylase, Maltogenic alpha-amylase, beta-amylase, cellulase, beta-glucosidase, glucoamylase, hemicellulase, lactase, alpha-galactosidase, endo-1,3(4)-beta-glucanase, endo-1,4-beta-glucanase, endo-1,4-beta-mannanase, endo-1,4-beta-xylanase, polygalacturonase, serine protease, subtilisin, pectinase, pullulanase, xylanase, lipase, bromelain, ficin, keratinase, papain, pepsin, protease (trypsin), catalase, glucose oxidase, Lysozyme, Neutral Protease, Isomaltooligosaccharide, Mannan Oligosaccharide, Endopentosanase, Fungal protease, Arabinase, Cellulobiase, Esterase, Hydrolase, Isomerase, Ligninase, Maltase, Oxidoreductase, Alkaline Protease, Proteinase, Urease, Invertase, 1,3-1,6 Beta glucan, Hemicellulose</p>
2	<p>Gastrointestinal microbiota aids:</p> <p><i>Bacillus amyloliquefaciens, Bacillus licheniformis, Bacillus subtilis, Bifidobacterium animalis ssp. animalis, Carnobacterium divergens, Clostridium butyricum, Enterococcus faecium, Lactobacillus acidophilus, Lactobacillus delbrueckii ssp. bulgaricus, Lactobacillus delbrueckii ssp. lactis, Lactobacillus helveticus, Lactobacillus plantarum, Lactobacillus rhamnosus, Lactobacillus salivarius ssp. salivarius, Pediococcus acidilactici, Pediococcus pentosaceus, Saccharomyces cerevisiae, Streptococcus thermophiles</i></p>
3	<p>Other aids:</p> <ul style="list-style-type: none"> - Microorganisms: <i>Lactobacillus farciminis, Pediococcus acidilactici, Saccharomyces cerevisiae boulardii</i> - Herbal products and active ingredient made from herb - Other substances: Ammonium chloride, Benzoic acid, Calcium formate, Canthaxanthin, Cinnamaldehyde, Dimethylglycine sodium salt, Fumaric acid, Kidney bean lectins, Lanthanum carbonate octahydrate, Potassium diformate, Sodium benzoate, Mono- and Diglycerides of Butyric acid, Diglycerides of Lauric acid, Monoglycerides of propionic acid, Mono- di- triglycerides of butyric acid, Mono- di- triglycerides of propionic acid, Mono-di-triglycerides of caprylic, Mono-di-triglycerides of capric acid, Glucosamine sulphate, Chondroitin sulphate, Octanoic acid, Decanoic acid, Palmitic acid, High- palmitic triglycerides, TMaz 80, Caprylic acid, Capric acid, Lauric acid, 10t-12c- Octadecadienoic acid methyl ester, 9c-11c-Octadecadienoic acid methyl ester, 10t-12c- Octadecadienoic acid, 9c-11-Octadecadienoic acid, Isomer t10-c12, Isomert11-c9, Lactic acid, Calcium lactate, Potassium lactate, Ammonium lactate, Sodium lactate and other salts of Lactic acid, Acetic acid, Calcium acetate, Potassium acetate, Ammoniumacetate, Sodium acetate and other salts of Acetic acid, Propionic acid, Calcium propionate, Potassium propionate, Ammoniumpropionate, Sodium propionate and other salts of Propionic acid, Butyric acid, Calcium butyrate, Potassium butyrate, Ammoniumbutyrate, Sodium butyrate and other salts of Butyric acid,

3. Technical substances (to maintain or boost properties of animal feed)

No.	Name of active ingredients and microorganisms
1	<p>Preservatives:</p> <p>Acetic acid, Ammonium formate, Ammonium propionate, Calcium acetate, Calcium citrates, Calcium formate, Calcium lactate, Calcium propionate, Calcium sorbate, Citric acid, DL-Malic acid, Ethyl 4-hydroxybenzoate, Formic acid, Fumaric acid, Hydrochloric acid, Lactic acid, L-Tartaric acid, Methyl 4-hydroxybenzoate, Methylpropionic acid, Orthophosphoric acid, Potassium acetate, Potassium citrates, Potassium diformate, Potassium lactate, Potassium L-tartrates, Potassium propionate, Potassium sodium L-tartrate, Potassium sorbate, Propionic acid, Propyl 4- hydroxybenzoate, Sodium benzoate, Sodium bisulphate, Sodium bisulphite, Sodium citrates, Sodium diacetate, Sodium ethyl 4-hydroxybenzoate, Sodium formate, Sodium lactate, Sodium L-tartrates, Sodium metabisulphite, Sodium methyl 4- hydroxybenzoate, Sodium nitrite, Sodium propyl 4-hydroxybenzoate, Sodium sorbate, Sodium propionate, Sorbic acid, Sulphuric acid, Sodium methylparaben, Sodium propyl paraben, Sodium acetate dehydro, Sodium Erythorbate</p>
2	<p>Antioxidants:</p> <p>Alpha-tocopherol, Ascorbic acid, Ascorbyl palmitate, Butylated hydroxyanisole (BHA), Butylated hydroxytoluene (BHT), Calcium ascorbate, Dodecyl gallate, Ethoxyquin, Octyl gallate, Propyl gallate, Sodium ascorbate, Synthetic delta tocopherol, Synthetic gamma tocopherol, Tocopherol extracts from vegetable oils, Tocopherol- rich extracts from vegetable oils (delta rich), Polyphenol, Quercetin, Sodium metabisulfite, Tertiary butylhydroquinone, Ethoxyquin monomer, Ethoxyquin polymer</p>
3	<p>Emulsifiers:</p> <p>Lecithins, Lecithins liquid, Hydrolysed lecithins, Lecithins de-oiled, Glycerine fatty acid ester, Ethoxylated castor oil, Modified lecithin, Glyceryl monostearate, Glycerol polyethylene glycol ricinoleate, Sucrose fatty acid ester, Polyxyethylene sorbitan fatty acid ester</p>
4	<p>Stabilizers:</p> <p>Sodium alginate, Potassium alginate</p>
5	<p>Thickeners:</p> <p>Sodium alginate, Potassium alginate, Gelatin</p>
6	<p>Gelling agents:</p> <p>Sodium alginate, Potassium alginate</p>

	Binders:
7	Clinoptilolite of sedimentary origin, Illite-montmorillonite-kaolinite, Montmorillonite-Illite, Sodium alginate, Potassium alginate, Gelatin, Sodium lignosulphonate, Polymethylolcarbamine, Calcium Lignosulphonate
8	Radiation control substances: Ferric(III) ammonium hexacyanoferrate (II), Bentonite
9	Anticaking agents: Bentonite, Clinoptilolite of sedimentary origin, Dolomite-Magnesite, Illite-montmorillonite-kaolinite, Iron sodium tartrates, Montmorillonite-Illite, Aluminum Calcium silicate, Magnesium silicate, Hydrated Sodium calcium aluminosilicate; Tricalcium Silicate, Silica, Bentonite montmorillonite, Diatomaceous Earth, Colloidal silica, Clipnotilolite, diamol, Microcrystalline cellulose
10	Acidity regulators: DL- Malic acid , L-Malic acid, Sodium bisulphate, Ammonium carbonate, Ammonium dihydrogen orthophosphate, Ammonium hydrogen carbonate, Benzoic acid, Calcium hydroxide, Calcium oxide, Diammonium hydrogen orthophosphate, Dipotassium hydrogen orthophosphate, Disodium dihydrogen diphosphate, Enterococcus faecium, Hydrochloric acid, Pentapotassium triphosphate, Potassium dihydrogen orthophosphate, Potassium hydrogen carbonate, Potassium hydroxide, Salt of DL- or L-Malic Acid, Sodium bisulphate, Sodium hydroxide, Sodium malate, Sodium sesquicarbonate, Sulphuric acid, Tetrapotassium diphosphate, Tripotassium orthophosphate, Pyrophosphate
11	Pickling aids: - Enzymes:Alpha-amylase, Beta-glucanase, Cellulase, Xylanase - Microorganisms and environment for pickling thereof: <i>Enterococcus faecium</i> , <i>Lactobacillus buchneri</i> , <i>Lactobacillus brevis</i> , <i>Lactobacillus casei</i> , <i>Lactobacillus diolivorans</i> , <i>Lactobacillus fermentum</i> , <i>Lactobacillus kefir</i> , <i>Lactobacillus hilgardii</i> , <i>Lactococcus lactis</i> , <i>Lactobacillus paracasei</i> , <i>Lactobacillus plantarum</i> , <i>Lactobacillus rhamnosus</i> , <i>Pediococcus acidilactici</i> , <i>Pediococcus parvulus</i> , <i>Pediococcus pentosaceus</i> , <i>Propionibacterium acidipropionici</i> - <i>Chemicals</i> : Ammonium propionate, Formaldehyde, Formic acid, Hexamethylene tetramine, Propionic acid, Potassium sorbate, Sodium bisulphate, Sodium formate, Sodium propionate, Sodium nitrite, Sodium Humate, Gluconate calcium
12	Multi-purpose substances: Emulsifiers and stabilizers, thickeners and gelling agents: Acacia (Gum

arabic), Agar, Alginic acid, Ammonium alginate, Calcium alginate, Calcium stearoyl 2-lactylate, Carboxymethylcellulose (Sodium salt of carboxymethyl ether of cellulose), Carrageenan, Cassia gum, Cellulose powder, Dextran, Ether of polyglycerol and of alcohols obtained by the reduction of oleic and palmitic acids, Ethylcellulose, Ethylmethylcellulose, Gellan gum, Glyceryl polyethyleneglycol ricinoleate, Guar gum, Hydroxypropylcellulose, Hydroxypropylmethylcellulose, Lecithins, Locust bean gum (Carob gum), Mannitol, Methylcellulose, Microcrystalline cellulose, Mono-esters of propane-1,2-diol (propyleneglycol), Partial polyglycerol esters of polycondensed fatty acids of castor oil, Polyethyleneglycol, Polyethyleneglycol ester of fatty acids, Polyglycerol esters of non-polymerised edible fatty acids, Polyoxyethylated glyceride of tallow fatty acids, Polyoxyethylene (20)-sorbitan monolaurate, Polyoxypropylene-polyoxyethylene polymers, Potassium alginate, Propane-1,2-diol alginate (Propyleneglycol alginate), Sodium stearoyl 2-lactylate, Sorbitan monolaurate, Sorbitan monooleate, Sorbitan monopalmitate, Sorbitan monostearate, Sorbitan tristearate, Sorbitol, Stearoyl 2-lactylic acid, Stearyl tartrate, Sucroglycerides (mixture of esters of saccharose and mono- and di-glycerides of edible fatty acids), Sucrose esters of fatty acids (esters of saccharose and edible fatty acids), Tamarind seed flour, Tragacanth, Xanthan gum, Monopropylene glycol, Glycerin (glycerol), Ethylenediaminetetraacetic acid (EDTA), EDTA disodium salt, Polysorbate 80, Polyoxyethylene sorbitan monooleate, Sodium stearoyl lactylate, Tween 80

Binders, anticaking agents and freezing agents: Bentonite-montmorillonite, Calcium aluminates, Calcium silicate, Citric acid, Clinoptilolite of volcanic origin, Colloidal silica, Kaolinitic clays, Kieselgur, Lignosulphonates, Natrolite-phonolite, Natural mixtures of steatites and chlorite, Perlite, Potassium ferrocyanide, Sepiolite, Silicic acid, Sodium aluminosilicate, Sodium ferrocyanide, Vermiculite, Propylene glycol, Mono and di-glycerides, Polyoxyethylene sorbitan fatty acids ester, Clinoptilolite

4. Coloring agents

No.	Name of active ingredients
1	<p>Carotenoids and Xanthophylls: Astaxanthin, Beta-apo-8'-carotenal, Canthaxanthin, Capsanthin, Citranaxanthin, Cryptoxanthin, Ethyl ester of beta-apo-8'- carotenoic acid, Lutein, Zeaxanthin</p> <p>Other coloring agents: Acid brilliant green BS (Lissamine green), Allura Red, Azorubine hoặc carmoisine (Disodium 4- hydroxy-3- (4-sulfonato-1 -naphthylazo) naphthalene-1-sulfonate), Bixin, Brilliant Blue FCF, Caramel colours, Carbon black, Carmine, Chlorophyll copper complex, Chlorophyllin Copper Complex, Erythrosine, Indigotine, Iron Oxide (Red, Black, Yellow), Patent blue V, Ponceau 4 R, Quinoline Yellow, Sunset yellow FCF, Tartrazine, Titanium dioxide, Apocarotenoic Ester, Titanum dioxide, Egg yellow 990, Caramel N, Brown HT, Carmoisine, Edical carmoisine, Brillant blue, FD&C Blue#1, Amaranth, Carmoisine red E122</p>

5. Flavoring agents

No.	Name of active ingredients	No.	Name of active ingredients
1	(-)-3,7-Dimethyl-6-octen-1-ol	322	Ethyl heptanoate
2	(1R)-1,7,7-Trimethylbicyclo[2.2.1]heptan-2-one	323	Ethyl hex-3-enoate
3	(d-, l-) Isoleucine	324	Ethyl hexadecanoate
4	(DL-) Valine	325	Ethyl hexanoate
5	(L-) Histidine	326	Ethyl isobutyrate
6	1,1-Diethoxyethane	327	Ethyl isovalerate
7	1,1-Dimethoxy-2-phenylethane	328	Ethyl lactate
8	1,2-Dimethoxy-4-(prop-1-enyl)benzene	329	Ethyl nonanoate
9	1,3-Dimethoxybenzene	330	Ethyl octanoate
10	1,4(8), 12- Bisabolatriene	331	Ethyl oleate
11	1,4-Dimethoxybenzene	332	Ethyl phenylacetate
12	1,5,5,9-Tetramethyl-13-oxatricyclo[8.3.0.0.(4.9)]tridecane	333	Ethyl propionate
13	1,8-Cineole	334	Ethyl salicylate
14	12- Methyltridecanal	335	Ethyl tetradecanoate
15	1-Ethoxy-1-(3-hexenyloxy)ethane	336	Ethyl trans-2-butenate
16	1-Isopropenyl-4-methylbenzene	337	Ethyl undecanoate
17	1-Isopropyl-4-methylbenzene	338	Ethyl valerate
18	1-Isopropyl-2-methoxy-4-methylbenzene	339	Ethyldeca-2(cis),4(trans)-dienoate
19	1-Methoxy-4-(prop-1(trans)-enyl)benzene	340	Eugenol
20	1-Phenethyl acetate	341	Eugenyl acetate
21	1-Phenylethan-1-ol	342	Fenchyl acetate
22	1-Propane-1-thiol	343	Fenchyl alcohol
23	2-Methoxynaphthalene	344	Formic acid
24	2-Propionylthiazole	345	Fumaric acid
25	2-(2-Methylprop-1-enyl)-4-	346	Furfural
26	2-(4-Methylphenyl)propan-2-ol	347	Furfuryl acetate

27	2-(sec-Butyl)-3-methoxypyrazine	348	Furfuryl alcohol
28	2,3- Dimethylpyrazine	349	Gallic acid
29	2,3,5- Trimethylpyrazine	350	Gamma-Terpinene
30	2,3,5,6- Tetramethylpyrazine	351	Geraniol
31	2,3-Diethyl-5-methylpyrazine	352	Geranyl acetate
32	2,3-Diethylpyrazine	353	Geranyl butyrate
33	2,4,5-Trimethylthiazole	354	Geranyl formate
34	2,4-Decadienal	355	Geranyl isobutyrate
35	2,4-Dithiapentane	356	Geranyl propionate
36	2,4-heptadienal, Hepta-2,4-dienal	357	Glyceryl tributyrat
37	2,5- Dimethylpyrazine	358	Glycine
38	2,5 or 6-methoxy-3-methylpyrazine	359	Glycyrrhizic acid ammoniated
39	2,5-Dimethylphenol	360	Hept-2(trans)- enal
40	2,6- Dimethylpyridine	361	Hept-4-enal
41	2,6,6-Trimethylcyclohex-2-en-1,4-dione	362	Heptan-1-ol
42	2,6-Dimethoxyphenol	363	Heptan-2-one
43	2,6-Dimethylhept-5-enal	364	Heptanal
44	2,6-Dimethylphenol	365	Heptano-1,4-lactone
45	2-Acetyl-3- methylpyrazine	366	Heptanoic acid
46	2-Acetyl-3-ethylpyrazine	367	Heptyl acetate
47	2-Acetyl-5- methylfuran	368	Hex-2(trans)-enal
48	2-Acetylfuran	369	Hex-2(trans)-enyl acetate
49	2-Acetylpyridine	370	Hex-2-en-1-ol
50	2-Acetylpyrrole	371	Hex-2-enyl butyrate
51	2-Acetylthiazole	372	Hex-3(cis)-en-1-ol
52	2-Dodecenal	373	Hex-3(cis)-enal
53	2-Ethyl 4-methylthiazole	374	Hex-3(cis)-enyl acetate
54	2-Ethyl-3- methylpyrazine	375	Hex-3(cis)-enyl formate
55	2-ethyl-3,(5or6)di methylpyrazine	376	Hex-3(cis)-enyl isobutyrate
56	2-Ethyl-3,5- dimethylpyrazine	377	Hex-3-enyl butyrate
57	2-Ethyl-3-methoxypyrazine	378	Hex-3-enyl hexanoate

58	2-Ethyl-4- hydroxy-5-methyl-3(2H)-furanone	379	Hex-3-enyl isovalerate
59	2-Ethylbutyric acid	380	Hex-3-enyl lactate
60	2-Ethylhexan-1-ol	381	Hexa- 2(trans),4(trans)-dienal
61	2-Ethylpyrazine	382	Hexadecanoic acid
62	2-Furanmethanethiol	383	Hexan-1-ol
63	2-Hexenal; hex-2- enal	384	Hexan-3,4-dione
64	2-Isobutyl-3- methoxypyrazine	385	Hexanal
65	2-Isobutylthiazole	386	Hexano-1,4-lactone
66	2-Isopropyl-4- methylthiazole	387	Hexanoic acid
67	2-Isopropylphenol	388	Hexyl 2-methylbutyrate
68	2-Methoxy-3- methylpyrazine	389	Hexyl acetate
69	2-Methoxy-4- methylphenol	390	Hexyl butyrate
70	2-Methoxy-4- vinylphenol	391	Hexyl hexanoate
71	2-Methoxybenzaldehyde	392	Hexyl isobutyrate
72	2-Methoxyethyl benzene	393	Hexyl isovalerate
73	2-Methoxyphenol	394	Hexyl lactate
74	2-Methyl-1- phenylpropan-2-ol	395	Hexyl phenylacetate
75	2-Methyl-2- pentenoic acid	396	Hexyl salicylate
76	2-Methyl-2-(methyldithio) propanal	397	Indole
77	2-Methyl-4-propyl-1,3-oxathiane	398	Isoborneol
78	2-Methylbenzene-1-thiol	399	Isobornyl acetate
79	2-Methylbutyl acetate	400	Isobutyl acetate
80	2-Methylbutyl butyrate	401	Isobutyl benzoate
81	2-Methylbutyl isovalerate	402	Isobutyl butyrate
82	2-Methylbutyraldehyde	403	Isobutyl isobutyrate
83	2-Methylbutyric acid	404	Isobutyl isovalerate
84	2-Methylcrotonic acid	405	Isobutyl phenylacetate
85	2-Methylfuran	406	Isobutyl salicylate
86	2-Methylfuran-3-thiol	407	Isoeugenol
87	2-Methylheptanoic acid	408	Isopentanol

88	2-Methylphenol	409	Isopentyl 2-methylbutyrate
89	2-Methylpropan-1-ol	410	Isopentyl acetate
90	2-Methylpropanal	411	Isopentyl benzoate
91	2-Methylpropane-1-thiol	412	Isopentyl cinnamate
92	2-Methylpropionic acid	413	Isopentyl isobutyrate
93	2-Methylpyrazine	414	Isopentyl salicylate
94	2-Methylundecanal	415	Isopropanol
95	2-Methylvaleric acid	416	Isopropyl tetradecanoate
96	2-Oxopropanal	417	Isopulegol
97	2-Pentylfuran	418	Isopulegone
98	2-Phenylethan-1-ol	419	Lactic acid
99	2-Phenylpropanal	420	L-Alanine
100	3- (Methylthio)butanal	421	L-Arginine
101	3- Butylidenephthalide	422	L-arginine produced by <i>Escherichia coli</i> NITE BP- 02186)
102	3- Ethylcyclopentan-1,2-dione	423	L-Aspartic acid
103	3- Propylidenephthalide	424	L-Carvone
104	3-(Methylthio)hexan-1-ol	425	L-Cysteine
105	3-(Methylthio)propan-1-ol	426	L-Cysteine hydrochloride monohydrate
106	3-(Methylthio)propionaldehyde	427	L-glutamic acid
107	3-(p-Cumenyl)-2- methylpropionaldehyde	428	L-Histidine
108	3,4- Dimethylcyclopentan-1,2-dione	429	Linalool
109	3,4-Dihydrocoumarin	430	Linalool oxide
110	3,4-Dimethylphenol	431	Linalyl acetate
111	3,5,5- Trimethylcyclohex-2-en-1-one	432	Linalyl butyrate
112	3,5-Dimethyl-1,2,4-trithiolane	433	Linalyl formate
113	3,5-Dimethylcyclopentan-1,2-dione	434	Linalyl isobutyrate
114	3,5-Octadiene-2- one	435	Linalyl propionate
115	3,7,11- T rimethyldodeca-2,6,10-trien-1 -	436	L-Leucine

	ol		
116	3,7-Dimethyloctan-1-ol	437	l-Limonene
117	3-Ethylpyridine	438	L-Menthol
118	3-Hydroxy-4,5- dimethylfuran-2(5H)-one	439	L-Methionine
119	3-Hydroxybutan-2-one	440	L-Phenylalanine
120	3-Mercaptobutan-2- one	441	L-Proline
121	3-Methyl-1,2,4- trithiane	442	L-Thyrosine
122	3-Methyl-2- cyclopenten-1-one	443	L-Valine
123	3-Methyl-2- pentylcyclopent-2-en-1-one	444	Maltol
124	3-Methyl-2(pent-2- enyl)cyclopent-2-en-1-one	445	Menthol
125	3-Methyl-2(pent-2(cis)-enyl)cyclopent-2- en-1- one	446	Menthyl acetate
126	3-Methylbutanal	447	Methanethiol
127	3-Methylbutane-1- thiol	448	Methyl 2-furoate
128	3-Methylbutyl 3- methylbutyrate	449	Methyl 2-methyl-3-furyl disulfide
129	3-Methylbutyl butyrate	450	Methyl 2-methylbutyrate
130	3-Methylbutyl dodecanoate	451	Methyl 2-methylvalerate
131	3-Methylbutyl formate	452	Methyl 3-(methylthio)propionate
132	3-Methylbutyl hexanoate	453	Methyl 3-oxo-2- pentyl-1- cyclopentylacetate
133	3-Methylbutyl octanoate	454	Methyl acetate
134	3-Methylbutyl phenylacetate	455	Methyl anthranilate
135	3-Methylbutyl propionate	456	Methyl benzoate
136	3-Methylbutylamine	457	Methyl butyrate
137	3-Methylbutyric acid	458	Methyl cinnamate
138	3-Methylcyclopentan-1,2-dione	459	Methyl decanoate
139	3-Methylindole	460	Methyl furfuryl disulfide
140	3-Methylnona-2,4-dione	461	Methyl furfuryl Sulfide
141	3-Methylphenol	462	Methyl hexanoate
142	3-Phenylpropan-1- ol	463	Methyl isovalerate

143	3-Phenylpropanal	464	Methyl N-methylantranilate
144	3-Phenylpropyl isobutyrate	465	Methyl phenylacetate
145	4- Methoxyacetophenone	466	Methyl propionate
146	4- Methoxybenzaldehyde	467	Methyl propyl disulfide
147	4- Methylacetophenone	468	Methyl salicylate
148	4-(2,5,6,6- Tetramethyl-2-cyclohexenyl)-3- buten-2- one	469	Methylsulfinyl methane
149	4-(2-Furyl)but-3-en- 2-one	470	methyltetrahydropyran
150	4-(4-Methoxyphenyl)butan-2-one	471	Monosodium glutamate
151	4-(p- Hydroxyphenyl)butan-2-one	472	Myrcene
152	4,5- Dihydrothiophen-3(2H)-one	473	Naringin / (2S)-4H-1-Benzopyran-4- one,7-((2-O-(6-deoxy-alpha-L- mannopyranosyl)-beta- D- glucopyranosyl)oxy)-2,3-dihydro-5- hydroxy-2-(4-hydroxyphenyl)
153	4,5-Dihydro-2- methylfuran-3(2H)-one	474	Nerol
154	4-Acetoxy-2,5- dimethylfuran-3(2H)-one	475	Nerolidol
155	4-Allyl-2,6-dimethoxyphenol	476	Neryl acetate
156	4-Ethylguaiacol	477	Neryl formate
157	4-Ethylphenol	478	Neryl isobutyrate
158	4H-1,3,5- Dithiazine, Dihydro-2,4,6-tris(2- methylpropyl)-; 5,6-Dihydro-2,4,6- trans(2- methylpropyl)4H-1,3,5-dithiazine	479	Neryl propionate
159	4-Hydroxy-2,5- dimethylfuran-3(2H)-one	480	Non-2(cis)-en-1- ol
160	4-Isopropylbenzaldehyde	481	Non-2-enal
161	4-Isopropylbenzyl alcohol	482	Non-6(cis)-enal
162	4-Methyl-5- vinylthiazole	483	Non-6-en-1-ol
163	4-Methylnonanoic acid	484	Nona- 2(trans),6(cis)-dienal
164	4-Methyloctanoic acid	485	Nona- 2(trans),6(trans)-dienal
165	4-Methylphenol	486	Nona-2,4-dienal
166	4-Oxovaleric acid	487	Nona-2,6-dien-1-ol

167	4-Phenylbut-3-en-2- one	488	Nonan- 3- one
168	4-Terpinenol	489	Nonan-1-ol
169	5- Methylquinoxaline	490	Nonan-2-one
170	5-(2-Hydroxyethyl)-4-methylthiazole	491	Nonanal
171	5,6,7,8-Tetrahydroquinoxaline	492	Nonano-1,4-lactone
172	5,6-Dihydro-2,4,6, tris(2-methylpropyl)4H- 1,3,5-dithiazine	493	Nonano-1,5-lactone
173	5-Ethyl-3-hydroxy- 4-methylfuran-2(5H)-one	494	Nonanoic acid
174	5H-5-methyl-6,7- dihydrocyclopenta (b)pyrazine	495	Nonyl acetate
175	5-Methyl-2- phenylhex-2-enal	496	Nootkatone
176	5-Methylfurfural	497	Oct-1-en-3-ol
177	5-Methylhept-2- en-4-one	498	Oct-1-en-3-one
178	5-Methylquinoxaline	499	Oct-1-en-3-yl acetate
179	6,10-Dimethyl-5,9- undecadien-2-one	500	Oct-2-enal
180	6-Methyl- hepta- 3,5-dien- 2-one	501	Oct-3-en-1-ol
181	6-Methylhept-5-en- 2-one	502	Octan-1-ol
182	8-Mercapto-p- menthan-3-one	503	Octan-2-ol
183	Acetaldehyde	504	Octan-2-one
184	Acetic acid	505	Octan-3-ol
185	Acetophenone	506	Octan-3-one
186	Acetylpyrazine	507	Octanal
187	Allyl heptanoate	508	Octano-1,4-lactone
188	Allyl hexanoate	509	Octano-1,5-lactone
189	Allyl isothiocyanate	510	Octanoic acid
190	Allyl methyl disulfide	511	Octyl acetate
191	Allylthiol	512	Octyl butyrate
192	alpha- Damascone	513	Oleic acid
193	alpha- Hexylcinnamaldehyde	514	p-Anisyl acetate
194	alpha- Methylcinnamaldehyde	515	p-Anisyl alcohol
195	alpha- Pentylcinnamaldehyde	516	Pent-1-en-3-ol

196	alpha-Ionone	517	Pent-2-en-1-ol
197	alpha-Phellandrene	518	Pentadecano-1,15- lactone
198	alpha-Terpinene	519	Pentan-1-ol
199	alpha-Terpineol	520	Pentan-2,3-dione
200	Aspartic acid	521	Pentan-2-ol
201	Benzaldehyde	522	Pentan-2-one
202	Benzene-1,3-diol	523	Pentanal
203	Benzoic acid	524	Pentano-1,4-lactone
204	Benzophenone	525	Pentyl butyrate
205	Benzothiazole	526	Pentyl hexanoate
206	Benzyl acetate	527	Pentyl isovalerate
207	Benzyl alcohol	528	Pentyl salicylate
208	Benzyl benzoate	529	Phenethyl 2-methyl-butyrate
209	Benzyl butyrate	530	Phenethyl acetate
210	Benzyl cinnamate	531	Phenethyl benzoate
211	Benzyl formate	532	Phenethyl butyrate
212	Benzyl hexanoate	533	Phenethyl formate
213	Benzyl isobutyrate	534	Phenethyl isobutyrate
214	Benzyl isovalerate	535	Phenethyl isovalerate
215	Benzyl methyl sulfide	536	Phenethyl octanoate
216	Benzyl phenylacetate	537	Phenethyl phenylacetate
217	Benzyl propionate	538	Phenethyl propionate
218	Benzyl salicylate	539	Phenol
219	beta- Damasconone	540	Phenylacetaldehyde
220	beta-Alanine	541	Phenylacetic acid
221	beta-caryophyllene	542	Phenylmethanethiol
222	beta-Damascone	543	picoline beta (3- methylpyridine)
223	beta-Ionone	544	Pin-2(10)- ene
224	beta-Ocimene	545	Pin-2(3)- ene
225	Bis-(2-Methyl-3-furyl) disulfide	546	Piperine
226	Borneo	547	Piperonal

227	Bornyl acetate	548	p-Menth-1-ene-8- thiol
228	Butan-1-ol	549	p-methylanisole, 1-Methoxy-4-methylbenzene
229	Butan-2-one	550	Prenyl acetate
230	Butanal	551	Propanal
231	Butyl 2- methylbutyrate	552	Propane-2-thiol
232	Butyl acetate	553	Propionic acid
233	Butyl butyrate	554	Propyl acetate
234	Butyl isovalerate	555	Propyl hexanoate
235	Butyl lactate	556	p-Tolualdehyde
236	Butyl valerate	557	Pyrrolidine
237	Butylamine	558	Salicylaldehyde
238	Butyl-O-butyryllactate	559	sec- Pentylthiophene
239	Butyric acid	560	sec-Butan-3-onyl acetate
240	Butyro-1,4-lactone	561	Serine
241	Camphene	562	S-Furfuryl acetothioate
242	Carvacrol	563	S-Methyl butanethioate
243	Carvyl acetate	564	Smoke flavouring extract
244	Cinnamaldehyde	565	Sodium bisulphate
245	Cinnamic acid	566	Succinic acid
246	Cinnamyl acetate	567	Tannic acid
247	Cinnamyl alcohol	568	Taurine
248	Cinnamyl butyrate	569	Terpineol
249	Cinnamyl isobutyrate	570	Terpineol acetate
250	Cinnamyl isovalerate	571	Terpinolene
251	Citral	572	Tetradecano-1,5- lactone
252	Citronellal	573	Tetradecanoic acid
253	Citronellic acid	574	Thaumatococin / Einesc
254	Citronellol	575	Theaspirane
255	Citronellyl acetate	576	Thiamine hydrochloride
256	Citronellyl butyrate	577	Thymol

257	Citronellyl formate	578	tr-1-(2,6,6- Trimethyl-1-cyclohexen- 1-yl)but-2-en-1- one
258	Citronellyl propionate	579	tr-2, cis-6- Nonadien-1-ol
259	Cyclohexyl acetate	580	tr-2, tr-4- Nonadienal
260	D,L-Isoleucine	581	tr-2, tr-4- Undecadienal
261	d,l-Isomenthone	582	trans-2-Decenal
262	D,L-Serine	583	trans-2-Nonenal
263	d-Carvone	584	trans-2-Octenal
264	Dec-2-enal	585	trans-Menthone
265	Dec-2-enoic acid	586	Tridec-2-enal
266	Deca- 2(trans),4(trans)-dienal	587	Tridecan-2-one
267	Decan- 2 -one	588	Triethyl citrate
268	Decan-1-ol	589	Trimethylamine
269	Decanal	590	Trimethylamine hydrochloride
270	Decano-1,4-lactone	591	Trimethyloxazole
271	Decano-1,5-lactone	592	Undec-10-enal
272	Decanoic acid	593	Undec-2(trans)- enal
273	Decyl acetate	594	Undecan-2-one
274	delta-3- Carene	595	Undecanal
275	d-Fenchone	596	Undecano-1,4- lactone
276	Diacetyl	597	Undecano-1,5-lactone
277	Diallyl disulfide	598	Valencene
278	Diallyl sulfide	599	Valeric acid
279	Diallyl trisulfide	600	Vanillin
280	Dibutyl sulfide	601	Vanillyl acetone
281	Diethyl malonate	602	Veratraldehyde
282	Diethyl succinate	603	Erythritol
283	Diethyl-5- methylpyrazine	604	Ethyl maltol
284	Difurfuryl ether	605	Ethyl vanillin
285	Difurfuryl Sulfide	606	Isovaleric
286	Dihydrocarvyl acetate	607	Isoamyl acetate

287	Dimethyl disulfide	608	Sodium Saccharin
288	Dimethyl sulfide	609	Neohesperidin dihydrochalcone
289	Dimethyl tetrasulfide	610	Tributylin
290	Dimethyl trisulfide	611	Phenylethyl alcohol
291	Diphenyl ether	612	Isoamyl phenylacetate
292	Dipropyl disulfide	613	Gama Nonalactone
293	Dipropyl trisulfide	614	Isoamyl butyrate
294	Disodium 5-guanylate	615	Erythorsin
295	Disodium 5'-inosinate	616	Disodium 5'-Inosinate
296	Disodium 5'-ribonucleotide	617	Neotame
297	Disodium guanosine 5'-monophosphate	618	Guanosine 5'-monophosphate (GMP)
298	Disodium Inosine- 5-Mono-phosphate (IMP)	619	Inosine-5-mono-phosphate (IMP)
299	d-Limonene	620	Acetylmethyl Carbinol
300	DL-Menthol (racemic)	621	Cinnamic Aldehyde
301	Dodec-2(trans)- enal	622	Disodium 5'-guanylate
302	Dodecan-1-ol	623	Iso amyl iso Valerate
303	Dodecanal	624	Butyl butyryl lactate
304	Dodecano-1,4- lactone	625	Heptanone
305	Dodecano-1,5- lactone	626	Acetyl propionyl
306	Dodecanoic acid	627	Anisaldehyde
307	Dodecyl acetate	628	Isom amyl acetate
308	Ethanol	629	Gamma Undecalactone
309	Ethyl 2- methylbutyrate	630	Undecanone mono propylene glycol
310	Ethyl 4-oxovalerate	631	Iso Amyl Salicylate
311	Ethyl acetate	632	Bourbonal
312	Ethyl acetoacetate	633	Furaneol
313	Ethyl acrylate	634	Corylone
314	Ethyl benzoate	635	Furfural mercaptain
315	Ethyl butyrate	636	Isoamyl acetate

316	Ethyl cinnamate	637	Raspberry ketone
317	Ethyl dec-2- enoate	638	Sanguinarine
318	Ethyl dec-4- enoate	639	Glucosum anhydricum
319	Ethyl decanoate	640	Aspartme
320	Ethyl dodecanoate	641	Ammonium Glycyrrhizinate
321	Ethyl formate	642	β-Methy cyclopenten-1,2-dione

6. Other single ingredients permitted for use in food in Vietnam according to food safety laws.

III. Ingredients recognized according to test results; ingredients recognized according to results of ministry-level or national-level science and technology tasks in Vietnam.

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