Association of American Feed Control Officials (AAFCO)
Official Publication (OP), 2018 Defined Ingredient Categories

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The ingredients listed are to reference the feed ingredient category on the Commercial Feed License Application (Form 4273) and Inspection Fee Report (Form 4309).

In order to meet the conditions of an ingredient it must conform to the definition in the 2018 OP.

### 3. Alfalfa Products

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suncured Alfalfa Meal, or Pellets, or Ground Alfalfa Hay</td>
<td>Concentrated Alfalfa Solubles</td>
</tr>
<tr>
<td>Dehydrated Alfalfa Meal or Pellets</td>
<td>Direct Dehydrated Alfalfa Meal or Pellet</td>
</tr>
<tr>
<td>Alfalfa Nutrient Concentrate</td>
<td></td>
</tr>
</tbody>
</table>

### 6. Amino Acids and Related Products

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>DL-Methionine Hydroxy Analogue Calcium</td>
<td>L-Tryptophan</td>
</tr>
<tr>
<td>DL-Methionine</td>
<td>L-Lysine Monohydrochloride</td>
</tr>
<tr>
<td>Glycine</td>
<td>Taurine</td>
</tr>
<tr>
<td>L-Lysine</td>
<td>L-Arginine</td>
</tr>
<tr>
<td>L-Threonine</td>
<td>DL-Arginine</td>
</tr>
<tr>
<td>DL-Tryptophan</td>
<td>L-Tyrosine</td>
</tr>
<tr>
<td>DL-Methionine Hydroxyl Analogue Isoprphyl Ester</td>
<td>L-Lysine Liquid</td>
</tr>
<tr>
<td>DL Methionine Hydroxy Analogoue</td>
<td>L-Methionine</td>
</tr>
<tr>
<td>DL-Methionine Sodium</td>
<td>Taurine**</td>
</tr>
</tbody>
</table>

### 9. Animal Products

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat*</td>
<td>Hydrolyzed Whole Poultry</td>
</tr>
<tr>
<td>Meat By-Products</td>
<td>Hyrdolyzed Poultry By-Products Aggregate</td>
</tr>
<tr>
<td>Animal Liver</td>
<td>Egg Shell Meat</td>
</tr>
<tr>
<td>Poultry By-Product Meal</td>
<td>Blood Meal</td>
</tr>
<tr>
<td>Poultry Hatchery By-Product</td>
<td>Blood Meal, Flash Dried</td>
</tr>
<tr>
<td>Dried Meat Solubles</td>
<td>Blood Protein</td>
</tr>
<tr>
<td>Poultry By-Products</td>
<td>Glanudlar Meal and Extracted Glandular Meal</td>
</tr>
<tr>
<td>Hydrolyzed Poultry Feathers</td>
<td>Unborn Dalf Carcasses</td>
</tr>
<tr>
<td>Fleshings Hydrolysate</td>
<td>Animal Digest</td>
</tr>
<tr>
<td>Animal Serum</td>
<td>Cooked Bone Marrow</td>
</tr>
<tr>
<td>Serum Albumin</td>
<td>Mechanically Seperated Bone Marrow</td>
</tr>
<tr>
<td>Serum Globulin</td>
<td>Poultry Meal</td>
</tr>
<tr>
<td>Spray Dried Animal Blood Cells</td>
<td>Animal Plasma</td>
</tr>
<tr>
<td>Meat Meal</td>
<td>Ensiled Paunch</td>
</tr>
<tr>
<td>Meat and Bone Meal</td>
<td>Egg Product</td>
</tr>
<tr>
<td>Meat Meal Tankage</td>
<td>Leather Hydrolysate</td>
</tr>
<tr>
<td>Meat and Bone Meal Tankage</td>
<td>(Mammilian or Poultry) Stock/Broth</td>
</tr>
<tr>
<td>Hydrolyzed Hair</td>
<td>Meat Protein Isolate</td>
</tr>
<tr>
<td>Hydrolyzed Leather Meal</td>
<td>Air Dried Animal Blood Cells (Air Swept Tabular Drying)</td>
</tr>
<tr>
<td>Spray Dried Animal Blood</td>
<td>Hydrolyzed Whole Swine</td>
</tr>
</tbody>
</table>

* Ingredients are exempt from commercial feed definition unless ground, artifically dried and/or mixed with other feeds.
** Tentative Definitions

Where 'Name' is referenced, see the Official Publication for defined name.
## 12. Barley Products

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>Barley Hulls*</td>
<td>Barley Mill By-Product</td>
</tr>
<tr>
<td>Pearl Barley By-Product</td>
<td>Barley Distillers Protein Concentrate</td>
</tr>
</tbody>
</table>

## 15. Brewers Products

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brewers Dried Grains</td>
<td>Dried Spent Hops</td>
</tr>
<tr>
<td>Malt Sprouts</td>
<td>Brewers Wet Grains</td>
</tr>
<tr>
<td>Malt Cleaning</td>
<td>Brewers Condensed Solubles</td>
</tr>
<tr>
<td>Malt Hulls*</td>
<td></td>
</tr>
</tbody>
</table>

## 18. Preservatives

<table>
<thead>
<tr>
<th>Chemical Preservatives</th>
<th>Potassium sorbate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascobic Acid</td>
<td>Propionic acid</td>
</tr>
<tr>
<td>Ascoby palmitate</td>
<td>Propyl gallate</td>
</tr>
<tr>
<td>Benzoic acid</td>
<td>Porpylparaben</td>
</tr>
<tr>
<td>Butylated hydroxy anisole</td>
<td>Sodium ascorbate</td>
</tr>
<tr>
<td>Butylated hydroxytoluene</td>
<td>Sodium benzoate</td>
</tr>
<tr>
<td>Calcium ascorbate</td>
<td>Sodium bisulfite</td>
</tr>
<tr>
<td>Calcium propionate</td>
<td>Sodium metabisulfite</td>
</tr>
<tr>
<td>Calcium sorbate</td>
<td>Sodium nitrite</td>
</tr>
<tr>
<td>Citric acid</td>
<td>Sodium propionate</td>
</tr>
<tr>
<td>Dilauryl thiodipropionate</td>
<td>Sodium sulfite</td>
</tr>
<tr>
<td>Distearyl thiodipropionate</td>
<td>Sorbic acid</td>
</tr>
<tr>
<td>Erythoribic acid</td>
<td>Stannous chloride</td>
</tr>
<tr>
<td>Ethoxyquin</td>
<td>Sulfur dioxide</td>
</tr>
<tr>
<td>Gum guaic</td>
<td>Tertiary butyl hydroquinone</td>
</tr>
<tr>
<td>Methylparaben</td>
<td>Thiodipropionic</td>
</tr>
<tr>
<td>Potassium bisulfite</td>
<td>Tocopherols</td>
</tr>
<tr>
<td>Potassium metabisulfite</td>
<td></td>
</tr>
</tbody>
</table>

## 21. Citrus Products

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dried Citrus Pulp</td>
<td>Citrus Seed Meal, Mechanical Extracted</td>
</tr>
<tr>
<td>Dried Citrus Meal</td>
<td></td>
</tr>
</tbody>
</table>

## 24. Cottonseed Products

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammoniated Cottonseed Meal</td>
<td>Whole-Pressed Cottonseed, Mechanical Extracted</td>
</tr>
<tr>
<td>Cottonseed Meal, Mechanical Extracted</td>
<td>Low Gossypol Cottonseed Meal, Mechanical Extracted</td>
</tr>
<tr>
<td>Cottonseed Meal, Solvent Extracted</td>
<td>Low Gossypol Cottonseed Meal, Solvent Extracted</td>
</tr>
<tr>
<td>Cottonseed Cake, Mechanical Extracted</td>
<td>Cottonseed Hulls*</td>
</tr>
<tr>
<td>Cottonseed Flakes, Mechanical Extracted</td>
<td>Cottonseed Screenings</td>
</tr>
<tr>
<td>Cottonseed Flakes, Solvent Extracted</td>
<td>Cotton Plant By-Product</td>
</tr>
</tbody>
</table>

* Ingredients are exempt from commercial feed definition unless ground, artificially dried and/or mixed with other feeds.
** Tentative Definitions

Where '(Name)' is referenced, see the Official Publication for defined name.
### 27. Distillers Products

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Defined Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molasses Distillers Dried Solubes</td>
<td>(Name) Distillers Dried Grains with Solubles</td>
</tr>
<tr>
<td>Molasses Distillers Condensed Solubes</td>
<td>(Name) Condensed Distillers Solubles</td>
</tr>
<tr>
<td>Potato Distillers Dried Residue</td>
<td>(Name) Distillers Wet Grains</td>
</tr>
<tr>
<td>(Name) Distillers Dried Solubles</td>
<td>Deoiled Corn Distillers Dried Grains with Solubles, Solvent Extract</td>
</tr>
<tr>
<td>(Name) Distillers Dried Grains</td>
<td></td>
</tr>
</tbody>
</table>

### Drugs and Medicated Feeds

See 'Medicated' Feed Section of OP

### 30. Enzymes

Reference table in OP

### 33. Fats and Oils

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Defined Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal Fat</td>
<td>Hydrolyzed (Name) Sucrose Polyesters, Feed Grade</td>
</tr>
<tr>
<td>Vegetable Fat, or Oil</td>
<td>Methyl Esters of Conjugated Linoleic Acid</td>
</tr>
<tr>
<td>Hydrolyzed (Name) Fat, or Oil, Feed Grade</td>
<td>Gamma-Linolenic Acid Safflower Oil</td>
</tr>
<tr>
<td>(Name) Ester (Name), Feed Grade</td>
<td>Hydrogenated Glycerides</td>
</tr>
<tr>
<td>Vegetable Oil Refinery, Lipid Feed Grade</td>
<td>Yellow Grease, Feed Grade</td>
</tr>
<tr>
<td>Corn Syrup Refinery Insolubles, Feed Grade</td>
<td>Used Cooking Oil, Feed Grade</td>
</tr>
<tr>
<td>(Name) Distillers Oil, Feed Grade</td>
<td>Stearic Acid**</td>
</tr>
<tr>
<td>Calcium Salts of Long-Chain Fatty Acids</td>
<td>Palmitic Acid**</td>
</tr>
</tbody>
</table>

### 36. Fermentation Products

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Defined Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condensed, Extracted Glutamic Acid Fermentation Product</td>
<td>Dried (Name) Fermentation Product</td>
</tr>
<tr>
<td>Extracted (Name) Presscake</td>
<td>Liquid (Name) Fermentation Product</td>
</tr>
<tr>
<td>Extracted (Name) Meal</td>
<td>Extracted (Name)</td>
</tr>
<tr>
<td>Dried Extracted (Name) Fermentation Solubles</td>
<td>Direct-Fed Microorganisms</td>
</tr>
<tr>
<td>Dried (Name) Fermentation Extract</td>
<td>Dried Fermentation Biomass</td>
</tr>
<tr>
<td>Dried (Name) Fermentation Solubles</td>
<td></td>
</tr>
<tr>
<td>Undried Extracted (Name) Solids and Fermentation Solubles</td>
<td>Dried L-Lysine Fermentation Product</td>
</tr>
<tr>
<td>Condensed (Name) Fermentation Solubles</td>
<td>Liquid L-Lysine Fermentation Product</td>
</tr>
</tbody>
</table>

### 39. Flax Products

See 'Other Oilseed Products'

### 40. Human Food By-Products

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Defined Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dried Apple Pomace</td>
<td>Sugar Foods By-Products</td>
</tr>
<tr>
<td>Dried Apple Pectin Pulp</td>
<td>Past Product</td>
</tr>
<tr>
<td>Dried Tomato Pomace</td>
<td>Food Processing Waste</td>
</tr>
<tr>
<td>Cereal Food Fines</td>
<td>Restaurant Food Waste</td>
</tr>
<tr>
<td>Dried Potato Products</td>
<td>Recovered Retail Food</td>
</tr>
<tr>
<td>Gelatin By-Products</td>
<td>Mixed Feed Nuts</td>
</tr>
<tr>
<td>Dried Beans</td>
<td>(Name-fruit) Pomace</td>
</tr>
</tbody>
</table>

* Ingredients are exempt from commercial feed definition unless ground, artifically dried and/or mixed with other feeds.

** Tentative Definitions

Where 'Name' is referenced, see the Official Publication for defined name.
### 42. Grain Sorghums

- Ground Grain Sorghum*  
- Grain Sorghum Gluten Feed  
- Grain Sorghum Gluten Meal  
- Grain Sorghum Germ Cake or Grain Sorghum Germ Meal  
- Rolled Grain Sorghum*  
- Grain Sorghum Grits  
- Gelatinized Sorghum Grain Flour  
- Grain Sorghum Mill Feed

### 45. Lespedeza Products

- Lespedeza Meal  
- Lespedeza Stem Meal

### 48. Maize Products

- Corn Cob Fractions  
- Corn Bran  
- Corn Feed Meal  
- Ground Corn*  
- Cracked Corn*  
- Screened Cracked Corn  
- Corn Grits  
- Corn Flour  
- Ground Ear Corn  
- Ground Ear Corn with Husks  
- Flaked Corn*  
- Toasted Corn Flakes  
- Corn Gluten Feed  
- Corn Gluten Meal  
- Hominy Feed  
- Dried Corn Syrup  
- Hydrolyzed Corn Protein  
- Kibbled Corn  
- Dehydrated Corn Plant  
- Corn Germ Meal (Dry Milled)  
- Corn Germ Meal (Wet Milled)  
- Condensed Fermented Corn Extractives  
- Maltodextrins  
- Solvent Extracted Hominy Feed  
- Liquified Corn Product  
- Gelatinized Corn Flour  
- Corn Germ Dehydrated  
- Corn Refinery Concentrate  
- Corn Protein Concentrate

### 51. Marine Products

- Fish Meal  
- Fish Residue Meal  
- Fish Liver and Glandular Meal  
- Crab Meal  
- Shrimp Meal  
- Condensed Fish Solubles  
- Dried Fish Solubles  
- Fish Oil  
- Fish Protein Concentrate, Feed Grade  
- Fish By-Products  
- Dried Fish Protein Digest  
- Condensed Fish Protein Digest  
- Fish Digest Residue  
- Fish Stock/Broth  
- Dried Shellfish Digest

### 54. Milk Products

- Dried Buttermilk, Feed Grade  
- Condensed Buttermilk  
- Dried Skimmed Milk, Feed Grade  
- Condensed Skimmed Milk  
- Dried Cultured Skim Milk  
- Condensed Cultured Skim Milk  
- Cheese Rind  
- Dried Lactalbumin  
- Dried Milk, Feed Grade  
- Dried Milk Protein  
- Dried Hydrolyzed Casein  
- Dairy Food By-Products

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** Tentative Definitions

Where '(Name)' is referenced, see the Official Publication for defined name.
Dried (Dry) Whey
Condensed Whey
Dried (Dry) Whey Solubles
Condensed Whey Solubles
Dried Hydrolyzed Whey
Condensed Hydrolyzed Whey
Condensed Whey Product
Dried (Dry) Whey Product
Condensed Cultured Whey
Casein

Condensed Modified Whey Solubles
Whey
Dried (Dry) Whey Protein Concentrate
Dried Cultured Whey Product
Dried Cultured Whey
Dried Chocolate Milk
Dried Cheese
Dried Cheese Product
Bovine Colostrum
Dried Bovine Colostrum

57. Mineral Products

Ammonium Chloride
Ammonium Sulfate
Basic Copper Chloride
Bone Ash
Bone Charcoal
Bone Charcoal, Spent
Bone Meal, Cooked
Bone Meal, Steamed
Bone Phosphate
Calcite
Calcium Carbonate
Calcium Carbonate, Precipitated
Calcium Chloride
Calcium Gluconate
Calcium Hydroxide
Calcium Iodate
Calcium Iodobehenate
Calcium Oxide
Calcium Periodate
Calcium Sulfate
Seaweed-Derived Calcium
Chalk Precipitated
Chromium Tripicolinate
Chalk Rock
Clam Shells Ground
Cobalt Acetate
Cobalt Carbonate
Cobalt Chloride
Cobalt Choline Citrate Complex
Cobalt Glucoheptonate
Cobalt Gluconate
Cobalt Oxide

Magnesium-Mica
Magnesium Sulfate
Manganese Acetate
Manganese Carbonate
Manganese Chloride
Manganese Citrate (Soluble)
Manganese Gluconate
Manganese Orthophosphate
Manganese Phosphate (dibasic)
Manganese Sulfate
Manganese Oxide
Metal Amino Acid Complex
Metal (specific amino acid) Complex
Metal Amino Acid Chelate
Metal Methionine Hydroxy Analogue Chelate
Metal Polysaccharide Complex
Zinc Propionate
Chromium Propionate - The
Metal Proteinate
Oyster Shell Flour
Ammonium Polyphosphate Solution
Calcium Phosphate
Diammonium Phosphate
Dicalcium Phosphate
Disodium Phosphate
Monoammonium Phosphate
Monocalcium Phosphate
Monosodium Phosphate
Phosphoric Acid
Phosphate, Defluorinated
Rock Phosphate, Soft
Rock Phosphate, Ground

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** Tentative Definitions
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Ingredients are exempt from commercial feed definition unless ground, artificially dried and/or mixed with other feeds.

**Tentative Definitions**

Where '(Name)' is referenced, see the Official Publication for defined name.

---

Cobalt Sulfate
Copper Acetate Monohydrate
Copper Carbonate
Copper Chloride
Copper Choline Citrate Complex
Copper Citrate
Copper Gluconate
Copper Hydrosulfate
Copper Orthophosphate
Copper Oxide
Copper Sulfate
Cuprous Iodide
Diiodosalicylic Acid
Ethylendiamine Dihydriodide
Ferric Ammonium Citrate
Ferric Chloride
Ferric Choline Citrate Complex
Ferric Formate
Ferric Phosphate
Ferric Pyrophosphate
Ferric Sulfate
Ferrous Carbonate
Ferrous Chloride
Ferrous Fumarate
Ferrous Gluconate
Ferrous Glycine Complex
Ferrous Sulfate
Gypsiferrous Shale
Iron Oxide
Iron, Reduced
Limestone, Ground
Limestone, Magnesium or Dolomitic
Magnesium Carbonate
Magnesium Chloride
Magnesium Gluconate
Magnesium Hydroxide
Magnesium Phosphate
Magnesium Oxide
Rock Phosphate, Ground Low Fluorine
Sodium Hexametaphosphate
Sodium Tripolyphosphate
Tribasic Sodium Phosphate
Tricalcium Phosphate
Potassium Bicarbonate
Potassium Carbonate
Potassium Citrate
Potassium Chloride
Potassium Gluconate
Potassium Hydroxide
Potassium Iodate
Potassium Iodide
Potassium Sulfate
Salt
Iodized Salt
Shell Flour
Sodium Acid Pyrophosphate
Sodium Bicarbonate
Sodium Carbonate
Sodium Iodate
Sodium Iodide
Sodium Molybdate
Sodium Selenate
Sodium Selenite
Sodium Sesquicarbonate
Sodium Sulfate
Sulfur
Thymol Iodide
Zinc Acetate
Zinc Carbonate
Zinc Chloride
Zinc Chloride Diammine Complex
Zinc Oxide
Zinc Sulfate
Selenium Yeast
Zinc Hydroxychloride

**Descriptions of Salts, Complexes and Chelates**

Metal (Mineral) Salt
Metal (Mineral) Chelate
Metal (Mineral) Complex
### 60. Miscellaneous Products

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almond Hulls*</td>
<td>Sweet Lupin Meal</td>
</tr>
<tr>
<td>Almond Hulls with Almond Shells</td>
<td>Sweet Lupin Meal Dehulled</td>
</tr>
<tr>
<td>Ground Almond Shells</td>
<td>Sweet Lupin Meal Solvent Extracted</td>
</tr>
<tr>
<td>Ground Whole Aspen and/or Parts</td>
<td>Psyllium Seed Husk</td>
</tr>
<tr>
<td>Aspirated Grain Aspen Fractions</td>
<td>1, 3-Butylene Glycol</td>
</tr>
<tr>
<td>Coastal Burmudagrass Hay</td>
<td>Potato Protein</td>
</tr>
<tr>
<td>Buckwheat Hulls*</td>
<td>Lablab</td>
</tr>
<tr>
<td>Buckwheat Middlings</td>
<td>Chia Seed</td>
</tr>
<tr>
<td>L-Carnatine</td>
<td>Hydrolyzed Roughage</td>
</tr>
<tr>
<td>Ground Grass</td>
<td>Dried Chicory Root</td>
</tr>
<tr>
<td>Guar Meal</td>
<td>Fructooligosaccharide</td>
</tr>
<tr>
<td>Dried Kelp</td>
<td>Inulin</td>
</tr>
<tr>
<td>Paunch Product, Dehydrated</td>
<td>Salvage Pet Food</td>
</tr>
<tr>
<td>Quinoa Seed</td>
<td>Distressed Pet Food</td>
</tr>
<tr>
<td>Dehydrated Silage Pellets</td>
<td>Ground Pecan Shells</td>
</tr>
<tr>
<td>Ground Straw</td>
<td>Biodiesel-Derived Glycerin</td>
</tr>
<tr>
<td>Yeast Dried Grains</td>
<td>Pulse Fiver</td>
</tr>
<tr>
<td>Salts of Volatile Fatty Acids</td>
<td>Pulse Flour</td>
</tr>
<tr>
<td>Tapioca/Manioca and Cassava Root</td>
<td>Pulse Protein</td>
</tr>
<tr>
<td>Ethyl Alcohol Containing Ethyl Acetate</td>
<td>Pulse Starch</td>
</tr>
<tr>
<td>Dried Seaweed Meal</td>
<td>Dried Black Soldier Fly Larvae**</td>
</tr>
</tbody>
</table>

### 63. Molasses and Molasses Products

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beet Molasses</td>
<td>Beet pulp, dried, molasses</td>
</tr>
<tr>
<td>Citrus Molasses</td>
<td>Beet pulp, dried product, CSF, RNS</td>
</tr>
<tr>
<td>Hemicellulose Extract</td>
<td>Beet molasses, dried product</td>
</tr>
<tr>
<td>Starch Molasses</td>
<td>Concentrated Steffen Filtrate</td>
</tr>
<tr>
<td>Cane Molasses</td>
<td>Concentrated Separator By-Product</td>
</tr>
<tr>
<td>Bagasse</td>
<td>Beet Fiber, dried plain</td>
</tr>
<tr>
<td>Beet pulp, dried, plain</td>
<td></td>
</tr>
</tbody>
</table>

### 66. Non-Protein Nitrogen

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>Liquid Starch-Controlled Urea Product</td>
</tr>
<tr>
<td>Feed Grade Biuret</td>
<td>Fermented Ammoniated Condensed Whey</td>
</tr>
</tbody>
</table>

### 69. Oat Products

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oat Groats</td>
<td>Mixed Feed Oats</td>
</tr>
<tr>
<td>Oat Hulls*</td>
<td>Oat Mill By-Product</td>
</tr>
<tr>
<td>Feeding Oat Meal</td>
<td>Oat Fiber**</td>
</tr>
</tbody>
</table>

* Ingredients are exempt from commercial feed definition unless ground, artifically dried and/or mixed with other feeds.
** Tentative Definitions
Where '(Name)' is referenced, see the Official Publication for defined name.
### 71. Other Oilseed Products

- Camelina Meal Extracted
- Canola Meal
- Coconut Meal, Mechanical Extracted
- Coconut Meal, Solvent Extracted
- Crambe Meal, Heat Toasted
- Linseed Meal, Mechanical Extracted
- Linseed Meal, Solvent Extracted
- Flaxseed Screensings Meal, Solvent Extracted
- Flax Plant Product
- Flax Straw By-Product
- Peanut Skins
- Peanut Hulls*

- Peanut Meal and Hulls, Mechanical and Solvent Extracted
- Ground Peanut Hay
- Peanut Meal, Mechanical and Solvent Extracted
- Safflower Meal, Mechanical Extracted
- Sunflower Hulls*
- Sunflower Meal, Dehulled, Mechanical Extracted
- Sunflower Meal, Dehulled, Solvent Extracted
- Sunflower Meal, Mechanical Extracted
- Sunflower Meal, Solvent Extracted
- Brassica carinata Meal, Solvent Extracted**
- Low Glucosinolate High Erucic Acid Rapeseed Meal, Solvent Extracted**

### 73. Technical Additives

- Aluminum sulfate
- Attapulgite clay
- Calcium silicate
- Calcium aluminates
- Diacetel tartaric acid esters of mono and diglycerides or edible fats or oils, or edible fat-forming fatty acids
- Diatomaceous earth
- Disodium EDTA
- Ethyl cellulose
- Ethoxylated mono and diglycerides
- Fumaric acid
- Gellan gum
- Glucono-delta-lactone
- Guar gum (mucilage)
- Mono and diglycerides of edible fats or oils, or edible fat-forming acids
- Monosodium phosphate derivatives of mono and diglycerides of edible fats or oils or edible fat-forming fatty acids
- Montmorillonite clays
- Paraffin
- Petrolatum or a combination of mineral oil and petrolatum
- Polysorbate 80
- Polysorbate 60
- Polyvinyl alcohol
- Propylene glycol
- Stearic acid
- Sodium carboxymethyl-cellulose
- Sodium hexametaphosphate
- Sodium silico aluminate

- Calcium stearate
- Carrageenan
- Chondrus extract
- Hydrophobic silica
- Iron ammonium citrate
- Kaolin
- Lecithin
- Locust bean gum (Carob bean gum)
- Magnesium stearate
- Methyl glucoside Coconut oil ester
- Mineral oil

- Petroleum jelly
- Polyethylene glycol 400
- Polyoxyethylene glycol 400
- Sodium stearoyl lactylate
- Talc
- Tara gum
- Tetra sodium pyrophosphate
- Urea formaldehyde
- Yellow prussiate of soda

### Technical Additives, Acidifiers

- Ammonium Formate
- Benzoic Acid
- Formic Acid
- Feed Grade Sodium Formate

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** Tentative Definitions

Where ‘(Name)’ is referenced, see the Official Publication for defined name.
### Technical Additives, Antimicrobial Agents
- Formaldehyde

### Technical Additives, Anticaking Agents
- Bentonite
- Castor Oil
- Perlite
- Pyrophyllite
- Silicon Dioxide
- Sodium Bentonite
- Verxite
- Verxite Granules
- Verxite Flakes
- Verxite Grits
- Iron Tartrates**

### Technical Additives, Binders
- Lignin Sulfonate
- Sodium Salts of Fatty Acids
- Potassium Salts of Fatty Acids
- Hydrogenated Glycerides**

### Technical Additives, Biofuel Production
- Yeast for Production of Distiller Products

### Technical Additives, Emulsifiers
- Xanthan Gum

### Technical Additives, Floculants
- Chitosan
- Kraft Lignin

### Technical Additives, Nutritional Diluents
- Reed-Sedge Peat

### Technical Additives, Pelleting Aids
- Hide Glue (Technical Gelatin)
- Rice By-Products Fractions
- Urea Formaldehyde Condensation Polymer
- Sodium Hydroxide Lignin Dehydrated
- Surfactants
- Thickening Agents

### Technical Additives, Tracers
- Iron Nickel Tracer**

### Technical Additives, Antioxidants
- Cashew Nut Shell Liquid**

### 74. Processed Animal Waste Products
- Dried Poultry Waste
- Dried Poultry Waste - NPN Extracted
- Dried Poultry Litter
- Dried Ruminant Waste
- Undried Processed Animal Waste Products
- Processed Animal Waste Derivative

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** Tentative Definitions

Where `(Name)` is referenced, see the Official Publication for defined name.
### 75. Rice Products

- Rice Polishings
- Ground Rough Rice or Ground Paddy
- Rice Bran, Solvent Extracted
- Chipped Rice, Broken Rice or Brewers Rice
- Ground Brown Rice

### 78. Rye Products

- Rye Mill Run

### 81. Screenings

- Grain Screenings
- Mixed Screenings

### 84. Soybean Products

- Ground Soybeans
- Ground Soybean Hay
- Soybean Hulls*
- Soybean Feed, Solvent Extracted
- Soy Grits
- Soybean Meal, Dehulled, Solvent Extracted
- Soybean Mill Feed
- Soybean Mill Run
- Soy Phosphate or Soy Lecithin
- Heat Processed Soybeans
- Soy Protein Concentrate
- Kibbled Soybean Meal

### 87. Special Purpose Products

- Dried Algae Meal

**Additional Special Purpose Products**

- Aloe vera gel concentrate
- Anise seed
- Capsicum; red pepper
- Fennel
- Fenugreek seed
- Fumaric acid
- Ginger
- Glutamic acid
- Glycyr rhizin ammoniated
- Monosodium glutamate
- Phosphoric acid
- Saccharin sodium

### Tentative Definitions

Where '(Name)' is referenced, see the Official Publication for defined name.

* Ingredients are exempt from commercial feed definition unless ground, artificially dried and/or mixed with other feeds.

** Tentative Definitions
Special Purpose Products, Flavoring Agents

Aloe vera gel concentrate
Althea root and flowers
Amyris
Artemisia
Benzoin resin
Blackberry bark
Baronia flowers
Buchu leaves
Cajeput
Camphor tree
Cascara sagrada
Cassie flowers
Castor Oil
Catechu, Black
Cedar, white (aborvitae), leaves and twigs
Cherry pits
Cherry-laurel leaves
Chestnut leaves
Copaiba
Costus root
Cubeb
Currant, black, buds and leaves
Damiana leaves
Davana
Dill, Indian
Dittany of Crete
Dragon's blood (dracorubin)
Elemi
Erigeron
Eucalyptus globulus leaves
Fir ("pine") needles and twigs
Galbanum
Gambir (catechu, pale)
Genet flowers
Gentian rhizome and roots
Guaiac
Guarana
Haw, black, bark
Hemlock needles and twigs
Hyacinth flowers
Imperatoria
Labdanum
Linaloe wood
Imperatoria
Labdanum
Linaloe wood
Lovage
Lungmoss (lungwort)
Maple, mountain
Mimosa (black wattle) flowers
Myrrh
Oak, white, chips
Oak moss
Olibanum
Opppanax (bisabolmyrrh)
Orris root
Passion flower
Patchouli
Pennyroyal, American
Pennyroyal, European
Pine, Scotch, needles and twigs
Quassia
Quebracho bark
Quillaja (soapbark)
Rhatany root
Rhubarb root
Sandalwood, white (yellow, or East Indian)
Sarsaparilla
Sassafras leaves
Senna, Alexandria
Snakeroot, Canadian (wild ginger)
Spruce needles and twigs
Storax (styrax)
Tagetes (marigold)
Thymus capitatus (Spanish "origanum")
Tolu
Turpentine
Valerian rhizome and roots
Violet, Swiss
Walnut husks (hulls), leaves and green nuts
Yerba santa
Yucca, Joshua-tree
Yucca, Mohave
Cashew Nut Shell Extract

* Ingredients are exempt from commercial feed definition unless ground, artificially dried and/or mixed with other feeds.
** Tentative Definitions
Where '(Name)' is referenced, see the Official Publication for defined name.
### Special Purpose Products, Color Additive

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phaffia Yeast</td>
<td>Haematococcus Algae Meal</td>
</tr>
<tr>
<td>FD&amp;C Blue No. 1</td>
<td>Paprika Oleoresin</td>
</tr>
<tr>
<td>FD&amp;C Blue No. 2</td>
<td>Paprika</td>
</tr>
<tr>
<td>FD&amp;C Green No. 3</td>
<td>Paracoccus Pigment</td>
</tr>
<tr>
<td>FD&amp;C Red No. 3</td>
<td>Riboflavin</td>
</tr>
<tr>
<td>FD&amp;C Red No. 40</td>
<td>Saffron</td>
</tr>
<tr>
<td>FD&amp;C Yellow No. 6</td>
<td>Synthetic Iron Oxide</td>
</tr>
<tr>
<td>FD&amp;C Yellow No. 5</td>
<td>Tagetes (Aztec Marigold) Extract</td>
</tr>
<tr>
<td>Annatto Extract</td>
<td>Tagetes (Aztec Marigold) meal</td>
</tr>
<tr>
<td>Astaxanthin Dimethyldisuccinate</td>
<td>Titanium Dioxide</td>
</tr>
<tr>
<td>Astaxanthin</td>
<td>Toasted Partially Defatted Cooked Cottonseed Flour</td>
</tr>
<tr>
<td>Canthaxanthin</td>
<td>Tomato Lycopene Concentrate</td>
</tr>
<tr>
<td>Caramel</td>
<td>Tomato Lycopene Extract</td>
</tr>
<tr>
<td>Carmine</td>
<td>Turmeric Oleoresin</td>
</tr>
<tr>
<td>Carrot Oil</td>
<td>Turmeric</td>
</tr>
<tr>
<td>Cochineal Extract</td>
<td>Ultramarine Blue</td>
</tr>
<tr>
<td>Corn Endosperm Oil</td>
<td>Vegetable Juice</td>
</tr>
<tr>
<td>Dehydrated Beets</td>
<td>β-Apo-8'-Carotenal</td>
</tr>
<tr>
<td>Fruit Juice</td>
<td>β-Carotene</td>
</tr>
<tr>
<td>Glucose Syrup**</td>
<td></td>
</tr>
</tbody>
</table>

### 90. Vitamins

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Vitamin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cod Liver Oil</td>
<td>Vitamin B12 Supplement</td>
</tr>
<tr>
<td>Cod Liver Oil with Added Vitamins A and D</td>
<td>Vitamin E Supplement</td>
</tr>
<tr>
<td>Vitamin A Oil</td>
<td>Riboflavin Supplement</td>
</tr>
<tr>
<td>Vitamin A2 Supplement</td>
<td>Vitamin A Supplement</td>
</tr>
<tr>
<td>Vitamin D Oil</td>
<td>Vitamin D3 Supplement</td>
</tr>
<tr>
<td>Vitamin A and D Oil</td>
<td>Niacin Supplement</td>
</tr>
<tr>
<td>Cholecalciferol (D-Activated Animal Sterol)</td>
<td>Betaine (hydrochloride or anhydrous)</td>
</tr>
<tr>
<td>Ergocalciferol (D-Activated Plant Sterol)</td>
<td></td>
</tr>
</tbody>
</table>

**Additional Officially Recognized Vitamin Ingredients for Animal Feed Use**

(Reference the 2018 OP for nutritional levels in conformity with current Good Manufacturing Practices)

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Vitamin</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-Hydroxyvitamin D3</td>
<td>Menhaden oil</td>
</tr>
<tr>
<td>Ascorbic acid</td>
<td>Niacin; nicotinic acid</td>
</tr>
<tr>
<td>L-Ascorbyl-2-polyphosphate</td>
<td>Niacinamide; nicotinamide</td>
</tr>
<tr>
<td>L-Ascorbyl-2-sulfate</td>
<td>p-Aminobenzoic acid</td>
</tr>
<tr>
<td>Biotin</td>
<td>Pyridoxine hydrochloride</td>
</tr>
<tr>
<td>Calcium ascorbate</td>
<td>Riboflavin</td>
</tr>
<tr>
<td>Calcium L-ascorbyl-2-monophosphate</td>
<td>Salmon Oil</td>
</tr>
<tr>
<td>Calcium pantothenate</td>
<td>Salmon liver oil</td>
</tr>
<tr>
<td>Carotene</td>
<td>Sardine oil</td>
</tr>
<tr>
<td>Choline pantothenate</td>
<td>Shark liver oil</td>
</tr>
</tbody>
</table>

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** Tentative Definitions
Where ‘(Name)’ is referenced, see the Official Publication for defined name.
**Ingredients are exempt from commercial feed definition unless ground, artificially dried and/or mixed with other feeds.**

**Tentative Definitions**

Where '(Name)' is referenced, see the Official Publication for defined name.

### 93. Wheat Products

- Wheat Bran
- Wheat Flour
- Wheat Germ Meal
- Wheat Mill Run
- Wheat Middlings
- Wheat Shorts
- Wheat Red Dog
- Defatted Wheat Germ Meal
- (Name) Wheat Gluten

### 96. Yeast Products

- Primary Dried Yeast or Dried Yeast
- Active Dry Yeast
- Irradiated Dried Yeast, Irradiated (Name) Dried Yeast
- Brewers Dried Yeast
- Grain Distillers Dried Yeast
- Torula Dried Yeast or Candida Dried Yeast
- Yeast Culture
- Molasses Yeast Condensed Solubles
- Brewers Liquid Yeast
- Yeast Extract
- Hydrolyzed Yeast
- Molasses Hydrolyzed Yeast
- *Scheffersomyces stipitis* Dried Yeast

<table>
<thead>
<tr>
<th>Choline xanthate</th>
<th>Thiamine hydrochloride</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erythorbic acid</td>
<td>Thiamine mononitrate</td>
</tr>
<tr>
<td>Folic acid</td>
<td>Tocopherol</td>
</tr>
<tr>
<td>Herring oil</td>
<td>a-Tocopherol acetate</td>
</tr>
<tr>
<td>Inositol</td>
<td>Tuna oil</td>
</tr>
<tr>
<td>Magnesium L-ascorbil-2-phosphate</td>
<td>Vitamin A acetate</td>
</tr>
<tr>
<td>Menadione</td>
<td>Vitamin A plamitate</td>
</tr>
<tr>
<td>Menadione dimethylpyrimidinol bisulfite</td>
<td>Vitamin A proprionate</td>
</tr>
<tr>
<td>Menadione sodium bisulfite complex</td>
<td>Wheat germ oil</td>
</tr>
</tbody>
</table>