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| **MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT**  No. 21/2019/TT-BNNPTNT | **SOCIALIST REPUBLIC OF VIETNAM** **Independence - Freedom – Happiness \*\*\***  *Hanoi, November 28, 2019* |

**CIRCULAR**

**guiding a number of articles of the Law on Animal Husbandry****on animal feed**

*Pursuant to the Government's Decree 15/2017/ND-CP dated February 17, 2017, defining the functions, tasks, powers and organizational structure of the Ministry of Agriculture and Rural Development;*

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

*At the proposal of the Director of the Department of Livestock Production;*

*The Minister of Agriculture and Rural Development issues Circular guiding**a number of articles of the Law on Animal Husbandry on animal feed.*

**Chapter I**

**GENERAL PROVISIONS**

**Article 1. Scope of governing**

This Circular guides a number of contents specified in Item 4 Article 37, Item 2 Article 46, Point dd Item 2 Article 48 and Point c Item 2 Article 79 of the Animal Husbandry Law on animal feed, including:

1. Quality specifications of animal feed are mandatorily required to be announced in the applicable standards;

2. Labeling of animal feed;

3. Reporting on the production of animal feed;

4. List of chemicals, bio-products and microorganisms prohibited from use in animal feed; List of ingredients permitted for use as animal feed.

**Article 2. Applicability**

This Circular applies to domestic and foreign organizations and individuals that have activities related to animal feed in the Vietnam’s territory.

**Chapter II**

**CONTENT OF GUIDANCE**

**Article 3. Quality specifications of feed are mandatorily required to be announced in the applicable standards**

The quality specifications of animal feed required to be announced in the applicable standards are prescribed in Appendix I to this Circular.

**Article 4. Labeling of animal feed**

1. The contents that must be shown on the animal feed label are prescribed in Appendix II to this Circular.

2. When being circulated, animal feeds, which are bulk cargoes, must be accompanied by documents as prescribed in Appendix III to this Circular, except for cases where traditional animal feed are unprocessed and to be sold directly for users.

3. Animal feeds that are ordered and used internally and packed in circulation are not required to be labeled according to the provisions of Item 1 of this Article, but must have identifiable signs on their packages to avoid confusion, and the accompanying documents specified in Appendix III to this Circular.

4. Animal feeds containing veterinary drugs consisting of antibiotics for prevention and treatment of livestocks must have sufficient information on the name and content of the antibiotics, instructions for use, withdrawal time on labels or accompanying documents.

**Article 5. Report on the production of animal feed**

Establishments producing commercial animal feed report on the situation of animal feed production in accordance with the form prescribed in Appendix IV to this Circular to the Department of Livestock Production and provincial Departments of Agriculture and Rural Development through the internet or via postal services periodically on the 1st week of the month or unexpectedly when requested by a competent authority.

**Article 6. List of chemicals**, **bio-products and microorganisms prohibited from use in animal feed and List of ingredients permitted for use as animal feed**

1. The List of chemicals, bio-products and microorganisms prohibited from use in animal feed is prescribed in Appendix V to this Circular.

2. The List of ingredients permitted for use as animal feed is prescribed in Appendix VI to this Circular.

3. The Department of Livestock Production is responsible for:

a) Summarize and submit to the Minister of Agriculture and Rural Development for review and update the List specified in Item 1 and Item 2 of this Article annually;

b) Update and announce traditional feed products and commercial individual ingredients on the website of the Ministry of Agriculture and Rural Development (MARD).

Products of traditional feeds which have not been published under the provisions of this Point are manufactured for the purpose of trading, exchanging within households.

**Chapter III**

**ORGANIZATION OF IMPLEMENTATION**

**Article 7. Implementation Effectiveness**

1. This Circular takes effect from January 14, 2020.

2. This Circular replaces the following regulations:

a) Circular 28/2014/TT-BNNPTNT dated September 4, 2014 of the Minister of Agriculture and Rural Development promulgating the List of chemicals and antibiotics prohibited from import, production, trading and use in cattle and poultry feed in Vietnam;

b) Circular 42/2015/TT-BNNPTNT dated November 16, 2015 promulgating the additional List of chemicals and antibiotics prohibited from import, production, trading and use in cattle and poultry feed in Vietnam;

c) Circular 01/2017/TT-BNNPTNT dated January 16, 2017 of the Minister of Agriculture and Rural Development supplementing the List of chemicals and antibiotics prohibited from import, production, business and use in cattle and poultry feed in Vietnam;

d) Circular 02/2019/TT-BNNPTNT dated February 11, 2019 of the Minister of Agriculture and Rural Development promulgating the List of traditional animal feed products and individual ingredients allowed to be circulated in Vietnam.

**Article 8. Transitional provisions**

1. Labels of animal feed products complying with MARD’s Circular 20/2017/TT-BNNPTNT dated November 10, 2017 guiding the implementation of Government’s Decree 39/2017/ND-CP April 4, 2017 on management of animal and aqua feeds, that are printed before the effective date of this Circular, are permitted for use until December 31, 2021.
2. Animal feeds, that are permitted for sale in Vietnam in accordance with Government's Decree 39/2017/ND-CP dated April 4, 2017 on management of animal and aqua feeds, containing ingredients having not been announced under the provisions of Point b, Item 3, Article 6 of this Circular, are permitted for sale until December 31, 2021.

**Article 9. Implementation responsibilities**

In the course of implementation, if any difficulties or problems arise, agencies, organizations and individuals are requested to report them to MARD for consideration, amendment and supplement.

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| ***Recipients:***  - Ministries, ministerial-level agencies and Government-attached agencies;  - People's Committees of provinces and centrally-run cities;  - Departments of Agriculture and Rural Development of provinces and centrally-run cities;  - Official gazette; portals: of Government, Ministry of Agriculture and Rural Development;  - Department of Legal Document Examination - Ministry of Justice;  - Ministry of Agriculture and Rural Development: Ministers, Vice Ministers and units under the Ministry;  - Archive: Office, Livestock production. | **ON BEHALF OF THE MINISTER**  **VICE MINISTER**  **Phung Duc Tien** |

**Appendix V**

**LIST OF CHEMICALS, BIO-PRODUCTS AND MICOROORGANISMS PROHIBITED FROM USE AS ANIMAL FEED**

*Promulgated in conjunction with Circular 21/2019/TT-BNNPTNT dated November 28, 2019 of the Minister of Agriculture and Rural Development*

| **No.** | **Chemicals** |
| --- | --- |
|  | Carbuterol |
|  | Cimaterol |
|  | Clenbuterol |
|  | Chloramphenicol |
|  | Diethylstilbestrol (DES) |
|  | Dimetridazole |
|  | Fenoterol |
|  | Furazolidon and Nitrofuran derivatives |
|  | Isoxuprin |
|  | Methyl-testosterone |
|  | Metronidazole |
|  | 19 Nor-testosterone |
|  | Salbutamol |
|  | Terbutaline |
|  | Stilbenes |
|  | Melamine (with the melamine content in animal feed more than 2.5 mg/kg) |
|  | Bacitracin Zn |
|  | Carbadox |
|  | Olaquindox |
|  | Vat Yellow 1 (Other names: flavanthrone, flavanthrene, sandothrene); Molecular formulation: C28H12N2O2; Name: benzo[h]benz[5,6]acridino[2,1,9,8-klmna]acridine-8,16-dione. |
|  | Vat Yellow 2 (Other names: Indanthrene); Molecular formulation: C28H14N2O2S2; Name: 2,8-diphenylanthra[2,1-d:6,5-d']bisthiazole-6,12-dione. |
|  | Vat Yellow 3 (Other names: Mikethrene); Molecular formulation: C28H18N2O4; Name: N,N'-1,5-Anthraquinonylenebisbenzamide. |
|  | Vat Yellow 4 (Other names: Dibenzochrysenedione, Dibenzpyrenequinone); Molecular formulation: C24H12O2; Name: 7,14-Dibenzpyrenequinone. |
|  | Auramine (Other names: yellow pyoctanine; glauramine); Molecular formulation: C17H21N3; Name: 4,4’-Carbonimidoylbis[N,N-dimethylbenzenamine] and Auramine derivatives. |
|  | Cysteamine |

**Appendix VI**

**LIST OF INGREDIENTS PERMITTED FOR USE AS ANIMAL FEED**

*Promulgated in conjunction with Circular 21/2019/TT-BNNPTNT dated November 28, 2019 of the Minister of Agriculture and Rural Development*

**I. List of traditional animal feed ingredients**[[1]](#footnote-1)\*

| **No.** | **Ingredients** |
| --- | --- |
| 1 | **Ingredients derived from animals** |
| 1.1 | **Ingredients derived from aquatic products:**  Fish, shrimp, crab, crustaceans, mollusc, other aquatic species and products, by products from aquatic animals |
| 1.2 | **Ingredients derived from terrestrial animals:**  Bone meals, meat meals, meat bone meals, blood meals, hydrolyzed feather meals, poultry meals, egg, insects, invertebrate animals, milk and dairy products, other products from terrestrial animals |
| 1.3 | **Other ingredients of animal origin** |
| 2 | **Ingredients of plant origin** |
| 2.1 | **Grain and nuts, products from grain and nuts** |
| 2.1.1 | Grains: Corn, paddy, wheat, barley, millet, other grains and grain products and by-products |
| 2.1.2 | Beans: Soybeans, green beans, lupine beans, cajanus cajan, other beans and products and by-products from beans |
| 2.1.3 | Oil seeds: Peanut seeds, cotton seeds, flax seeds, sesame seeds, cashew nuts, other oil seeds and products and by-products from oil seeds |
| 2.1.4 | Other seeds |
| 2.2 | **Categories of meals:**  Soybean meals, peanut meals, palm meals, canola meals, sesame meals, sunflower meals, linseed meals, coconut meals, cotton meals, lupine meals and other meals |
| 2.3 | **Roots, stems, tubers and fruits:**  Roots, stems, tubers, fruits(e.g. sweet potato, cassava, radish, carrot, arrowroots, banana, sugar cane, vegetables, …) and other products, by products of roots, stems, tubers and fruits |
| 2.4 | **Gluten**  Corn gluten, wheat gluten, feed gluten and other gluten |
| **2.5** | **Products and by-products from food processing industries** |
| 2.5.1 | Products and by-products of sugar and confectionery industry: Sugarcane molasses, crumbs and other by-products of sugar and confectionery industry |
| 2.5.2 | By-products of spirit and alcohol processing industry: Spiritlees, argol, beer residues, beer yeast, alcohol yeast, distillers dried grain with solubles (DDGS) and other products from the alcoholic and alcohol processing industry |
| 2.5.3 | Products and by-products of other food processing industries: Pineapple residues, bean residue, cassava residues, bagasse, other by-products from the food processing industry |
| 2.5.4 | Starch: Corn starch, tapioca starch, wheat starch and other starches |
| **2.6** | **Raw feed:** |
| 2.6.1 | Terrestrial plants and grasses: Natural grasses, planted grasses, herbaceous plants, leguminous plants, other plants and products thereof |
| 2.6.2 | Aquatic plants: Seaweed, moss, algae, other aquatic plants and products derived from aquatic plants |
| 2.6.3 | Crop by-products: Rice straw, rice stubble, husk, corn cob, corn kelp, leaves and stems of plants, and other by-products from crops |
| **2.7** | **Other ingredients of plants** |
| **3** | **Oil and fat ingredients of plant, terrestrial animals and aquatic animals** |
| **4** | **Sugar:** Glucose, lactose, mantose and other sugars |
| **5** | Urea as food for ruminants, table salt (NaCl), stone powder (granular stone powder, fine stone powder) |
| **6** | **Other traditional ingredients** |

**II. List of single ingredients**

**1. Nutrition ingredients for livestocks**

| **No.** | **Ingredients** |
| --- | --- |
| 1 | **Group of Vitamins, pro-vitamins and like - vitamin functionable substances:**  Vitamin A (Vitamin A, Retinyl acetate, Retinyl palmitate, Retinyl propionate, beta carotene)  Vitamin B1 **(**Thiamine, Thiamine hydrochloride, Thiamine mononitrate)  Vitamin B2 (Riboflavin, Riboflavin-5'-phosphate ester monosodium salt, Riboflavin sodium phosphate)  Vitamin B3 (Niacin, Niacinamide, Acid nicotinic, Nicotinamide)  Vitamin B5 (Pantothenic acid, Calcium-D-pantothenate, Calcium-DL-pantothenate, Calcium-L-pantothenate)  Vitamin B6 (Vitamin B6, Pyridoxamine, Pyridoxal, Pyridoxine hydrochloride)  Vitamin B12 (Cyanocobalamin)  Vitamin C (Ascorbic acid, Sodium ascorbyl phosphate, Sodium calcium ascorbyl phosphate, 6-Palmitoyl-L-Ascorbic acid, Sodium-Carcium-L-Ascorbic acid-2-phosphate ester, L-Ascorbate monophossphate, 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)  Others: Beta-carotene, Betaine, Betaine anhydrous, Betaine anhydrous, Betaine hydrochloride, 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-3 Essential Unsaturated Fatty acids, Omega-3 Essential Unsaturated Fatty acids, Omega-3 Essential Unsaturated Fatty acids, Omega-3 Essential Unsaturated Fatty acids, 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** |
| 2.1 | **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  **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, Copper (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  **Chromium (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, Maganese chloride tetrahydrate, Manganese oxide, Manganomanganic oxide,Maganese 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  **Molypden (Mo):** Ammonium molybdate, Sodium molybdate, Disulfua molypden  **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. |
| 2.2 | **Macro minerals:**  Calcium carbonate (limestone), Calcareous marine shells, (Gizzard) Redstone, Attapulgite, Bone ash, Calcium and magnesium carbonate, Calcium carbonate-mag­nesium 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 phos­phate (Diammonium hydrogen orthophosphate), Dicalcium phosphate (calcium hydrogen orthophosphate), Dicalcium pyrophosphate (Dicalcium diphosphate), Dipotassium phosphate (Di-potassium hydrogen orthophosphate), Disodium dihydrogen diphosphate, Disodium phosphate (Disodium hydrogen orthophosphate), Lithothamn, Hydrated Sodium Calcium Aluminosilicates, Feldspar, Klino, Mica, Calcium Montmorillonite Clay, Lanthanide, Maerl, Magnesium acid pyrophosphate, Magnesium carbonate, Magnesium chloride, Magnesium gluconate, Magnesium hydroxide, Magnesium hypophos-phite, 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 tetrahy¬drogen diorthophosphate) Monodicalcium 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 hexametaphos - phate), Sodium pyrophosphate (Tetrasodium diphosphate), Sodium salts of organic acids, Sodium sesquicarbonate (trisodium hydrogendi- carbonate), 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 |
| 3 | **Amino acids, salts of amino acids and isomers:**  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 salt compounds of Lysine (Concentrated liquid L-lysine, L-lysine monohydrochloride, L- Lysine sulphate, Concentrated liquid L-lysine monohydrochloride), Methionine, Methionine salt compounds and 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 axit, Monosodium glutamate, Glycine, salt compounds of Glycine and isomers of Glycine, Taurine, L-Arginine, DL- Arginine, Arginine Hydrochloride, 2-Hydroxy-4-(Methylthio) butanoic acid -isopropyl ester (HMBI), Carnitine, Glutamate (Mono sodium L-glutamate), Glutamine, Serine, Phenylalamin, Proline |

**2. List of supplemental ingredients**

| **No.** | **Ingredients** |
| --- | --- |
| 1 | **Digestive aids**  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 (trypsine), 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 |
| 2 | **Supporting intestinal microflora:**  *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* |
| 3 | **Others**  **- Microorganisms:** *Lactobacillus farciminis*, *Pediococcus acidilactici, Saccharomyces cerevisiae boulardii*  - **Herbal products, active ingredients from herbs - 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, Diglyrecides 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, Ammonium acetate, Sodium acetate and other salts of Acetic acid, Propionic acid, Calcium propionate, Potassium propionate, Ammonium propionate, Sodium propionate and other salts of Propionic acid, Butyric acid, Calcium butyrate, Potassium butyrate, Ammonium butyrate, Sodium butyrate and other salts of Butyric acid, |

1. **Technical substances (maintaining or improving the characteristics of animal feeds)**

|  |  |
| --- | --- |
| **No.** | **Name of active ingredients, microorganisms** |
| 1 | **Preservatives:**  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 |
| 2 | **Antioxidants:**  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 |
| 3 | **Emulsifiers:**  Lecithins, Lecithin 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 |
| 4 | **Stabilizers:**  Sodium alginate, Potassium alginate |
| 5 | **Thickeners:**  Sodium alginate, Potassium alginate, Gelatin |
| 6 | **Gelling agents:**  Sodium alginate, Potassium alginate |
| 7 | **Adhesives:**  Clinoptilolite of sedimentary origin, Illite-montmorillonite-kaolinite, Montmorillonite-Illite, Sodium alginate, Potassium alginate, Gelatin, Sodium lignosulphonate, Polymethylol carbamine, Calcium Lignosulphonate |
| 8 | **Radioactive contamination 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 bisulfate, Ammonium carbonate, Ammonium dihydrogen orthophosphate, Ammonium hydrogen carbonate, Benzoic acid, Calcium hydroxide, Calcium oxide, Diammonium hydrogen orthophosphate, Dipotassium hydrogen orthophosphate, Disodium dihydrogen diphosphate, Hydrochloric acid, Penta potassium triphosphate, Potassium dihydrogen orthophosphate, Potassium hydrogen carbonate, Potassium hydroxide, Salt of DL- or L-Malic Acid, Sodium bi sulphate, Sodium hydroxide, Sodium malate, Sodium sesquicarbonate, Sulfuric acid, Tetra potassium diphosphate, Tri potassium orthophosphate, Pyrophosphate |
| 11 | **Fermentation enhancers:**  **- Enzymes:** Alpha-amylase, Beta-glucanase, Cellulase, Xylanase – Microorganisms and culture media: *Enterococcus faecium, Lactobacillus buchneri, Lactobacillus brevis, Lactobacillus casei, Lactobacillus diolivorans, Lactobacillus fermentum, Lactobacillus kefiri, Lactobacillus hilgardii, Lactococcus lactis, Lactobacillus paracasei, Lactobacillus plantarum, Lactobacillus rhamnosus, Pediococcus acidilactici, Pediococcus parvulus, Pediococcus pentosaceus, Propionibacterium acidipropionici*  **- Chemicals:** Ammonium propionate, Formaldehyde, Formic acid, Hexamethylene tetramine, Propionic acid, Potassium sorbate, Sodium bisulphate, Sodium formate, Sodium propionate, Sodium nitrite, Sodium Humate, Gluconate calcium |
| 12 | **Multipurpose 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, Dextrans, 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  **Adhesives, anti-caking 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, Clipnotilolite |

**4. Coloring agents**

| **No.** | **Ingredients** |
| --- | --- |
| 1 | **Carotenoids and Xanthophylls:** Astaxanthin, Beta-apo-8'-carotenal, Canthaxanthin, Capsanthin, Citranaxanthin, Cryptoxanthin, Ethyl ester of beta-apo-8'- carotenoic acid, Lutein, Zeaxanthin  **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 |

**5. Flavoring enhancers**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Substances** | **No.** | **Substances** |
| 1 | (-)-3,7-Dimethyl-6-octen-1-ol | 322 | Ethyl heptanoate |
| 2 | (1R)-1,7,7- T rimethylbicyclo[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-butenoate |
| 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 tributyrate |
| 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 *Escherichia coli* 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 -ol | 436 | L-Leucine |
| 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-methylanthranilate |
| 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-mann opyranosyl )-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- Damascenone | 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-Tolu aldehyde |
| 236 | Butyl valerate | 557 | Pyrrolidine |
| 237 | Butylamine | 558 | Salicylaldehyde |
| 238 | Butyl-O-butyryllactate | 559 | sec- Pentyl thiophene |
| 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 | Thaumatin / Einecs |
| 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 | Tributyrin |
| 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 | 3-Methy cyclopenten-1,2-dione |

6. Other single ingredients are used as food in Vietnam according to the provisions of the law on food safety.

III. Ingredients are recognized from testing results; ingredients are recognized as results of scientific and technological research projects at ministerial and national levels in Vietnam.

1. \* In natural form or processed, with or without technical substances. [↑](#footnote-ref-1)