GUIDELINES - FARM FEEDS

INDEX

GENERAL REQUIREMENTS FOR FARM FEEDS

1. Substances whose use is prohibited in mixed farm feeds

(1) The use of the ingredients in Annexure 5 is prohibited in mixed farm feeds.

(2) A product shall not be registered as a farm feed if

(a) it contains any feed ingredient of such nature or in such quantities that it could cause an interaction leading to the loss of one or more of the nutrients in that product such as to be below the intended nutritional requirement for that product;

(b) it consists of or contains any substance of animal origin, including excreta or other by-products, and which has not been sterilised beforehand to such extent that the infection or contamination of such product with *Bacillus anthracis*, organisms of the gas-gangrene type, other pathogenic or putrefactive organisms of viable micro-organisms or substances has been reduced to the level where such organisms or substances will be injurious to or endanger the health or detrimentally affect the productive capacity of animals to which such product is fed;

2. Ingredients allowed in mixed farm feeds

(1) The use of the ingredients as specified in Annexure 1 is allowed, in mixed farm feeds unless designated otherwise in the definitions.

(2) The bold print names are acceptable ingredient names unless designated otherwise in the definitions.

(3) All ingredients with the exception of grain cereals must conform and be registered according to these definitions .

3. Undesirable substances with limited use in farm feeds

(1) Feed ingredients for use in farm feeds may not be sold in the Republic of South Africa unless they are sound, genuine and of merchantable quality.

(2) In particular, and subject to the provisions in Annexure 4, feed ingredients for use in farm feeds cannot be considered as sound, genuine and of merchantable quality if the level of undesirable substances or products is so high as to make it impossible to respect the maximum levels fixed for mixed farm feeds in Annexure 4.

(3) The substances and products listed in Annexure 4 shall be tolerated in farm feeds only under the conditions set out therein.

(4) The Registrar may authorise that the maximum levels provided for in Annexure 4 in respect of farm feeds may be exceeded in the case of farm feed which is produced and used in the same geographical area and used on the same agricultural holding, where this is necessary for particular local reasons.

(5) The feed ingredients intended for use in farm feeds listed in Annexure 4 may be sold only if their content of the undesirable substance or product mentioned in column 1 of the Annexure mentioned does not exceed the maximum level laid down in column 3 of that Annexure.

(6) Where the content of the undesirable substance or product listed in column 1 of Annexure 4 exceeds the level laid down in column 3 of Annexure 4 in respect of an unmixed farm feed, the feed ingredient listed in column 2 of Annexure 4 may, without prejudice to sub-guideline (5), be sold only if it is intended for use by an establishment which has received written permission from the Registrar to do so, and if the undesirable substance or product concerned is accompanied by a document stating:

(a) that the feed ingredient is intended for manufacturers of mixed farm feeds who have been given permission by the Registrar;

(b) that the feed ingredient may not be fed unprocessed to livestock;

(c) the quantity of the undesirable substance or product contained in the feed ingredient.

(7) Establishments wishing to sell the feed ingredients specified in sub-guideline (6) shall apply in writing to the Registrar for such permission. The Registrar may, at his discretion, inspect the establishment concerned, before either granting or refusing in writing the request for permission.

(8) Complementary, supplement and concentrated farm feeds, may not, allowing for dilutions prescribed for their use, contain levels of the substances and products listed in Annexure 4 in excess of those fixed for complete farm feeds.

(9) Where a person, as a result of new information or of a reassessment of existing scientific information made since the provisions in question were adopted, has detailed grounds for establishing that a maximum content fixed in Annexure 4 or a substance or product not listed therein constitutes a danger to animal or human health or the environment, that person must inform the Registrar immediately, giving reasons. The Registrar shall investigate the matter and consult the farm feed industry before deciding whether the Annexures should be modified.

(10) The Registrar shall be entitled to inspect establishments at random, take random samples and take all necessary measures to ensure that farm feeds and feed ingredients conform to this Guideline.

(11) Any person who possesses, or has possessed or has had direct contact with a consignment of farm feed or feed ingredient which does not comply with this Guideline shall immediately inform the Registrar, even if the destruction of the consignment is envisaged. The Registrar shall take the necessary measures to ensure that that the consignment is not used in animal nutrition and that the final destination of the contaminated consignment, including possible destruction, cannot have harmful effects on public or animal health or on the environment.

4. Maximum and minimum levels of additives in farm feeds

(1) Additives shall only be used in farm feeds if they appear in Annexure 2 hereto.

(2) Additives shall only be used in farm feeds taking account of the maximum and minimum levels set in Annexure 2, such additive levels referring to complete farm feeds with a moisture content of 120g/kg

(3) If a substance permitted as an additive also exists in the natural state in certain feed ingredients, the quantity of additive to be incorporated shall be calculated so that the total of the elements added and the elements present naturally does not exceed the maximum level provided for in Annexure 2.

(4) The mixing of additives shall only be permitted in premixtures and farm feeds where there is physio-chemical and biological compatibility between the components of the mixture in relation to the effects desired.

(5) Where a person, as a result of new information or of a reassessment of existing scientific information made since the provisions in question were adopted, has detailed grounds for establishing that an additive in Annexure 2 constitutes a danger to animal or human health or the environment, that person shall inform the Registrar immediately, giving reasons. The Registrar must investigate the matter and consult the farm feed industry before deciding whether the Annexure should be modified.

(6) Where a person, as a result of new information or technology or of a reassessment of existing scientific information, has grounds for desiring an additive which is not listed in Annexure 2 to be included in that list or grounds for believing that an additive on the list should be allowed for use in farm feeds in increased quantities, that person shall inform the Registrar, providing a detailed dossier setting out all the scientific evidence. The Registrar must investigate the matter and consult the farm feed industry before deciding whether the Annexure should be amended.

5. Additives in complementary, supplementary and concentrated farm feeds

(1) In the case of a complementary, supplementary and concentrated farm feed which contains any additive in excess of the maximum content specified for that additive in relation to the complete farm feed by Annexure 2, the instruction for use shall state, according to the species and age of the animal, the maximum quantity in grams or kilograms of the farm feed to be given per animal per day, and shall be so formulated that, when they are correctly followed, the final content of the additive does not exceed the

maximum so specified. This sub-guideline shall not apply to products delivered to manufacturers of mixed farm feeds or to their suppliers.

(2) The provisions of Guideline 5(1) and 6 shall not apply to additives, pre-mixtures and farm feeds which are shown, at least by an appropriate indication, to be for export to other countries.

6. Maximum and minimum levels of stock remedies in farm feeds

(1) Stock remedies shall only be used in farm feeds if they appear in Annexure 6 hereto.

(2) Stock remedies shall only be used in farm feeds taking account of the maximum and minimum levels set in Annexure 6, such additive levels referring to complete farm feeds with a moisture content of 120g/kg

(3) The mixing of stock remedies shall only be permitted in pre-mixtures and farm feeds where there is physio-chemical and biological compatibility between the components of the mixture in relation to the effects desired.

(4) Where a person, as a result of new information or of a reassessment of existing scientific information made since the provisions in question were adopted, has detailed grounds for establishing that a stock remedy in Annexure 6 constitutes a danger to animal or human health or the environment, that person shall inform the Registrar immediately, giving reasons. The Registrar shall investigate the matter and consult the farm feed industry before deciding whether the Annexure should be modified.

(5) Where a person, as a result of new information or technology or of a reassessment of existing scientific information, has grounds for registering a stock remedy which is not listed in Annexure 6 to be included in that list that person shall inform the Registrar, providing a detailed dossier setting out all the scientific evidence. The Registrar will update this list annually.

7. Stock Remedies in complementary, supplementary and concentrated farm feeds

In the case of a complementary, supplementary and concentrated farm feed which contains any stock remedy in excess of the maximum content specified for that stock remedy in relation to the complete farm feed by Annexure 6, the instruction for use shall state, according to the species and age of the animal, the maximum quantity in grams or kilograms of the farm feed to be given per animal per day, and shall be so formulated that, when they are correctly followed, the final content of the stock remedy does not exceed the maximum so specified.

8. Sampling of farm feeds

. When a sample of a farm feed is taken at a plant or elsewhere than a plant in terms of Article 15(1) of the Act the person in charge of the undertaking or an officer as intended and authorised in terms of Article 2(2)(a) of the Act shall take such sample by using a standard documented method that is appropriate on the understanding that should the holder of the registration, his employee, agent or any other witness sign the certificate relating to the sample taken, the method of the sampling cannot become the subject of dispute.

9. Analysis method

In the case of a dispute only methods of analysis as determined by the Agri-Laboratory Association of Southern Africa (AgriLASA), may be used: on the understanding that the Registrar may recognise any other method of analysis as may be modified from time to time

10. Tolerances

A farm feed is not considered to have a deficiency of one or another of its registered nutrients as long as it is within the limits set out in Annexure 7.

11. Guidelines relating to ingredients and other products

11.1 Requirements for ingredients

Ingredients must conform with and comply to the definitions as set out in Annexure 1 of the Guidelines.

All ingredients must be marked and labeled accordingly.

11.2 Requirements for enzymes, micro-organisms and their preparations in farm feeds

(1) TERMS

Enzyme a protein made up of amino acids or their derivatives which catalyses a defined chemical reaction. Required cofactors should be considered as an integral part of the enzyme

Source organism the organism that actually produces the enzyme(s).

Enzyme substrate the material or substance which is acted upon catalytically by the enzyme.

Enzyme activity (unit of) The catalytic activity required to convert a given quantity assay substrate to a given quantity of product per unit time under the standard conditions set forth in the assay procedure.

(2) REGISTRATION REQUIREMENTS FOR ENZYMES, MICRO-ORGANISMS AND THEIR PREPARATIONS

(3) (a) The following information must be submitted:
- (i) Identity of the product:
- (ii) Trade name.

(b) Qualitative and quantitative composition:
- (i) active substance (1),
- (ii) other components,
- (iii) impurities,
- (iv) undesirable substances.

(c) Specifications concerning the active substance.

(4) For micro-organisms:
- (a) name and taxonomic description according to an international code of nomenclature.
- (b) the number of colony-forming units (CFU/g).

(5) For enzymes:
- (a) name according to main enzymatic activities – refer to Table A.
- (b) relevant activities with regard to appropriate types of chemically pure substrates (expressed in activity unites (4) per g).

NB: If the active substance is a mixture of active components, all the components must be described separately with an indication of their proportion in the mixture.

(6) Properties of the product:
Main effect:
- (i) information concerning effectiveness,
- (ii) justification for the presence of each component if the substance is a mixture of active components.
- (iii) Other effects:
- (iv) Product safety.

11.3 Conditions for the use of product:

Uses provided for in animal nutrition (species or categories of animal, type of feeding stuffs, period of use, etc).

Proposed dosage in premixes and feeding stuffs (appropriate units of biological activity such as CFU per gram of product for micro-organisms or activity units per gram for enzyme preparations.

Other known uses of the active substance or the preparation (in foodstuffs, human or veterinary medicine, industry etc).

Recommendations concerning product safety in relation to targeted species, the consumer and the environment.

If necessary, measures for the prevention of risks and means of protection during manufacture and use.

(1) Technical information:

(a) Stability of the product:
- (i) with regard to atmospheric agents,
- (ii) during the preparation of premixes and feeding stuffs,
- (iii) during the storage of premixes and feeding stuffs,
- (iv) description of the process of manufacture and methods used concerning the control of the quality of the product during its manufacture.

(b) Control:

Method(s) of analysis for determining the active component(s) in:
- (i) the product itself,
- (ii) premixes,
- (iii) feedingstuffs.

11.4 Labelling requirements for enzymes, micro-organisms and their preparations

Enzymes, micro-organisms and their preparations, as well as premixtures and complete feeds in which they have been incorporated, may be marketed only if the particulars listed below, which must be clearly visible, legible and indelible are shown on the packaging, the container or on a label attached thereto**:**

(1) For enzymes and their preparations:

(a) the specific name of the active constituent(s) according to their enzymatic activity(ies);

(b) the activity units (activity units per g or activity units per ml);

(c) the name and the address of the registration holder;

(d) the registration number reflected as Reg No. ……. Act No. 36 of 1947;

(e) the expiry date of the guarantee or the storage life from the date of manufacture;

(f) the batch reference number and the date of manufacture;

(g) directions for use and where appropriate, a safety recommendation;

(h) the net mass and for liquid additives either the net volume or the net mass.

(2) For micro-organisms and their preparations:

(a) the identifications of the strain(s);

(b) the number of colony-forming units (CFU/g);

(c) the name and address of the registration holder;

(d) the expiry date of the guarantee or the storage life from the date of manufacture;

(e) the batch reference number and the date of manufacture;

(f) the directions for use and, where appropriate, a safety recommendation;

(g) the net mass and for liquid additives either the net volume or the net mass;

(h) where appropriate, indication of any particular significant characteristics due to the manufacturing process.

TABLE A Enzymes/Source organisms acceptable for use in farm feeds

In the case of microbial enzymes it is understood that they are produced from non-pathogenic and non-toxigenic strains

Classification/ Name	Source organism	Typical substrate [1]	Function	Current supported use
Carbohydrases				
alpha-amylase	Animal pancreatic tissue *Aspergillus niger,* var. *Aspergillus oryzae*, var. *Bacillus amyloliquefaciens* *Bacillus lentus* *Bacillus licheniformis* *Bacillus licheniformis* containing a *Bacillus stearothermophilus* gene for alpha-amylase *Bacillus stearothermophilus* *Bacillus subtilis* containing a *Bacillus megaterium* gene for alpha-amylase *Bacillus subtilis* containing a *Bacillus stearothermophilus* gene for alpha-Amylase *Bacillus subtilis,* var. Barley malt *Rhizopus niveus* *Rhizopus oryzae,* var.	corn silage, corn, corn feed meal, corn gluten feed, soya-bean meal, wheat, wheat middlings, wheat feed meal, barley, grain sorghum, pea, oat, tapioca, millet, rice, rice feed meal	hydrolyses starch	
Maltogenic alpha-amylase	*Bacillus subtilis* containing a *Bacillus stearothermophilus* gene for maltogenic alpha-amylase	see alpha-amylase	hydrolyses starch with production of maltose	
beta-amylase	Barley malt	see alpha-amylase	hydrolyses starch with production of maltose	
Cellulase	*Aspergillus niger,* var. *Humicola insolens* *Trichoderma longibrachiatum* (formerly *reesei)*	corn, barley, wheat, wheat bran, rye, grain sorghum	breaks down cellulose	
Alpha-galactosidase	*Aspergillus niger,* var. *Morteirella vinaceae* var. *raffinoseutilizer* *Saccharomyces* sp.	sweet lupin, soya-bean meal	hydrolyses oligosaccharides	
Beta-glucanase	*Aspergillus niger,* vat. *Bacillus lentus* *Bacillus subtilis,* var. *Humicola insolens*	wheat, barley, canola meal, wheat byproduct, oat groats, rye, triticale, grain sorghum	hydrolysis of B-glucans, a type of non-starch polysac-charide	reduction of digesta viscosity with barley-based poultry diets, reduces soluble non-starch

Classification/ Name	Source organism	Typical substrate [1]	Function	Current supported use
	Penicillium funiculosum *Trichoderma longibrachiatum* (formerly *reesei)*			polysaccharides in digesta
Beta-glucosidase	*Aspergillus niger,* var.	plant cell wall constituents	hydrolyses cellulose degradation products to glucose	
Glucoamylase (Amyloglucosidase)	*Aspergillus niger,* var. *Aspergillus oryzae,* var. Rhyzopus niveus *Rhizopus oryzae,* var.	see alpha-amylase	hydrolyses starch with production of glucose	
Hemicellulase	*Aspergillus aculeatus* *Aspergillus niger,* var. *Bacillus lentus* *Bacillus subtilis,* var. *Humicola insolens* *Trichoderma longibrachiatum* (formerly reesei)	corn, soya-bean meal, guar meal, barley, rye, grain sorghum, wheat, oats, peas, lentils	breaks down hemicellulose	reduction in stickiness of excreta in poultry fed guar meal
Invertase	*Aspergillus niger,* var. *Saccharomyces* sp.	sucrose containing products and by-products	hydrolyses sucrose to glucose and fructose	
Lactase	*Aspergillus niger,* var. *Aspergillus oryzae,* var. *Candida pseudotropicalis* *Kluyveromyces marxianis* var. *lactis* (formerly *Saccharomyces* sp.)	lactose containing products and by-products	hydrolyses lactose to glucose and galactose	
Beta-mannanase	*Aspergilus niger*, var. *Bacillus lentus* *Trichoderma longibrachiatum* (formerly *reesei*)	corn, soya-bean meal, guar meal, copra meal	hydrolyses B-mannans, a component of hemicellulose	reduction in stickiness of excreta in poultry fed guar meal
Pectinase	*Aspergillus aculeatus* *Aspergillus niger*, var. *Rhizopus oryzae*	corn, wheat	breaks down pectin	
Pullulanase	*Bacillus acidopullulyticus* *Bacillus licheniformis* containing a *Bacillus Deramificans* gene for pullulanase	see alpha-amylase	hydrolyses starch	
Xylanase	*Aspergillus niger*, var. *Bacillus lentus* *Bacillus subtilis*, var. *Humicola insolens* *Penicillium funiculosum* *Trichoderma longibrachiatum* (formerly	corn, barley, rye, wheat, grain sorghum, triticale, oats	hydrolyses xylans, a compo-nent of hemicellulose	reduction of digesta viscosity with poultry diets

Classification/ Name	Source organism	Typical substrate [1]	Function	Current supported use
	reesei)			
Lipases				
Lipase	Animal pancreatic tissue *Aspergillus niger,* var. *Aspergillus oryzae,* var. *Candida rugosa* (formerly *cylindracea*) Edible forestomach of calves, kids, and lambs *Rhizopus oryzae*	plant and animal sources of fats and oils	hydrolyses triglycerides	
Protcases				
Bromelain	Pineapples – stem, fruit	plant and animal proteins	hydrolyses proteins	
Ficin	Figs	plant and animal proteins	hydrolyses proteins	
Papain	Papaya	plant and animal proteins	hydrolyses proteins	
Pepsin	Procine or other animal stomachs	plant and animal proteins	hydrolyses proteins	
Protease (general)	*Asperigillus niger*, var. *Aspergillus oryzae,* var. *Bacillus amyloliquefaciens* *Bacillus licheniformis* *Bacillus subtilis,* var. *Bacillus subtilis* containing a *Bacillus amyloliquefaciens* gene for protease	plant and animal proteins plant proteins	hydrolyses proteins	
Trypsin	Animal pancreas	plant and animal proteins	hydrolyses proteins	
Oxidoreductases				
Catalase	*Aspergillus niger,* var. *Micrococcus lysodeikticus*	hydrogen peroxide	produces water and oxygen from hydrogen peroxide	
Glucose oxidase	*Aspergillus niger,* var.	glucose	degrades glucose to hydrogen peroxide and gluconic acid	
Phosphatases				
Phytase	*Aspergillus niger,* var. *Aspergillus oryzae,* var.	corn, soya-bean meal meal, hominy, tapioca, plant by-products sunflower	hydrolyses phytate	increases the digestibility of phytin-bound phospho-rus in pig and poultry diets.

[1]This list is to provide guidance and is not all inclusive.

ANNEXURE 1 – INGREDIENT DEFINITIONS

1. Alfalfa/Lucerne Products

Note: 1. The maximum moisture should not exceed 120 g/kg
Note: 2. The label shall include guarantees for protein (min), moisture (max) and fibre (min) and (max)

1.1.1 **Sundried lucerne meal, or pellets or ground lucerne** is the aerial part of the lucerne plant, reasonably free of other crop plants, weeds, and mould, which has been sundried and finely ground. If it is chopped instead of finely ground, it must be designated as "Sundried Chopped Lucerne" or "Chopped Lucerne Hay."

1.1.2 **Dehydrated lucerne meal or pellets** is the aerial part of the lucerne plant, reasonably free of other crop plants, weeds, and mould, which has been finely ground and dried by thermal means.

2. Amino Acids and Related Products

Note: 1. Guarantees for amino acid content and moisture must be expressed as g/kg on feed labels.
Note: 2. Unless indicated otherwise, the amino acids defined above can be added to farm feed for nutritional purposes in accordance with good manufacturing or feeding practices.
Note: 3. Data sheets must be submitted.

2.1 **DL-methionine hydroxy analogue calcium** is a product which contains a minimum of 97% racemic 2hydroxy-4-methylthiobutyric acid calcium salt. The quantity of DL-methionine hydroxy analogue calcium must be guaranteed. The term methionine supplement may be used in the ingredient list on a feed label to indicate the addition of DL-methionine hydroxy analogue calcium.

2.2 **DL-methionine** is a product which contains a minimum of 99% racemic 2-amino-4-methylthiobutyric acid. The quantity of DL-methionine must be guaranteed. The term methionine supplement may be used in the ingredient list on a feed label to indicate the addition of DL-methionine.

2.3 **Glycine** is a product which contains a minimum of 97% amino acetic acid. The quantity of glycine must be guaranteed.

2.4 **L-lysine** is a product which contains a minimum of 95% L-2,6- diaminohexanoic acid. The quantity of L-lysine must be guaranteed.

2.5 **Amino acid complex** is a product containing different proportions of specific amino acids guaranteed in g/kg.

2.6 **L-threonine** is a product which contains a minimum of 95% L-2- amino-3-hydroxybutyric acid. The quantity of L-threonine must be guaranteed in g/kg.

2.7 **DL- tryptophan** is a product which contains a minimum of 97% racemic 2-amino-3-(3'indolyl)-propionic acid. The quantity of DL-Tryptophan must be guaranteed in g/kg

2.8 **DL-methionine hydroxy analogue** is a product which contains a minimum of 88% racemic 2-hydroxy-4-methylthiobutyric acid. The quantity of DL-Methionine Hydroxy Analogue must be guaranteed in g/kg. The term methionine supplement may be used in the ingredient list on a feed label to indicate the addition of DL-methionine hydroxy analogue.

2.9 **DL-methionine sodium** is a product which contains a minimum of 45.9% racemic 2-amino-methylthiobutyric acid sodium salt. The quantity of DL-methionine must be guaranteed. The term methionine supplement may be used in the ingredient list on a feed label to indicate the addition of DL- methionine sodium salt.

2.10 **L-tryptophan** is a product which contains a minimum of 97% L-2- amino-3-(3'indolyl)-propionic acid. The quantity of L-Tryptophan must be guaranteed.

2.11 **L-lysine monohydrochloride** is a product which contains a minimum of 95% L-2, 6-diaminohexanoic acid monohydrochloride. The quantity of L-lysine must be guaranteed.

2.12 **Taurine** is a product which contains a minimum of 97% 2- aminoethanesulphonic acid. The quantity of taurine must be guaranteed. If it is used as a nutritional supplement in the feed of growing chickens. It is added to complete feeds so that the total taurine content does not exceed 0,054% of the feed.

2.13 **L-arginine** is a product which contains a minimum of 98% L-2-amino-5-guanidyl-valeric acid. The quantity of L-arginine must be guaranteed.

2.14 **DL-arginine** is a product which contains a minimum of 98% racemic 2-amino-5-guanidyl-valeric acid. The quantity of DL-arginine must be guaranteed.

2.15 **L-tyrosine** is a product which contains a minimum of 98% L-2-amino- 3-(4-hydroxyphenyl) propionic acid. The quantity of L-tyrosine must be guaranteed.

3. Animal Products

Note: 1. The maximum moisture content of dehydrated rendered meals must not exceed 100g/kg moisture.
Note: 2. Products with a fat content exceeding 80 g/kg must contain an approved anti-oxidant in accordance with good manufacturing practice.
Note: 3. Rendered products must be manufactured in registered sterilizing plants in accordance with good manufacturing practices, regulations and guidelines applying thereto.

3.1 **Meat and meat by-products** are the clean flesh parts derived from mammal livestock species and poultry. It may include all parts of that species except: added blood, bone and bone meal, bone fraction of fresh materials which consists of fleshy or other moist material with associated bone, bone contents of meat and bone meals, bone content of poultry carcasses, bone component of poultry meals, meals/greaves from knackers, claws, hair, horns, hide (except pork rind), feathers, teeth, hooves, the content part of the intestines and stomachs and added fat. It shall be suitable for use in animal food. If it bears a name descriptive of its kind, it must correspond thereto. The label shall have the following warning, in clear legible print, in a contrasting colour:: " NOT TO BE USED IN RUMINANT FEEDS OR FEEDING"

3.2 **Animal liver** if it bears a name descriptive of its kind, it must correspond thereto. Meal is obtained by drying and grinding liver from slaughtered mammals.

3.3. **Poultry byproduct meal** consists of the ground, rendered, clean parts of the carcass of slaughtered poultry, such as necks, feet, undeveloped eggs, and intestines, exclusive of feathers, except in such quantities as might occur unavoidably in good processing practices. The label shall include guarantees for minimum crude protein, maximum moisture, minimum and maximum crude fat, maximum crude ash, minimum phosphorus (P), and minimum and maximum calcium (Ca). The calcium (Ca) level shall not exceed the actual level of phosphorus (P) by more than 2.2 times.

3.4 **Poultry byproduct and feather meal** consists of the ground, rendered, clean parts of the carcass of slaughtered poultry and mortalities, such as necks, feet, undeveloped eggs, and intestines, inclusive of feathers. The label shall include guarantees for minimum crude protein, maximum moisture, minimum and maximum crude fat, maximum crude ash, minimum phosphorus (P), and minimum and maximum calcium (Ca).

3.5 **Poultry hatchery byproduct meal** is a mixture of egg shells, infertile and unhatched eggs, and culled chicks which have been cooked, dried, and ground, with or without removal of part of the fat. The label shall include guarantees for minimum crude protein, maximum moisture minimum and maximum crude fat, maximum crude fibre, maximum ash, minimum phosphorus (P), and minimum and maximum calcium (Ca).

3.6 **Dried meat solubles** is obtained by drying the defatted water extract of the clean, wholesome parts of slaughtered animals prepared by steaming or hot water extraction. It must be designated according to its crude protein content which shall be no less than 700 g/kg. The label shall include guarantees for minimum crude protein, maximum moisture, minimum crude fat, maximum crude ash, minimum phosphorus (P), and minimum and maximum calcium (Ca).
The label shall have the following warning, in clear legible print, in a contrasting colour:: "NOT TO BE USED IN RUMINANT FEEDS OR FEEDING"

3.7 **Poultry by-products (fresh)** must consist of non-rendered clean parts of carcasses of slaughtered poultry such as heads, feet, viscera, free from faecal content and foreign matter except in such trace quantities as might occur unavoidably in good factory practice.

3.8 **Hydrolysed poultry feathers** is the product resulting from the treatment under pressure of clean, undecomposed feathers from slaughtered poultry, free of additives, and/or accelerators. Not less than 75% of its crude protein content must be digestible by the pepsin digestibility method.* The label shall include guarantees for minimum crude protein, maximum moisture, maximum crude ash and pepsin digestibility.

3.9 **Meat meal** is the rendered product from mammalian livestock tissue, exclusive of any added blood, hair, hoof, horn, hide trimmings, manure, stomach and rumen contents except in such quantities as may occur unavoidably in good processing practices. It shall not contain added extraneous materials not provided for by this definition. The calcium (Ca) level shall not exceed the actual level of phosphorus (P) by more than 2,2 times. The label shall include guarantees for minimum crude protein, maximum moisture, minimum & maximum crude fat, maximum ash, minimum phosphorus (P) and minimum and maximum calcium (Ca). If the product bears a name descriptive of its kind, composition or origin, it must correspond thereto. The label shall have the following warning, in clear legible print, in a contrasting colour:: " NOT TO BE USED IN RUMINANT FEEDS OR FEEDING"

3.10 **Meat and bone meal** is the rendered product from mammalian livestock tissues, including bone, exclusive of any added blood, hair, hoof, horn, hide trimmings, manure, stomach and rumen contents, except in such quantities as may occur unavoidably in good processing practices. It shall not contain added extraneous materials not provided for in this definition. The calcium (Ca) level shall not be more than 2,2 times the actual phosphorus (P) level. The label shall include guarantees for minimum crude protein, maximum moisture, minimum crude fat, maximum ash, minimum phosphorus (P) and minimum and maximum calcium (Ca). If it bears a name description of its kind, composition or origin it must correspond thereto.

3.11 **Animal byproduct meal** is the rendered product from animal tissue, exclusive of any added hair, hoof, horn, hide trimmings, manure, stomach and rumen contents, except in such quantities as may occur unavoidably in good processing practices. It shall not contain added extraneous materials not provided for by this definition. This ingredient definition is intended to cover those individual rendered animal tissue products that cannot meet the criteria as set forth elsewhere in this section. This ingredient is not intended to be used to label a mixture of animal tissue products. The label shall include guarantees for minimum crude protein, maximum moisture, minimum & maximum crude fat, maximum ash, minimum phosphorus (P), and minimum and maximum calcium (Ca). The label shall have the following warning, in clear legible print, in a contrasting colour:: " NOT TO BE USED IN RUMINANT FEEDS OR FEEDING"

3.12 **Spray-dried animal blood** is produced from clean, fresh animal blood, exclusive of all extraneous material such as hair, stomach belching, urine, except in such traces as might occur unavoidably in good factory practice. Moisture is removed from the blood by a low temperature, evaporator under vacuum until it contains approximately 300 g/kg solids. It is then dried by spraying into a draft of warm, dry air which reduces the blood to finely divided particles with a maximum moisture of 80 g/kg and a minimum crude protein of 850 g/kg. It must be designated according to its minimum water solubility.

3.13 **Poultry** is the clean combination of flesh and skin with or without accompanying bone, derived from the parts or whole carcasses of poultry or a combination thereof, exclusive of feathers, heads, feet and entrails. It shall be suitable for use in farm feed. If it bears a name descriptive of its kind, it must correspond thereto.

3.14 **Eggshell meal** is mixture of eggshells, shell membranes and egg content obtained by drying the residue from an egg breaking plant in a dehydrator to an end product temperature of 82°C. It must be designated according to its protein and calcium content. The label shall include guarantees for minimum protein and minimum and maximum calcium.

3.15 **Bloodmeal** is produced from clean, fresh animal blood, exclusive of all extraneous materials such as hair, stomach belchings and urine, except as might occur unavoidably in good processing practices. The process used must be listed as a part of the product name such as conventional cooker dried, steamed or hydrolysed. The product usually has a dark-black-like colour and is rather insoluble in water. The label shall include guarantees for minimum crude protein, maximum moisture, minimum fat, minimum phosphorus (P), and maximum calcium (Ca).

3.16 **Bloodmeal, flash-dried** is produced from clean, fresh animal blood, exclusive of all extraneous material such as hair, stomach belchings and urine except as might occur unavoidably in good manufacturing processes. A large portion of the moisture (water) is usually removed by a mechanical dewatering process or by condensing by cooking to a semi-solid state. The semi-solid blood mass is then transferred to a rapid-drying facility where the more tightly bound water is rapidly removed. The label shall include guarantees for minimum crude protein, maximum moisture minimum crude fat, minimum phosphorus (P), and maximum calcium (Ca).

3.17 **Animal digest** is a material that results from chemical and/or enzymatic hydrolysis of clean and non-decomposed animal tissue. The animal tissue used shall be exclusive of hair, horns, teeth, hooves and feathers, except in such trace quantities as might occur unavoidably in good factory practice and shall be suitable for farm feed. If it bears a name descriptive of its kind or flavour(s), it must correspond thereto. The label shall include guarantees for minimum crude protein, maximum moisture, minimum crude fat, minimum phosphorus (P), and minimum and maximum calcium (Ca). The label shall have the following warning, in clear legible print, in a contrasting colour:: " NOT TO BE USED IN RUMINANT FEEDS OR FEEDING"

3.18 **Poultry meal** is the dry rendered product from a combination of clean flesh and skin with or without accompanying bone, derived from the parts of whole carcasses of poultry or a combination thereof, exclusive of feathers, heads, feet, and entrails. If it bears a name descriptive of its kind, it must correspond thereto. The label shall include guarantees for minimum crude protein, maximum moisture, minimum and maximum crude fat, maximum ash, minimum phosphorus (P), and minimum and maximum calcium (Ca).

3.19 **Animal plasma** is the product obtained by spray drying plasma which has been separated away from the cellular matter (red and white blood cells) of fresh whole blood by chemical and mechanical processing. The protein portion of this product is primarily albumin, globulin, and fibrinogen-type proteins.. If it bears a name descriptive of its kind, composition, or origin, it must correspond thereto. The label shall include guarantees for minimum crude protein, maximum moisture, minimum crude fat, minimum phosphorus (P), and minimum and maximum calcium (Ca). The label shall have the following warning, in clear legible print, in a contrasting colour:: " NOT TO BE USED IN RUMINANT FEEDS OR FEEDING"

3.20 **Meat protein isolate** is produced by separating meat protein from fresh, clean, unadulterated bones by heat processing followed by low temperature drying to preserve function and nutrition. This product is characterised by a fresh meaty aroma, a 900 g/kg minimum protein level, 10 g/kg maximum fat and 20 g/kg maximum ash. The label shall have the following warning, in clear legible print, in a contrasting colour:: "NOT TO BE USED IN RUMINANT FEEDS OR FEEDING"

4. Barley Products

Note: 1. The maximum moisture must not exceed 120 g/kg
Note: 2. The label shall include guarantees for protein (min), moisture (max) and fibre (max)

4.1 **Barley hulls** consist of the outer covering of the barley.

4.2 **Pearl barley byproduct** is the entire byproduct resulting from the manufacture of pearl barley from clean barley.

4.3 **Barley mill byproduct** is the entire residue from the milling of barley flour from clean barley and is composed of barley hulls and barley midlings.

5. Brewers Products

Note: 1. The maximum moisture for dehydrated products must not exceed 120 g/kg
Note: 2. The label shall include guarantees for protein (min), moisture (max) and fibre (max)

5.1 **Brewers dried grains** is the dried extracted residue of barley malt alone or in mixture with other cereal grain or grain products resulting from the manufacture of wort or beer and may contain pulverised dried spent hops in an quantity not to exceed 30 g/kg, evenly distributed.

5.2 **Brewers wet grains** is the extracted residue resulting from the manufacture of wort from barley malt alone or in mixture with other cereal grains or grain products.

6. Citrus Products

Note: 1. The maximum moisture for dehydrated products must not exceed 120 g/kg
Note: 2. The label shall include guarantees for protein (min), moisture (max) and fibre (max)

6.1 **Dried citrus pulp** is the ground peel, residue of the inside portions, and occasional cull fruits of the citrus family which have been dried, producing a coarse, flaky product. It may contain dried citrus meal or pellets and whole citrus seeds. If calcium oxide or calcium hydroxide is added as an aid in processing, the maximum quantity (g/kg) present, expressed as calcium (Ca), must be shown. If it bears a name descriptive of its kind or origin, it must correspond thereto.

7. Cereal Grains

Note: 1. The maximum moisture for dehydrated products must not exceed 120 g/kg
Note: 2. The label shall include guarantees for protein (min), moisture (max) and fibre (max)

NAME	DESCRIPTION
Oats	Grains of *Avena sativa L*. and other cultivars of oats

Barley	Grains of *Hordeum vulgare L*.
Rice broken	Byproduct of the preparation of polished or glazed rice *Oryza sativa l*. it consists principally of undersized and/or broken grains
Millet	Grains of *Panicum niliaceum L*.
Rye	Grains of *Secale cereale L*.
Sorghum	Grains of *Sorghum bicolor (L)*. Moench s.i.
Wheat	Grains of *Triticum aestivum L. Triticum durum* Desf. and other cultivars of wheat
Triticale	Grains of the *Triticum X Secale Hybrid*
Maize	Grains of *Zea mays L*.

8. Distillers' Products

Note: 1. The maximum moisture for dehydrated products must not exceed 120 g/kg
Note: 2. The label shall include guarantees for protein (min), moisture (max) and fibre (max)

8.1 **Condensed molasses dried solubles** is obtained by drying the residue from the yeast fermentation of molasses after the removal of the alcohol by distillation.

8.2 **Condensed molasses solubles (CMS)** is obtained by condensing to a syrupy consistency the residue from the yeast fermentation of molasses after the removal of the alcohol by distillation.

8.3 **Potato distillers' dried residue** is the dried product obtained after the manufacture of alcohol and distilled liquors from potatoes or from a mixture in which potatoes predominate.

8.4 **Distillers' dried solubles** is obtained after the removal of ethyl alcohol by distillation from the yeast fermentation of a grain mixture by condensing the thin stillage fraction and drying it by methods employed in the grain distilling industry. The predominating grain must be declared as the first word in the name.

8.5 **Distillers' dried grains** is obtained after the removal of ethyl alcohol by distillation from the yeast fermentation of a grain or a grain mixture by separating the resultant coarse grain faction of the whole stillage and drying it by methods employed in the grain distilling industry. The .predominating grain shall be declared as the first word in the name.

8.6 **Distillers' dried grains with solubles** is the product obtained after the removal of ethyl alcohol by distillation from the yeast fermentation of a grain or a grain mixture by condensing and drying at least 3/4 of the solids of the resultant whole stillage by methods employed in the grain distilling industry. The predominating grain shall be declared as the first word in the name.

8.7 **Condensed distillers' solubles** is obtained after the removal of ethyl alcohol by distillation from the yeast fermentation of a grain or a grain mixture by condensing the thin stillage fraction to a semi-solid. The predominating grain must be declared as the first word in the name.

8.8 **Distillers' wet grains** is the product obtained after the removal of ethyl alcohol by distillation from the yeast fermentation of a grain mixture. The guaranteed analysis shall include the maximum moisture.

9. Fats and Oils

Note: 1. The use of the term "feed grade" requires that the specific type of product be adequately tested to prove its safety for feeding purposes. In mixed feeds containing fats or fat derivatives the term "feed grade" may be omitted in the ingredient declaration.
Note: 2. Any mixture of two or more fats or fat derivatives defined below is to be identified by listing each component: i.e., "animal fat and hydrolysed vegetable oil."
Note: 3. Fats or fat derivatives must come from acceptable farm feed sources.
Note: 4. An approved anti-oxidant must added in accordance with good manufacturing practices.

9.1 Animal fat

9.1.1 Animal Fat is obtained from the tissue of mammals and/or poultry in the commercial processes of rendering or extracting. It consists predominantly of glyceride esters of fatty acids and contains no additions of free fatty acids or other materials obtained from fats. It must contain, and be guaranteed for, not less than 900 g/kg total fatty acids, moisture maximum 20 g/kg, not more than 25 g/kg unsaponifiable matter, and not more than 10 g/kg insoluble impurities. Maximum free fatty acids and moisture must also be guaranteed. The product must bear a name descriptive of its kind or origin; i.e., "beef', "pork", "poultry".

9.1.2 Greaves is the product derived from residue of manufacture of tallow and other fats of animal origin. It shall be technically free of organic solvents. It must contain guarantees for protein (max), fat (min), moisture (max), ash (max) , free fatty acids(max), peroxide value (max) and salt (max). The label shall have the following warning, in clear legible print, in a contrasting colour:: " NOT TO BE USED IN RUMINANT FEEDS OR FEEDING"

9.2 **Vegetable fat or oil** is the product of vegetable origin obtained by extracting the oil from seeds or fruit which are commonly processed for edible purposes. It consists predominantly of glyceride esters of fatty acids and contains no additions of free fatty acids or other materials obtained from fats. It must contain, and be guaranteed for, not less than 900 g/kg total fatty acids, moisture maximum 20 g/kg, not more than 20 g/kg unsaponifiable matter and not more than 10 g/kg insoluble impurities. Maximum free fatty acids and moisture must also be guaranteed. The product must bear a name descriptive of its kind or origin; i.e., "soy-bean oil", "cottonseed oil".

9.3 **Hydrolysed fat or oil (Feed Grade)** is obtained in the fat processing procedures commonly used in edible fat processing or soap making. It consists predominantly of fatty acids and must contain, and be guaranteed for, not less than 850 g/kg total fatty acids, not more than 60 g/kg unsaponifiable matter, and not more than 10 g/kg insoluble impurities. Maximum moisture must also be guaranteed. The source must be stated in the product name; i.e., "hydrolysed animal fat", "hydrolysed vegetable fat", or "hydrolysed animal and vegetable fat".

9.4 **Acid oil/fat product (Feed Grade)** is any fat product which does not meet the definitions for animal fat, vegetable fat or oil, hydrolysed fat or fat ester. It must be sold on its individual specifications which will include the minimum percentage of total fatty acids, the maximum percentage of unsaponifiable matter, the maximum percentage of insoluble impurities, the maximum percentage of free fatty acids, moisture and melting point. The above listed specifications must be guaranteed on the label.

9.5 **Corn endosperm oil** is obtained by the extraction of oil from corn gluten. It consists predominantly of free fatty acids and glycerides, and must contain not less than 850 g/kg total fatty acids, not more than 140 g/kg unsaponifiable matter, and not more than 10 g/kg insoluble matter.

9.6 **Calcium salts or long-chain fatty acids** are the reaction products between calcium and long-chain fatty acids of vegetable and/or animal origin. They shall contain a maximum of 200 g/kg lipid not bound in the calcium salt form and the percentage total fat shall be indicated. The unsaponifiable matter (exclusive of calcium salts) shall not exceed 40 g/kg and moisture shall not exceed 50 g/kg. Prior to conducting an assay for total fats, hydrolysis of the calcium salts should be performed to liberate the lipid fraction.

9.7 Restaurant Oil or Fat

Any edible oil or fat that has been used at least once in the frying of food and is still fit for human consumption. They shall contain below 16 % polymerised triglycerides and/or 25 % polar compounds with no mineral oil present. Total fatty acid content, free fatty acid content, colour, moisture content, impurities, unsaponifiables, iodine values, etc. can be specified by manufacturer according to need.

Note: 1. With respect to Cottonseed oil the maximum gossypol level must be declared.

Note: 2. An approved anti-oxidant must be added to animal fats at an inclusion rate of 500 – 1 000 mg/kg . The following warning must be displayed on the label: This product has a limited shelf-life and must not be stored for long periods

10. Fermentation Products

Note: 1. The maximum moisture for dehydrated products must not exceed 120 g/kg.
Note: 2. Data sheets must be submitted.

10.1 **Condensed, extracted glutamic acid fermentation product** is a concentrated mixture of the liquor remaining from the extraction of glutamic acid, combined with the cells of *Corynebacterium ilium* used to produce the glutamic acid.

10.2 **Dried extracted fermentation solubles** is the dried extracted broth obtained from fermentation. (For label identification the source must be indicated as penicillium, streptomyces, citric acid, etc.)

10.3 **Dried fermentation extract** is the dried product resulting from extracting and precipitating by means of non-aqueous solvents or other suitable means, the water soluble materials from a fermentation conducted for maximum production of enzymes using a nonpathogenic strain of the micro-organisms in accordance with good manufacturing practices. (For label identification the source must be indicated as *B.subtilis*, *A.oryzae*, *A.niger*, etc.)

10.4 **Dried fermentation solubles** is the dried material resulting from drying the water soluble materials after separation of suspended solids from a fermentation conducted for maximum production of enzymes using a nonpathogenic strain of the microorganism in accordance with good manufacturing practices. (For label identification the source .must be indicated as *B.subtilis*, *A.oryzae*, *A.niger*, etc.)

10.5 **Undried extracted solids and fermentation solubles** is undried mycelium and extracted broth or the extracted and undried mycelium and broth obtained from fermentation. (For label identification the source must be indicated as penicillium, streptomyces, citric acid, etc.)

10.6 **Condensed fermentation solubles** is the product resulting from the removal of a considerable portion of the liquid byproduct resulting from the action of the ferment on the basic medium of grain, molasses, whey, or other media. (For label identification, the source must be indicated as "Condensed (whey, grain, or molasses) fermentation solubles."

10.7 **Dried fermentation product** is the product derived by culturing on appropriate nutrient media for the production of one or more of the following: enzymes, fermentation substances, or other microbial metabolites, and dried in accordance with approved methods and good manufacturing practices. Protein, fat, fibre, cell count, enzyme activity or nutrient metabolite level shall be guaranteed where applicable. (For label identification the source must be indicated as *B.subtilis*, *A.oryzae*, *A.niger*, *Lactobacillus acidophilus*, *Lactobacillus bulgaricus* or *Streptococcus faecium*).

10.8 **Liquid fermentation product** is the liquid product derived by culturing or fermenting on appropriate liquid nutrient media for the production of one or more of the following: enzymes, fermentation substances, or other microbial metabolites, and stabilised by approved methods in accordance with good manufacturing practices. Percentage solids, cell count, enzyme activity or nutrient metabolite level shall be guaranteed where applicable. (For label identification the source must be indicated as *B.subtilis*, *A.oryzae*, *A.niger*, *Lactobacillus acidophilus*, *Lactobacillus bulgaricus* or *Streptococcus faecium*.)

10.9 **Direct-fed micro-organisms**-

Note: 1. Data sheets must be submitted
Note: 2. Efficacy data must be submitted
Note: 3. Method of analysis must be submitted

The following micro-organisms were found to present no safety concerns when used in direct-fed microbial products:

Aspergillus niger
Aspergillus oryzae
Bacillus coagulans
Bacillus lentus
Bacillus licheniformis
Bacillus pumilus
Bacillus subtilis
Bacteroides amylophilus
Bacteroides capillosus
Bacteroides ruminocola
Bacteroides suis
Bifidobacterium adolescentis
Bifidobacterium animalis
Bifidobacterium bifidum
Bifidobacterium infantis
Bifidobacterium longum
Bifidobacterium thermephilum
Lactobacillus curvatus
Lactobacillus delbruekii
Lactobacillus fermentum
Lactobacillus helveticus
Lactobacillus lactis
Lactobacillus plantarum
Lactobacillus euterii
Leuconostoc mesenteroides
Pediococcus acidilacticii
Pediococcus cerevisiae (damnosus)
Pediococcus pentosaceus
Propionibacterium freudenreichii
Propionibacterium shermanii
Saccharomyces cerevisiae
Streptococcus cremoris
Streptococcus diacetylactis
Streptococcus faecium

Lactobacillus acidolphilus
Lactobaccilus brevis
Lactobacillus bulgaricus
Lactobacillus casei
Lactobacillus cellobiosus
Streptococcus intermedius
Streptococcus lactis
Streptococcus thermophilus
Yeast (as defined elsewhere)

11. Grain Sorghums

Note: 1. The maximum moisture must not exceed 120 g/kg.
Note: 2. The label shall include guarantees for protein (min), moisture (max) , fibre (max) and tannin (max).

11.1 **Ground/processed grain sorghum** is the entire product made by grinding/processed the grains of grain sorghum.

11.2 **Grain sorghum gluten feed** is that part of the grain of grain sorghums that remains after the extraction of the larger part of the starch and germ, by the processes employed in the wet milling manufacture of starch or syrup.

11.3 **Grain sorghum gluten meal** is that part of the grain of grain sorghums that remains after the extraction of the larger part of the starch and germ, and the separation of the bran by the processes employed in the wet milling manufacture of starch or syrup.

11.4 **Grain sorghum germ cake or grain sorghum germ meal** consists of the germ of grain sorghum grains from which part of the oil has been pressed and is the product obtained in the wet milling process of manufacture of starch, syrup, and other grain sorghum products.

11.5 **Grain sorghum grits** consists of the hard flinty portions of sorghums containing little or no bran or germ.

11.6 **Grain sorghum mill feed** is a mixture of grain sorghum bran, grain sorghum germ, part of the starchy portion of grain sorghum kernels, or mixture thereof as produced in the manufacture of grain sorghum grits and refined meal and flour and must contain not less than 50 g/kg crude fat and not more than 60 g/kg crude fibre.

11.7 **Grain sorghum bran** is the coarse outer covering of the sorghum kernel as separated from cleaned and scoured sorghum in the usual process of commercial milling.

12. Maize

Note: 1. The maximum moisture must not exceed 120 g/kg
Note: 2. The label shall include guarantees for protein (min), moisture (max), fibre (max) and fibre (min) and (max) for maize products rich in fibre.
Note: 3. Maize must be marketed according to RSA grading standards

12.1 **Maize bran** is the outer coating of the maize kernel, with little or none of the starchy part of germ.

12.2 **Maize feed meal** is the fine siftings obtained from screened cracked maize, with or without its aspiration products added.

12.3 **Maize ground/processed** is the entire maize kernel ground/processed.

12.4 **Maize grits** is the medium-sized, hard, flinty portions of ground maize containing little or none of the bran or germ.

12.5 **Maize flour** is the fine sized hard flinty portions of ground maize containing little or none of the bran or germ.

12.6 **Maize and cob meal** is the entire ear of maize ground, without husks, with no greater portion of cob than occurs in the ear maize in its natural state.

12.7 **Maize and cob meal with husks** is the entire ear of maize with husks ground or chopped, with not greater proportion of cob than occurs in the ear maize in its natural state.

12.8 **Flaked maize** is obtained by running cracked maize which has been aspirated and properly tempered, over smooth flaking rolls and subsequently dried and cooled.

12.9 **Maize gluten feed (Gluten 20)** is that part of the commercial shelled maize that remains after the extraction of the larger portion of the starch, gluten, and term by the processes employed in the wet milling manufacture of corn starch or syrup. It may/or may not contain one or more of the following: fermented maize extractives, maize germ meal.

12.10 **Maize gluten meal (Gluten 60)** is the dried residue from maize after the removal of the larger part of the starch and germ, and the separation of the bran by the process employed in the wet milling manufacture of maize starch or syrup, or by enzymatic treatment of the endosperm. It may contain fermented maize extractives and/or maize germ meal.

12.11 **Hominy chop** is a mixture of maize bran, maize germ, and part of the starchy portion of either white or yellow maize kernels or mixture thereof. The moisture may not exceed 130 g/kg.

12.12 **Dehydrated maize plant** is the entire maize plant consisting of the ear, leaves and stalk, which has been dried and ground.

12.13 **Ground maize-cob** is the product resulting from grinding the entire cob.

12.14 **Maize germ meal (dry milled**, **defatted**) is ground maize germ which consists of maize germ with other parts of the maize kernel from which part of the oil has been removed and is the product obtained in the dry milling process of manufacture of maize-meal, maize grits, hominy chop, and other maize products.

12.15 **Maize germ meal (wet milled) / maize germ cake** is ground maize germ from which most of the solubles have been removed by steeping and most of the oil removed by hydraulic, expeller, or solvent extraction processes, and is obtained in the wet milling process of manufacture of maize starch, maize syrup, or other maize products.

12.16 **Malto dextrins** is a purified concentrated aqueous solution of nutritive saccharides, or a dried product derived from this solution, derived from starch having a dextrose equivalent of less than 20.

13. Marine Products

Note: 1. The label must include guarantees for minimum crude protein, maximum moisture minimum & maximum crude fat, maximum crude ash, minimum phosphorus (P), maximum calcium (Ca) and maximum sodium.

Note: 2. Products with a fat content exceeding 80 g/kg must contain an approved anti – oxidant in accordance with good manufacturing practice.

13.1 **Fish meal** is the clean, dried, ground tissue of non-decomposed whole fish or fish cuttings, either or both, with or without the extraction of part of the oil..

13.2 **White fish meal** must consist of rendered, clean non-decomposed portions of fish (such as, but not limited to, heads, fins, tails, ends, skin, bone and viscera) which result from the fish processing industry. If it bears a name descriptive of its kind, it must correspond thereto. Any single constituent used as such may be labelled according to the common or usual name of the particular portion used (such as fish heads, fish tails, etc).

13.3 **Fish oil** is the oil from rendering whole fish or cannery waste.

13.4 **Fish byproduct** must consist of non-rendered, clean non-decomposed portions of fish (such as, but not limited to, heads, fins, tails, ends, skin, bone and viscera) which result from the fish processing industry. If it bears a name descriptive of its kind, it must correspond thereto. Any single constituent used as such may be labelled according to the common or usual name of the particular portion used (such as fish heads, fish tails, etc).

13.5 **Dried fish protein digest** is the dried enzymatic digest of clean non-decomposed whole fish or fish cuttings using the enzyme hydrolysis process. The product must be free of bones, scales and undigested solids with or without the extraction of part of the oil. It must contain not less than 800 g/kg protein and not more than 100 g/kg moisture. If the degree of fineness is stated, it must conform thereto.

13.6 **Condensed fish protein digest** is the condensed enzymatic digest of clean non-decomposed whole fish or fish cuttings using the enzyme hydrolysis process. The product must be free of bones, scales, and undigested solids with or without the extraction of part of the oil. It must contain not less than 300 g/kg protein.

14. Milk Products

Note: 1. The label must include guarantees for minimum crude protein, maximum moisture, minimum crude fat, minimum milk fat, minimum phosphorus (P) and maximum calcium (Ca).
Note: 2. Products with a fat content exceeding 80 g/kg must contain an approved anti – oxidant in accordance with good manufacturing practice

14.1 **Dried buttermilk, Feed Grade** is the residue obtained by drying buttermilk. It contains 80 g/kg maximum moisture, 130 g/kg maximum ash, and 50 g/kg minimum milk fat.

14.2 **Dried skimmed milk, Feed Grade**, is the residue obtained by drying defatted milk. It contains 80 g/kg maximum moisture.

14.3 **Dried (dry) whey** is the product obtained by removing water from whey. It contains not less than 110 g/kg protein nor less than 610 g/kg lactose.

14.4 **Casein** is the solid residue obtained by acid or rennet coagulation of defatted milk. It contains 800 g/kg minimum crude protein.

14.5 **Dried whole milk, Feed Grade** is the residue obtained by drying milk. It contains 80 g/kg maximum moisture and 260 g/kg minimum milk fat.

14.6 **Whey** is the product obtained as a fluid by separating the coagulum from milk, cream, or skimmed milk and from which a portion of the milk fat may have been removed.

14.7 **Dried milk, Feed Grade** is the residue obtained by drying milk. It may derive from whole milk, defatted milk or from intermediate fat level milk. If product qualifies as dried whole milk by containing a minimum of 260 g/kg milk fat, or as dried skimmed milk by containing a maximum of 15 g/kg milk fat, those terms may be used as the ingredient name.

15. Mineral Products

Element	Additive	Chemical formula
Iron – Fe	Ferrous carbonate	$FeCO_3$
	Ferrous chloride, tetrahydrate	$FeCl_2(4H_2O)$
	Ferric chloride, hexahydrate	$FeCl_3.6H_2O$
	Ferrous citrate, hexahydrate	$Fe_3(C_6H_5O_7)_2.6H_2O$
	Ferrous fumarate	$FeC_4H_2O_4$
	Ferrous lactate, trihydrate	$Fe(C_3H_5O_3)_2.3H_2O$
	Ferric oxide	Fe_2O_3
	Ferrous sulphate, monohydrate	$FeSO_4.H_2O$
	Ferrous sulphate, heptahydrate	$FeSO_4.7H_2O$
	Ferrous chelate of amino acids hydrate	$Fe.(x)_{1-3}.nH_2O$ (where x equals an anion of any amino acids derived from hydrolysed soya protein) Molecular weight not exceeding 1 500
Iodine – I	Calcium iodate, hexahydrate	$Ca(IO_3)_2.6H_2O$
	Calcium iodate, anhydrous	$Ca\ (IO_3)_2$
	Sodium iodine	NaI
	Potassium iodide	KI
Cobalt – Co	Cabaltous acetate, tetrahydrate	$Co(CH_3COO)_2.4H_2O$
	Basic cobaltous carbonate, mono-hydrate	$2CoCO_3.3Co(OH)_2.H_2O$
	Cabaltous chloride, hexahydrate	$CoCl_2.6H_2O$
	Cobaltous sulphate, heptahydrate	$CoSO_4.7H_2O$
	Cobaltous sulphate, monohydrate	$CoSO_4.H_2O$
	Cobaltous nitrate, hexahydrate	$Co(No_3)_2.H_2O$

Element	Additive	Chemical formula
Copper – Cu	Cupric acetate, monohydrate	$Cu(CH_3COO)_2.H_2O$
	Basic cupric carbonate, monohydrate	$CuCO_3.Cu(OH)_2.H_2O$
	Cupric chloride, dihydrate	$CuCl_2.2H_2O$
	Cupric methionate	$Cu(C_5H_{10}NO_2S)_2$
	Cupric oxide	CuO
	Cupric sulphate, pentahydrate	$CuSO_4.5H_2O$
	Cupric sulphate, monohydrate	$CuSO_4.H_2O$
		$CuSO_4.5H_2O$
	Cupric chelate of amino acids hydrate	Cu(x)1-3 . nH2O (x = anion of any amino acid derived from hydrolysed soya protein) Molecular weight not exceeding 1 500
Manganese – Mn	Manganous carbonate	
	Manganous chloride, tetrahydrate	
	Manganous hydrogen phosphate, trihydrate	
	Manganous oxide	
	Manganic oxide	
	Manganous sulphate, tetrahydrate	
	Manganous sulphate, monohydrate	

Element	Additive	Chemical formula
	Manganese chelate of amino acids hydrate	
Zinc – Zn	Zinc lactate, trihydrate	$Zn(C_3H_5O_3)_2.3H_2O$
	Zinc acetate, dihydrate	$Zn(CH_3\text{-}COO)_2.2H_2O$
	Zinc carbonate	$ZnCO_3$
	Zinc chloride, monohydrate	$ZnCl_2.H_2O$
	Zinc oxide*	ZnO
	Zinc sulphate, heptahydrate	$ZnSO_4.7H_2O$
	Zinc sulphate, monohydrate	$ZnSO_4.H_2O$
	Zinc chelate of amino acids hydrate	$Zn\ (x)_{1\text{-}3}\ .nH_2O$ (x = anion of any amino acid derived from hydrolysed soya protein) molecular weight not exceeding 1 500
Molybdenum Mo	Ammonium molybdate	$(NH_4)_6Mo_7O_{24}\bullet 4H_2O$
	Sodium molybdate	$Na_2MoO_4.2H_2O$
Selenium – Se	Sodium selenite	Na_2SeO_3
	Sodium selenate	Na_2SeO_4

15.1 **Ammonium sulphate** is the product resulting from the neutralisation of sulphuric acid with ammonia. It shall contain not less than 210 g/kg nitrogen (N) and not less than 240 g/kg sulphur (S). It shall contain not more than 15 ppm arsenic (As) and 30 ppm heavy metals reported as lead. This does not include ammonium sulphate

made from by-product ammonia recovered from coke-oven gas. It shall be used only in ruminant feeds as a source of sulphur and nitrogen. The label shall have adequate directions for use and the prescribed NPN warnings.

15.2 **Bone meal,** is the dried and ground sterilised product resulting from rendering of un-decomposed bones. Fat, gelatin, and meat fibre may or may not be removed. When labeled as a commercial feed ingredient, it must have guarantees for protein (min), moisture (max), ash (max) phosphorus (P) min, and calcium (Ca) max: "NOT TO BE USED IN RUMINANT FEEDS OR FEEDING"

15.3 **Calcium carbonate** is a calcium salt of carbonate acid generally expressed as CaCO3. The minimum calcium and maximum magnesium must be specified. An analysis certificate indicating calcium, magnesium, iron and manganese must be submitted

15.4 **Calcium chloride** is the calcium salt of hydrochloric acid generally expressed as CaCl and its hydrated forms. Minimum calcium (Ca) and chlorine (Cl) must be specified.

15.5 **Calcium formate** is the calcium salt of formic acid generally expressed as $Ca(HOCO_2)_2$ and its hydrated forms. It is to be used as a source of supplemental calcium in pig diets, not to supply more than 6 g/kg calcium to the diet.

15.6 **Calcium gluconate monohydrate** is the calcium salt of gluconic acid generally expressed as $Ca(C_6H_{II}0_7)_2$ and its hydrated forms. Minimum calcium (Ca) must be specified.

15.7 **Calcium hydroxide** is the hydrated form of calcium oxide generally expressed as $Ca(OH)_2$. Minimum calcium (Ca) must be specified.

15.8 **Calcium Iodate** is the calcium salt. of iodic acid generally expressed as $Ca(IO_3)_2$ and the monohydrate form. Minimum calcium (Ca) and Iodine I(I) must be specified.

15.9 **Calcium oxide** is the oxide form of calcium generally expressed as CaO (commonly called quicklime). A strong alkali, therefore requiring caution in its use. Minimum calcium (Ca) must be specified.

16.10 **Calcium sulphate** is the calcium salt of sulphuric acid generally expressed as $CaSO_4$ and its hydrated forms. Minimum calcium (Ca) and minimum sulphur (S) must be specified.

15.11 **Limestone, ground**, is an acceptable source of calcium carbonate. The label must include guarantees for minimum calcium (Ca), maximum manganese (Mn), maximum magnesium (Mg), maximum iron (Fe) and maximum moisture as well as particle size.

15.12 **Limestone, magnesium or dolomitic**, is an acceptable source of magnesium and calcium carbonate. The terms are synonymous and designate a native mineral omposed of mixtures of magnesium carbonate ($MgCO_3$), and calcium carbonate ($CaCO_3$). It must contain not less than 100 g/kg magnesium (Mg). The label must include guarantees for minimum calcium (Ca), maximum manganese (Mn), maximum magnesium (Mg), maximum iron (Fe) and maximum moisture as well as particle size.

15.13 **Magnesium carbonate** is a magnesium salt of carbonic acid generally expressed as $MgCO_3$ $Mg(OH)_2$ and its hydrated forms. Minimum magnesium (Mg) must be specified.

15.14 **Magnesium chloride** is the magnesium salt of hydrochloric acid generally expressed as $MgCl_2$ and its hydrated forms. Minimum magnesium (Mg) must be specified.

15.15 **Magnesium hydroxide** is the hydrated form of magnesium generally expressed as $Mg(OH)_2$. Minimum magnesium (Mg) must be specified.

15.16 **Magnesium phosphate** is the magnesium salt of phosphoric acid, generally expressed as $MgHPO_4$ and its hydrated forms. Minimum magnesium (Mg) and phosphorus (P) and maximum fluorine (F) must be specified.

15.17 **Magnesium oxide** is the oxide of magnesium generally expressed as MgO. Minimum magnesium (Mg) must be specified

15.18 **Magnesium sulphate** is the magnesium salt of sulphuric acid generally expressed as $MgS0_4$ and its hydrated forms. Minimum magnesium (Mg) must be specified.

15.19 **Metal (specific amino acid) complex** is the product resulting from complexing a soluble metal salt with a specific amino acid. Minimum metal content must be declared. When used as a commercial feed ingredient, it must be declared as a specific metal, specific amino acid, i.e., copper lysine complex, zinc lysine complex, ferric methionine complex, manganese methionine complex and zinc methionine.

15.20 **Metal amino acid chelate** is the product resulting from the reaction of a metal ion from a soluble metal salt with amino acids with a mole ratio of one mole of metal to one to three (preferably two) moles of amino acids to form co-ordinate covalent bonds. The average weight of the hydrolysed amino acids must be approximately 150 and the resulting molecular weight of the chelate must not exceed 800. The minimum metal content must be declared. When used as a commercial feed ingredient it must be declared as a specific metal amino acid chelate.

15.21 **Metal polysaccharide complex** is the product resulting from complexing of a soluble salt with a polysaccharide solution declared as an ingredient as the specific metal complex, i.e. copper polysaccharide complex, zinc polysaccharide complex, iron polysaccharide complex, cobalt polysaccharide complex and manganese polysaccharide complex.

15.22 **Metal proteinate** is the product resulting from the chelation of a soluble salt with amino acids and/or partially hydrolysed protein. It must be declared as an ingredient as the specific metal proteinate

15.23 **Oyster shell flour** is an acceptable source of calcium carbonate. It must be true to name and contain not less than 330 g/kg calcium (Ca).

15.24 **Calcium phosphate** is a calcium phosphate product either calcined, fused, precipitated or reacted. The minimum phosphorus (P) and maximum calcium (Ca), maximum fluorine (F), minimum %P solubility (in 2% citric acid; alkaline ammonium citrate) must be specified.

15.25 **Dicalcium phosphate** is a calcium salt of phosphoric acid generally expressed as $CaHPO_4$ and its hydrated forms. Minimum phosphorus (P), minimum and maximum calcium (Ca), maximum fluorine (F), minimum %P solubility (in 2% citric acid; alkaline ammonium citrate) must be specified.

15.26 **Mono ammonium phosphate** is the product resulting from the neutralisation of phosphoric acid, feed grade, or defluorinated wet-process phosphoric acid which contains not less than 90 g/kg nitrogen (N) and 230 g/kg phosphorus (P). Maximum fluorine (F) must be specified. It shall be used only in ruminant feeds as a source of phosphorus and nitrogen. The label shall have adequate directions for use and the prescribed NPN warnings.

15.27 **Monocalcium phosphate** is a calcium salt of phosphoric acid generally expressed as $CaH_4(PO_4)_2$ and its hydrated forms. Minimum phosphorus (P), minimum calcium (Ca) and maximum fluorine (F), minimum %P solubility (in 2% citric acid; alkaline ammonium citrate and water) must be specified.

15.28 **Mono-dicalcium phosphate** is a calcium salt of phosphoric acid generally expressed as $CaH_4(PO_4)_2$ + $CaHPO_4$ and its hydrated forms. Minimum phosphorus (P), minimum and maximum calcium (Ca) ,and maximum fluorine (F), minimum %P solubility (in 2% citric acid; alkaline ammonium citrate and water) must be specified. Water soluble P must be a minimum of 30% of total P.

15.29 **Monosodium phosphate** is a sodium salt of phosphoric acid generally expressed as NaH_2PO_4 and its hydrated forms. Minimum phosphorus (P), minimum sodium (Na) and maximum fluorine (F), minimum %P solubility (in 2% citric acid; alkaline ammonium citrate and water) must be specified. Water soluble P must be a minimum 90% of total P.

15.30 **Phosphoric acid,** also known as orthophosphoric acid, is a solution of phosphoric acid in water generally expressed as H_3PO_4. The concentration of acid is frequently given as a percentage of P_2O_5 Minimum phosphorus (P) and maximum fluorine (F) must be specified.

15.31 **Sodium tripolyphosphate**, is a sodium salt of phosphoric acid generally expressed as $Na_5P_30_{l0}$. Minimum sodium (Na) and maximum fluorine (F) must be specified.

15.32 **Potassium bicarbonate** is a potassium salt of carbonic acid generally expressed as $KHCO_3$. Minimum potassium (K) must be specified.

15.33 **Potassium carbonate** is a potassium salt of cabonic acid generally expressed as K_2CO_3. Minimum potassium (K) must be specified.

15.34 **Potassium citrate** is a potassium salt of citric acid generally expressed as $K_3C_6H_5O_7$. H_20 and its hydrated forms. Minimum potassium (K) must be specified.

15.35 **Potassium chloride**, is the potassium salt of hydrochloric acid generally expressed as KCl. Minimum potassium (K) must be specified.

15.36 **Potassium Sulphate** is the potassium salt of sulphuric acid generally expressed as K_2S0_4. Minimum potassium (K) and sulphur (S) must be specified.

15.37 **Salt** is an acceptable source of sodium chloride. It must be true to name and contain not less than 950 g/kg sodium chloride for first grade and not less than 850 g/kg for second grade and 750 g/kg for third grade

15.38 **Iodised salt**, is a common salt (NaCI) containing not less than 0.07 g/kg iodine, uniformly distributed.

15.39 **Sodium bicarbonate** is the sodium salt of carbonic acid generally expressed as $NaHCO_3$. Minimum sodium (Na) must be specified.

15.40 **Sodium carbonate** is the sodium salt of carbonic acid generally expressed as Na_2CO_3 and its hydrated forms. Minimum sodium (Na) must be specified.

15.41 **Sodium sulphate** is the sodium salt of sulphuric acid generally expressed as Na_2S0_4 and its hydrated forms. The minimum sodium (Na) and minimum sulphur (S) must be specified

15.42 **Sulphur** is elemental sulphur generally expressed as sulphur (S). Minimum sulphur (S) must be specified.

15.43 Urea phosphate is a product resulting from reaction of urea with orthophosphoric acid. It shall contain not less than 980 g/kg ure phosphate $CO(NH_2)_2H_3PO_4$, minimum phosphorus pentoxide 440 g/kg, minimum nitrogen 170 g/kg and maximum moisture 5 g/kg. An analyses certificate indicating arsenic (As), lead (Pb) and fluoride (F) must be submitted. It shall be used only in ruminant feed as a source of phosphorus and nitrogen. The label shall have adequate directions for use and the prescribed NPN warnings.

16. Miscellaneous Products

Note: 1. The maximum moisture must not exceed 120 g/kg
Note: 2. The label must include guarantees for protein (min), moisture (max), fibre (max) and fibre (min) and (max) for high fibre products

16.1 **Dried apple pomace** is the sound, dried residue obtained by the removal of cider from apples.

16.2 **Bagasse** is that portion of the stalk of sugar cane, after removal of leaves and tops, remaining after extraction of the juice.

16.3 **Dried bakery product** is a mixture of bread, cookies, cake, crackers, flours, and dough which has been mechanically separated from non-edible material, artificially dried and ground. If the product contains more than 35 g/kg salt, the maximum level of salt must be a part of the name; i.e., Dried bakery product with –g/kg Salt.

16.4 **Dried beans** are the residue of the normal packaging and processing of dried beans for human consumption. This residue shall consist of the broken, small, shriveled, and cull -beans. They shall be identified by variety. Where further processing, such as grinding, roasting, etc., has occurred, ground, roasted, or other acceptable description may be part of the name, i.e., ground roasted -dried beans.

16.5 **Beet molasses, dried product**, is the properly dried mixture of beet molasses and dried beet pulp containing not less than 450 g/kg total sugar expressed as invert.

16.6 **Beet pulp, dried, plain**, is the dried residue from sugar beets which has been cleaned and freed from crowns, leaves, and sand, and which has been extracted in the process of manufacturing sugar.

16.7 **Cereal food fines** consists of particles of breakfast cereals obtained as a byproduct of their processing.

16.8 **Ground grass** is obtained by drying and grinding grass. If a specie"s name is used, the produce must correspond thereto.

16.9 **Guar meal** is obtained from whole guar beans after removal of most of the endosperm. If the product is heat treated, it may be designated as "heat treated" or "toasted".

16.10 **Dried kelp** is dried seaweed of the families Lanlinariacae and Fucaeae. The maximum salt (NaCl) and the minimum potassium (K) must be declared. If the kelp is sold as a source of iodine (I), the minimum quantity of iodine must be declared. If the product is prepared by artificial drying, it may be called "Dehydrated kelp."

16.11 **Dried potato products** is the dried residue of potato pieces, peeling, culls, etc., obtained from the manufacture of processed potato products for human consumption. The residue may contain up to 30 g/kg hydrate of lime which may be added to aid in processing.

16.12 **Ground straw** is the ground product remaining after separation of the seed from mature forage plants. The source of the material shall constitute a part of the name of the product; i.e., "Ground wheat straw", "Ground lucerne straw" .

16.13 **Sugar foods byproduct** is the product resulting from the grinding and mixing of the inedible portions derived from the preparation and packaging of sugar based food products such as candy, dry packaged drinks, dried gelatin mixes, and similar food products which are largely sugar. It shall contain not less than 800 g/kg total sugar expressed as invert. It shall be free from foreign materials harmful to animals.

16.14 **Dried tomato pomace** is the dried mixture of tomato skins, pulp, and crushed seeds. If the pomace contains spices used in the production of the tomato product, this must be shown in the name as "Dried spiced tomato pomace."

16.15 **Yeast dried grains** is the properly dried residue from the mixture of cereals, malt, and malt sprouts (sometimes cottonseed meal) obtained in the manufacture of yeast or vinegar, and consists of maize and rye from which most of the starch has been extracted, together with malt added during the, manufacturing process to change the starch to sugar, and malt sprouts (sometimes cottonseed meal) added during the manufacturing process to aid in filtering the residue from the wort and to serve as a source of food supply for the yeast- " If residue is from manufacture of vinegar, may also be listed as "Vinegar dried grains."

16.16 **Salts or volatile fatty acids** is a blend containing the ammonium or calcium salt of isobutyric acid and the ammonium or calcium salts of a mixture of 5-carbon acids/isovaleric, 2-methylbutyric, and n-valeric. The contained ammonium or calcium salts of volatile fatty acids shall conform to international recognized specifications. It is used as a source of energy in dairy cattle feed. The label of the product shall bear adequate directions for use including statements expressing maximum use levels: For ammonium salts of volatile fatty acids: not to exceed 120 grams per head per day thoroughly mixed in dairy cattle feed as a source of energy; For calcium salts of volatile fatty acids: not to exceed 135 grams per head per day thoroughly mixed in dairy cattle feed as a source of energy.

16.17 **Tapioca/manioca and/or cassava root** is the whole root chipped mechanically into small pieces and sun dried on concrete surfaces for 2 to 3 days and then the chips are pelleted. Ash content to be specified.

16.18 **Sweet lupin meal and sweet lupin meal dehulled** is the product resulting from the grinding of the entire seed or dehulled seed of the species of *Lupinus albus* (white), *L. augustifolius* (blue), or *L. luteus* (yellow) which contains less than 0.3 g/kg alkaloids.

16.19 **Sweet lupin meal solvent extract** is the product obtained by grinding of the flakes after the removal of most of the oil by a solvent extraction process from the seeds of the species of *Lupinus albus* (white), *L. augustifolius* (blue), or *L. luteus* (yellow) which contains less than 0.3 g/kg alkaloids It must contain not more than 70 g/kg crude fibre.

17. Molasses

Note: 1. the label must have guarantees for protein (min), moisture (max) and sugar (min)

17.1 **Beet molasses** is a byproduct of the manufacture of sucrose from sugar beets. It must contain not less than 480 g/kg total sugars expressed as invert and its density must be determined and specified in Brix.

17.2 **Cane molasses** is a byproduct of the manufacture of sucrose from sugar cane. It must contain not less than 430 g/kg total sugars expressed as invert. If its moisture content exceeds 270 g/kg, its density must be determined and specified in Brix.

18. Non-Protein Nitrogen

Note: 1. All products must have the prescribed NPN warnings on labels
Note: 2. The label must include guarantees for protein (min), moisture (max), protein equivalent and all other nutriets as specified in these definitions.

Use only in mixed feeds for ruminants (cattle, sheep and goats)

Warning: Do not feed to animals producing milk for human consumption

18.1 **Urea** must contain not less than 460 g/kg nitrogen (equivalent to 287% crude protein) The free ammonia level may not exceed 0,3 g/kg and the biuret level may not exceed 15 g/kg. Iron, arsenic and lead content must be in accordance with Annexure 4 and must form part of the guarantees. Altogether 85% of the particles shall ideally between 0,5 – 2 mm. The maximum formaldehyde content is 0,5 g/kg.

18.2 **Feed-grade biuret** is predominantly composed of biuret (550 g/kg min) together with related nitrogenous compounds resulting from the controlled pyrolysis of urea and subsequent processing. It must contain not less than 360 g/kg nitrogen (equivalent to 225% crude protein) with not more than 150 g/kg nitrogen (equivalent to 93,75% crude protein) being from urea. It shall not contain more 5 g/kg mineral oil. The label of the additive and any feed containing this additive must have the prescribed NPN warnings and the following additional warnings:

18.3 **Ammonium chloride**, is the product resulting from the neutralisation of hydrochloric acid with ammonia generally expressed as NH_4Cl. It must contain not less than 256 g/kg nitrogen (equivalent to 160% crude protein). It must contain not more than 1 g/kg moisture, 4 g/kg salt (NaCl), 15 ppm iron (Fe), 3 ppm arsenic (As), and 10 ppm heavy metals reported as lead. It may be treated with not more than 10 g/kg tricalcium phosphate to prevent caking. It shall not be made from byproduct ammonia recovered from coke oven gas. It is to be used only in feeds for cattle and sheep as a source of non-protein nitrogen at a level not to exceed 10 g/kg ammonium chloride in the total daily ration to provide not more than 1.6% equivalent crude protein. Labels for feed containing ammonium chloride include premixes, concentrates and supplements shall contain adequate directions for use and the prescribed warnings.

18.4 **Ammonium sulphate** is the product resulting from the neutralization of sulphuric acid with ammonia. It shall contain not less than 210 g/kg nitrogen (N) and not less than 240 g/kg sulphur (S). It shall contain not more than 15 ppm arsenic (As) and 30 ppm heavy metals reported as lead. This does not include ammonium sulphate made from byproduct ammonia recovered from coke-oven gas. It shall be used only in ruminant feeds as a source of sulphur and nitrogen. The label must have adequate directions for use and the prescribed NPN warnings.

18.5 **Mono ammonium phosphate** is the product resulting from the neutralisation of phosphoric acid, feed grade, or defluorinated wet-process phosphoric acid which contains not less than 90 g/kg nitrogen (N) and 230 g/kg phosphorus (P). . It shall be used only in ruminant feeds as a source of phosphorus and nitrogen. The label shall have adequate directions for use and the prescribed NPN warnings.

19. Oat Products

Note: 1. The maximum moisture must not exceed 120 g/kg

The label shall include guarantees for protein (min), moisture (max), fibre (max) and fibre (min) and (max) for products rich in fibre.

19.1 **Oat groats** is cleaned oats with the hulls removed.

19.2 **Oat hulls** consists primarily of the outer covering of oats, obtained in the milling of table cereals or in the groating of oats from clean oats.

19.3 O**at meal** is obtained in the manufacture of rolled oat groats or rolled oats and consists of broken oat groats, oat groat chips, and floury portions of the oat groats, with only such quantity of finely ground oat hulls as is unavoidable in the usual process of commercial milling. It must not contain more than 40 g/kg crude fibre.

20. Oilseeds

Note: 1. Cake is an unground form of an oilseed product
Note: 2. The label must have guarantees for minimum protein, maximum fibre and maximum moisture.

NAME	DESCRIPTION
Groundnut	Seeds from *Arachis hypogaea* L. and other species of *Arachis*
Rape seed	Seeds of rape *Brassica napus* L ssp *oleifera* (Metzg.) Sinsk. of Indian sarson, *Brassica napus* L var. *Glauca* (Roxb.) O.E. Schulz and of rape *Brassica campestris* L. ssp. *oleifera* (Metzg.) Sinsk. (minimum botanical purity 94%)
Safflower seeds	Seeds of safflower *Carthamus tinctorius L*.
Copra / Coconut seeds	Seeds of the coconut palm *Cocos nucifera L*.
Palm kernels	Palm kernels from *Elaeis guineenisis Jacq*., *Corozo oleifera* (HBK) L. H. Bailey (*Elaeis melanococca* auct.)
Soya-bean	Soya-beans *Glycine max* L. Merr.
Cotton seed	Seed of cotton *Gossypium spp*.
Sunflower seed	Seeds of the sunflower *Helianthus annuus L*.
Linseed	Seeds of linseed *Linum usitatissimum L*. (Minimum botanical purity 93%)
Cocoa bean	Beans of *Theabroma cocao L*.

21. Legume Seeds

NAME	DESCRIPTION
Chick peas	Seeds of *Cicer arietinum L*.
Guar	Seeds of *Cyamopsis tetragonoloba* (L.) Taub.
Lentils	Seeds of *Lens culinaris* a. o. Medik
Sweet lupins	Seeds of *Lupinus* spp. low in bitter seed content
Beans	Seeds of *Phaseolus or Vigna* spp.
Peas	Seeds of *Pisum* spp.
Horse beans	Seeds of *Vicia faba* L. spp., *faba var. equina* Pers. and var. *minuta* (Alef) Mansf.

22. Oilseed Products

Note: 1 The maximum moisture for dehydrated products must not exceed 120g/kg.
Note: 2 The label shall include guarantees for minimum crude protein, maximum moisture, maximum crude fibre, minimum and maximum crude fibre for products high in fibre.

22.1 **Canola meal/cake** low erucic acid, low glucosinolate consists of the meal obtained after the removal of most of the oil, by a direct solvent or prepress solvent extraction process, from the whole seeds of the species *Brassica napus* or *Brassica campestris* the oil component of which seed contains less than 20 g/kg erucic acid and the solid component contains less than 30 micromoles of any mixture of 3-butenyl glucosinolate, 4-pentenyl glucosinolate, 2-hydroxy3-butenyl glucosinnolate and 2-hydroxy-4-pentenyl glucosinolate per, gram of air dry, oil-free solid. It must contain a maximum of 30 micromoles of glucosinolates per gram.

23.2 **Coconut meal/cake, mechanical extract**, is the ground residue which remains after removal of most of the oil from dried meat of coconuts by a mechanical extraction process. May also be called "Copra meal".

23.3 **Coconut meal/cake, solvent extract**, is the ground residue which remains after removal of most of the oil from dried meat of coconuts by a solvent extraction process. May also be called "Copra meal".

22.4 **Cottonseed meal/cake, Mechanical extract**, is the product obtained by finely grinding the cake which remains after removal of most of the oil from cottonseed by a mechanical extraction process.

22.5 **Cottonseed meal/cake, solvent extract** is the product obtained by finely grinding the flakes which remain after removal of most of the oil from cottonseed by a solvent extraction process. The words "solvent extracted" must be reflected on the label.

22.6 **Groundnut skins** is the outer covering of the groundnut kernel, exclusive of hulls, as obtained in ordinary commercial processing. The product may contain broken groundnut kernels.

22.7 **Groundnut hulls** consists of the outer hull of the groundnut shell. May also be called groundnut hulls.

22.8 **Groundnut meal/cake and hulls, mechanical and/or solvent extract** is a product of shelled groundnuts, composed principally of the kernels and hulls, with such portion of the oil as may be left in the ordinary course of manufacture.

22.9 **Ground groundnut hay** is composed of ground groundnut leaves and stems from which the groundnuts have been removed.

22.10 **Groundnut meal/cake, mechanical and/or solvent extract** is a ground product of the shelled groundnuts, composed principally of the kernels, with such portion of the hull, or fibre, and oil as may be left in the ordinary course of manufacture. May aslo be called Groundnut oilcake.

22.11 **Linseed meal/cake, mechanical extract**, is the product obtained by grinding the cake or chips which remain after removal of most of the oil from flaxseed by a mechanical extraction process.

22.12 **Linseed meal/cake, solvent extract**, is the product obtained by grinding the flakes which remain after removal of most of the oil from flaxseed by a solvent extraction process.

22.13 **Rapeseed meal/cake, mechanical extract.** Rapeseed meal, mechanical extracted, obtained by grinding the cake which remains after removal of most of the oil by mechanical extraction of the seed from the rapeseed plant (*Brassica*).

22.14 **Safflower meal/cake, mechanical extract**, is the ground residue obtained after extracting the oil from whole safflower seed by a mechanical extraction process.

22.15 **Safflower meal/cake, solvent extract**, is the ground residue obtained after extracting the oil from whole safflower seed by a solvent extraction process.

22.16 **Sunflower hulls** consists of the outer covering of sunflower seed.

22.17 **Sunflower meal/cake, dehulled, mechanical extract**, is obtained by grinding the residue remaining after exctraction of most of the sunflower seed by a mechanical extraction process.

22.18 **Sunflower meal/cake, dehulled, solvent extract**, is obtained by grinding the residue remaining after extraction of most of the oil from dehulled sunflower seed by a solvent extraction process.

22.19 **Sunflower meal/cake, mechanical extract**, is obtained by grinding the residue remaining after extraction of the oil from whole sunflower seed by a mechanical extraction process.

22.20 **Sunflower meal/cake, solvent extract**, is obtained by grinding the residue remaining after extraction of most of the oil from whole sunflower seed by a solvent extraction process.

22.21 Oilseed Products - Soya Bean Products

22.21.1 **Ground soya-beans** is obtained by grinding whole soya-beans without cooking or removing any of the oil.

22.21.2 **Ground soya-bean hay** is the ground soya-bean plant including the leaves and beans. It must be reasonably free of other crop plants and weeds.

22.21.3 **Soya-bean hulls** consist primarily of the outer covering of the soya-bean.

22.21.4 **Soya phosphate or soya lecithin** is the mixed phosphatide product obtained from soya-bean oil by a degumming process. It contains lecithin, cephalin, and inositol phosphatides, together with glycerides of soybean oil and traces of tocopherols, glucosides, and pigments. It must be designated and sold according to conventional descriptive grades with respect to consistency and bleaching.

22.21.5 **Heat-processed soya-beans** (Roasted, expanded, micronised, toasted, flaked) is the product resulting from heating whole soya-beans without removing any of the component parts. It may be ground, pelleted, flaked, or powdered. The pH rise using standard urease testing procedure should be between 0.10 and 0.3 pH units.

22.21.6 **Ground extruded whole soya-beans (full-fat soya)** is the meal product resulting from extrusion by friction heat and/or steam, whole soya-beans without removing or adding any of the component parts. The pH rise using standard urease testing procedure should be between 0.1 and 0.3 pH units.

22.21.7 **Soya-bean meal, dehulled, solvent extract** is obtained by grinding the flakes remaining after removal of most of the oil from dehulled soya-beans by a solvent extraction process.

22.21.8 **Soya-bean meal, mechanical extract** is the product obtained by grinding the cake or chips which remain after removal of most of the oil from soya-beans by a mechanical extraction process.

22.21.9 **Soya-bean meal, solvent extract** is the product obtained by grinding the flakes which remain after removal of most of the oil from soya-beans by a sol vent extraction process.

22.21.10 **Soya protein isolate** is the major proteinaceous fraction of soya-beans prepared from dehulled soya-beans by removing the majority of non-protein components and must contain not less than 900 g/kg protein on a moisture-free basis.

22.21.11 **Textured soya protein product** is made from defatted soya flour mixed with water and/or steam, extruded and then dried.

23. Recycled Animal Waste Products

Any person seeking or receiving registration of any processed animal waste product shall test, by representative sampling and assaying of such samples, and keep accurate records thereof, the processed animal waste product for which the registration is sought or received. The sample shall be of sufficient size so as to provide meaningful data, statistically reliable in carrying out the purpose of such sampling and analysis.

The registration holder, manufacturer, or producer of any such processed animal waste product ingredient shall conform to the following sample and assay requirements, in addition to quality standards, testing on the same production run of lots:

a Drugs suspected or known to be used in the feed or as a therapeutic treatment of source animals.
b. Pesticides used on the source animal, facility, and wastes for pest control.
c. Pathogenic organisms, at least to include Salmonella and *E. coli.*
d. Heavy metals: arsenic, cadmium, copper, lead, mercury and selenium, at least.
e. Parasitic larva or ova.
f. Mycotoxins, such as aflatoxins.

Periodic analyses shall be conducted on production runs no less than one per calendar quarter, except that less frequent testing may be allowed where analytical results show continued uniformity and a consistent margin of compliance. Any processed animal waste product that does not meet the quality standards for the product shall be further processed until standards are met, or shall be diverted to non-feed uses or destroyed.

If a product contains drug residue, then the label shall contain the following statement in bold face type:
"WARNING: THIS PRODUCT CONTAINS DRUG RESIDUE. DO NOT USE WITHIN 15 DAYS OF SLAUGHTER AND DO NOT USE 15 DAYS PRIOR TO OR DURING THE FOOD PRODUTION PERIOD OF DAIRY ANIMALS AND LAYING HENS."

If the product contains 25 ppm or greater of copper, a maximum guarantee of copper and the following statement in bold face type is required:

"WARNING: CONTAINS HIGH LEVELS OF COPPER: DO NOT FEED TO SHEEP."
Labels must contain prescribed NPN and uric acid warnings.

Any person seeking or receiving registration of any processed animal waste product shall keep for a period of two years, accurate records of:

a. All sources of raw materials and date acquired, including information on drug and pesticide usage.
b. All production output, including a code or other method to identify the date of production.
c. All sales and distribution, including the name and address of the purchaser or to whom distributed, date, quantity and product code.
d. Sample and assay records of testing specified above.

Processed animal waste products as a class, offered for sale or distributed for sale, shall not contain extraneous materials such as. but not limited to, metal, glass, nails or other harmful matter. They shall be free of harmful pathogenic organisms, pesticide residue, parasites, or drug residue, above levels permitted by regulation, which could be harmful to animals or could result in residue in human food products or by-products of animals at levels in excess or those allowed by regulation.

23.1 **Dried poultry waste** means a sterilised animal waste product composed primarily of faeces from commercial poultry, which has been thermally dehydrated. Minimum protein, maximum moisture, maximum fibre and maximum ash must be specified.

23.2 **Dried poultry litter** means a sterilised animal waste product composed of a processed combination of faeces from commercial poultry together with litter that was present in the floor production of poultry, which has been artificially dehydrated. Minimum protein, maximum moisture, maximum fibre and maximum ash must be specified.

24. Rice Products

Note: 1. The maximum moisture must not exceed 120 g/kg

Note: 2. The label shall include guarantees for protein (min), moisture (max), fibre (max) and fibre (min) and (max) for products rich in fibre.

24.1 **Rice polishings** is a by-product of rice obtained in the milling operation of brushing the grain to polish the kernel.

24.2 **Ground rough rice or ground paddy** is the entire product obtained in grinding the whole rice grain including the hulls.

24.3 **Chipped rice, broken rice, or brewers rice** is the small fragments of rice kernels that have been separated from the larger kernels of milled rice.

24.4 **Ground brown rice** is the entire product obtained in grinding the rice kernels after the hulls have been removed.

24.5 **Rice bran** is the pericarp or bran layer and germ of the rice, with only such quantity of hull fragments, chipped, broken, or brewers rice, and calcium carbonate as is unavoidable in the regular milling of edible rice.

24.6 **Rice mill by-product** is the total offal obtained in the milling of rice. It consists of rice hulls, rice bran, rice polishings and broken rice grains.

25. Wheat Products

Note: 1. The maximum moisture should ideally not exceed 120 g/kg.
Note: 2. The label must include guarantees for protein (min), moisture (max), fibre (max) and fibre (min) and (max) for products rich in fibre.

25.1 **Wheat bran** is the coarse outer covering of the wheat kernel as separated from cleaned and scoured wheat in the usual process of commercial milling.

25.2 **Wheat flour** consists principally of wheat flour together with fine particles of wheat bran, wheat germ, and the offal from the "tail of the mill."

25.3 **Wheat germ meal** consists chiefly of wheat germ together with some bran and midlings or shorts.

25.4 **Wheat mill run** consists of coarse wheat bran, fine particles of wheat bran, wheat shorts, wheat germ, wheat flour, and the offal from the "tail of the mill". This product must be obtained in the usual process of commercial milling and must contain not more than 95 g/kg crude fibre.

25.5 **Wheat midlings** consists of fine particles of wheat bran, wheat pollard, wheat germ, wheat flour, and some of the offal from the "tail of the mill". This product must be obtained in the usual process of commercial milling and must contain not more than 95 g/kg crude fibre.

25.6 **Wheat pollard** consists of fine particles of wheat bran, wheat germ, wheat flour, and the offal from the "tail of the mill". This product must be obtained in the usual process of commercial milling and must contain not more than 70 g/kg crude fibre.

25.7 **Defatted wheat germ meal** is obtained after the removal of part of the oil or fat from wheat germ meal.

26. Yeast

Note: 1. The maximum moisture must not exceed 100 g/kg
Note: 2. The label mustl include guarantees for protein (min), moisture (max), fibre (max) .

26.1 **Primary dried yeast or dried yeast** is the dried, non-fermentative yeast of the botanical classification Saccharomyces which has been separated from the medium in which propagated. It must contain not less than 400 g/kg crude protein.

26.2 **Active dry yeast** is yeast which has been dried in such a manner as to preserve a large portion of its fermenting power. It must contain no added cereal or filler and must contain not less than 15 billion live yeast cells per gram.

26.3 **Brewers dried yeast** is the dried, non-fermentative, non-extracted yeast of the botanical classification Saccharomyces resulting as a by-product from the brewing of beer and ale. It must contain not less than 350 g/kg crude protein. It must be labelled according to its crude protein content.

26.4 **Torula dried yeast or candida dried yeast** is the dried, non-fermentation yeast of the botanical classification (torulopsis) *Candida utilis* (formerly *Torulopsis utilis*) which has been separated from the medium in which propagated. It must contain not less than 400 g/kg crude protein.

26.5 **Yeast culture** is the dried product composed of yeast and the media on which it was grown, dried in such a manner as to preserve the fermenting activity of the yeast. The media must be stated on the label.

26.6 **Molasses yeast condensed solubles** is obtained by condensing to a syrup consistency the broth remaining after the removal of baker's yeast cells propagated on molasses.

26.7 **Vitamin Products**

Note: 1. Labels must have a guarantee for minimum vitamin content.
Note: 2. Data sheets must be submitted.

NAME OR DESCRIPTION
VITAMIN A
Vitamin A-acetate
Vitamin A-propionate
Vitamin A-palmitate
Vitamin A-alcohol
beta-carotene (Provitamin A)
VITAMIN D
calciferol (Vitamin D)
cholecalciferol (Vitamin D3)
ergocalciferol (Vitamin D2)
VITAMIN E
dl-alpha-tocopherol acetate
dl –alpha-tocopherol
d-alpha-tocopherol
VITAMIN K
menadione sodium bisulphite
menodione pyrimidinol bisulphite
menodione Dimethylpyrimidinol bisulphite
VITAMIN B1
thiamine hydrochloride
thiamine mono-nitrate
VITAMIN B2
riboflavin
riboflavin phosphate
BIOTIN (Vitamin H)
d-biotin

NAME OR DESCRIPTION
FOLIC ACID folic acid PANTOTHENIC ACID d-pantothenic acid calcium d-pantothenate calcium dl-pantothenate CHOLINE Choline chloride Choline pantothenate Choline xanthate Choline bitartrate NIACIN Nicotinic acid nicotinamide VITAMIN B6 Pyridoxine hydrochloride VITAMIN B12 Cyanocobalamine VITAMIN C Ascorbic acid INOSITOL BETAINE VITAMIN F (essential fatty acids) VITAMIN P (rutin) OROTIC ACID VITAMIN B15 (pangamic acid) VITAMIN Bt (carnitine) p-aminobenzoic acid (PABA)

ANNEXURE 2 – ADDITIVES

PERMITTED ANTIOXIDANTS

Table 2.1 Permitted Antioxidants

Name or description	Chemical formula	Maximum content (mg/kg in complete feed ingredient)
L-ascorbic acid	$C_6H_8O_6$	
Sodium L-ascorbate	$C_6H_7O_6N_a$	
Calcium diL-ascorbate	$C_{12}H_{14}O_{12}Ca2H_2O$	
5,6 Diacetyl-L-ascorbic acid	$C_{10}H_{12}O_8$	
6-Palmityl-L-ascorbic acid	$C_{22}H_{38}O_7$	
Tocopherol-rich extracts of natural origin	-	
Synthetic alpha-tocopherol	$C_{29}H_{50}O_2$	
Synthetic gamma-tocopherol	$C_{28}H_{48}O_2$	
Synthetic delta-tocopherol	$C_{27}H_{46}O_2$	
Propyl gallate	$C_{10}H_{12}O_5$	100: alone or together
Octyle gallate	$C_{15}H_{22}O_5$	
Dodecyl gallate	$C_{19}H_{30}O_5$	
Butylated hydroxyanisole (BHA)	$C_{11}H_{16}O_2$	150: alone or together
Butylated hydroxytoluene (BHT)	$C_{15}H_{24}O$	
Ethoxyquin	$C_{14}H_{19}NO$	

Table 2.2 Aromatic and Appetising Substances (Generally accepted as safe)

Additives	Chemical formula
1. All natural products and corresponding synthetic products	_
2. Artificial substances:	
Saccharin	$C_7H_5NO_3S$
Calcium saccharin	$C_{14}H_8CaN_2O^6S_2$
Sodium saccharin	$C_7H_4NNAO_3S$
Neohesperidin dihydrochalcone	$C_{28}H_{36}O_{15}$

Spices and other natural seasonings and flavourings.

Allspice
Ambrette seed
Angelica
Angelica root
Angelica seed
Angostura (cusparia bark)
Balm (lemon balm)
Basil, bush
Basil, sweet
Bay
Calendula
Camomile(chamomile),English,or Roman mustard, white or yellow
Camomile(chamomile)German/Hungarian nutmeg
Capers
Caraway
Caraway, black (black cumin)
Cardamom (cardamon)
Cassia, Chinese
Cassia, Padang or Batavia
Cassia, Saigon
Cayenne pepper
Celery seed
Chevril
Horehound (hoarhound)
Horseradish
Hyssop
Lavender
Licorice
Linden flowers
Mace
Marigold, pot
Marjoram, pot
Marjoram, sweet
Mustard, black or brown
Mustard, brown
Mexican sage, origano
Oregano (origanum, Mexican oregano
Paprika
Parsley
Pepper, black
Pepper, cayenne
Pepper, red
Pepper, white
Peppermint
Poppy Seed
Pot marigold

Chives
Cinnamon, Ceylon
Cinnamon, Chinese
Cinnamon, Saigon
Clary (clary sage)
Clover
Cloves
Coriander
Cumin (cummin)
Cumin, black (black caraway)
Dill
Elder flowers
Galanga (galangal)
Garlic
Geramium
Glycyrrhiza
Grains of paradise
Pot marjoram
Rosemary
Rue
Saffron
Sage
Sage, Greek
Savory, summer
Savory, winter
Sesame
Spearmint
Star anise
Tarragon
Thyme
Tyme, wild or creeping
Tumeric
Vanilla
Zedoary

Essential oils, oleroresins (solvent-free), and natural extractives (including distillates).

Alfalfa
Allspice
Almond, bitter (free from prussic acid)
Ambrette (seed)
Angelica root
Angelica seed
Angelica stem
Angostura (cuspana bark)
Bitter almond (free from prussic acid)
Bois de rose
Cacao
Camomile (chamomile) flowers,Hungarian grapefruit
Camomile (chamomile) flowers, Roman guava or English
Cananga
Capsicum
Caraway
Cardamom seed (cardamon)
Carob bean
Carrot
Anise
Asafoetida
Balm (lemon balm)
Balsaim of Peru
Basil
Bay leaves
Bay (myrcia oil)
Bergamot (bergamot orange
Geranium, rose
Ginger
Glycyrrhiza
Hickory bark
Horehound (hoarhound)
Hops
Horsemint
Hyssop
Immortelle
Jasmine
Juniper (berries)

Cascarila bark
Cassia bark, Chinese
Cassia bark, Padang or Batavia
Cassia bark, Saigon
Celery seed
Cherry, wild, bark
Chervil
Chicory
Cinnamon bark, Ceylon
Cinnamon bark, Chinese
Cinnamon bark, Saigon
Cinnamon bark, Ceylon
Cinnamon leaf, Chinese
Cinnamon leaf, Saigon
Citronella
Citrus peels
Clary (clary sage)
Clove bud
Clove leaf
Clove stem
Clover
Coca (decocainised)
Coffee
Cola nut
Coriander
Corn silk
Cumin (cummin)
Curacao orange peel (orange, bitter peel) Neroli, bigarade
Cusparia bark
Dandelion
Dandelion root
Dill
Dog grass (quackgrass, triticum)
Elder flowers
Estragole (esdragol, esdragon, tarragon)
Estragon (tarragon)
Fennel, sweet
Fenugreek
Kola nut
Laurel berries
Laurel leaves
Lavender
Lavender, spike
Lavandin
Lemon
Lemon balm (see balm)
Lemon grass
Lemon peel
Licorice
Lime
Linden flowers
Locust bean
Lupulin
Mace
Malt (extract)
Mandarin
Majoram, sweet
Malei
Melissa (see balm)
Menthol
Menthyl acetate
Molasses (extract)
Mustard
Naringin
Nutmeg
Onion
Orange, bitter, flowers
Orange, bitter, peel
Orange leaf
Orange, sweet
Orange, sweet, flowers
Orange, sweet, peel
Origanum
Palmarosa
Paprika
Parsley

Galanga (galangal)
Garlic
Geranium
Geranium, East Indian
Peppermint
Peruvian balsam
Petitgrain
Petitgrain lemon
Petitgrain mandarin or tangerine
Pimenta
Pimenta leaf
Pipsissewa leaves
Pomegranate
Prickly ash bark
Rose absolute
Rose lotto of roses (attar of roses)
Rose buds
Rose flowers
Rose fruit (hips)
Rose geranium
Rose leaves
Rosemary
Rue
Saffron
Sage
Sage, Creek
Sage, Spanish
St. John's bread
Pepper, black
Pepper, white
Savory, summer
Savory, winter
Schinus molle
Sloe berries (blackthorn berries)
Spearmint
Spike lavender
Tamarind
Tangerine
Tannic acid
Tarragon
Tea
Thyme
Thyme, white
Thyme, wild or creeping
Triticum (see dog grass)
Tuberose
Turmeric
Vanilla
Violet flowers
Violet leaves
Violet leaves absolute
Wild cherry bark
Ylang-ylang
Zeodary bark

Natural substances used in conjunction with spices and other natural seasonings and flavourings.
Algae, brown (kelp)
Algae, red
Dulse

Natural extractives (solvent-free) used in injunction with spices, seasonings, and flavourings

Algae, brown
Algae, red
Apricot kernel (persic oil)

Dulse
Groundnut stearine
Kelp (sea algae, brown)
Peach kernal (persic oil)
Persic oil (see apricot kernel and peach kernel)
Quince seed

Certain other spices, seasonings, essential oils, oleoresins, and natural extracts.

Ambergris
Castioreum
Civet (zibeth, zibet, zibetum)
Cognac oil, white and green
Musk (Tonquin musk

Table 2.3 Permitted Preservatives

NAME OR DESCRIPTION	CHEMICAL FORMULA	KIND OF ANIMAL	MAXIMUM CONTENT (mg/kg IN COMPLETE FEED INGREDIENTS)	MINIMUM CONTENT (mg/kg IN COMPLETE FEED INGREDIENTS)
Acetic acid	$C_2H_4O_2$			
Ammonium formate	$C_3H_9O_2N$			
Calcium acetate	$C_4H_6O_4Ca$			
Calcium citrates	-			
Calcium formate	$C_2H_2O_4Ca$			
Calcium lactate	$C_6H_{10}O_6Ca$			
Calcium propionate	$C_6H_{10}O_4Ca$			
Calcium sorbate	$C_{12}H_{14}O_4Ca$			
Citric acid	$C_6H_8O_7$			
Disodium disulphite (Sodium metabisulphite) – Not permitted in unprocessed meat and fish	$Na_2S_2O_5$	Dogs and cats	500 alone or together as SO2	
DL-Malic acid	$C_4H_6O_5$			
Ethyl 4-hydroxybenzoate	$C_9H_{10}O_3$	Pet animals	No limit	
Formaldehyde	CH_2O	All species of animals Pigs up to the age	No limit (for silage only) 600 (skimmed milk only)	

NAME OR DESCRIPTION	CHEMICAL FORMULA	KIND OF ANIMAL	MAXIMUM CONTENT (mg/kg IN COMPLETE FEED INGREDIENTS)	MINIMUM CONTENT (mg/kg IN COMPLETE FEED INGREDIENTS)
		of six months		
Formica acid	CH_2O_2			
Fumaric acid	$C_4H_4O_4$			
Hydrochloric acid for use in silage only	HCl			
Lactic acid	$C_3H_6O_3$			
L-Tartaric acid	$C_4H_6O_6$			
Methyl 4-hydroxybenzoate	$C_8H_8O_3$	Pet animals	No limit	
Methylpropionic acid	$C_4H_8O_2$	Ruminants at the beginning of rumination	4,000	1,000
Orthophosphoric acid	H_3PO_4			
Potassium acetate	$C_2H_3O_2K$			
Potassium citrates	-			
Potassium lactate	$C_3H_5O_3K$			
Potassium L-tartrate	-			
Potassium propionate	$C_3H_5O_2K$			
Potassium sodium L-tartrate	$C_4H_4O_6Kna.4H_2O$			
Potassium sorbate	$C_6H_7O_2K$			
Propane –1, 2 diol	$C_3H_8O_2$	Dogs	53,00	
Propionic acid	$C_3H_6O_2$			
Propyl 4-hydroxybenzoate	$C_{10}H_{12}O_3$	Pet animals	No limit	
Sodium citrates	-			
Sodium diacetate	$C_4H_7O_4Na$			
Sodium ethyl 4-hydroxybenzoate	$C_9H_2O_3Na$	Pet animals	No limit	
Sodium formate	CHO_2Na			
Sodium hydrogensulphite (Sodium bisulphite) – Not permitted in unprocessed meat and fish	$NaHSO_3$	Dogs and cats	500 alone or together expressed as SO2	
Sodium lactate	$C_3H_5O_3Na$			

NAME OR DESCRIPTION	CHEMICAL FORMULA	KIND OF ANIMAL	MAXIMUM CONTENT (mg/kg IN COMPLETE FEED INGREDIENTS)	MINIMUM CONTENT (mg/kg IN COMPLETE FEED INGREDIENTS)
Sodium L-tarters	-			
Sodium methyl 4-hydroxybenzoate	$C_8H_7O_3Na$	Pet animals	No limit	
Sodium nitrite	$NaNO_2$	Dogs and cats	100 (canned feeding stuffs only)	
Sodium propionate	$C_3H_{15}O_2Na$			
Sodium propyl 4-hydroxybenzoate	$C_{10}H_{11}O_3Na$	Pet animals	No limit	
Sodium sorbate	$C_6H_7O_2Na$			
Sorbic acid	$C_6H_8O_2$	All	No limit	
Sulphuric acid	H_2SO_4			

Table 2.4 Permitted Colourants

NAME OF DESCRIPTION	CHEMICAL FORMULA, DESCRIPTION	KIND OF ANIMAL	MAXIMUM CONTENT (mg/kg IN COMPLETE FEEDINGSTUFFS	CONDITIONS
Carotenoids and xanthophylls: Capsanthin	$C_{40}H_{56}O_3$	Poultry	80 (alone or with the other carotenoids and xanthophylls)	-
Beta-apo-8"carotenal	$C_{30}H_{40}O$			
Ethyl ester of bet-apo-8"-carotenoic acid	$C_{32}H_{44}O_2$			
Lutein	$C_{40}H_{56}O_2$			
Cryptoxanthin	$C_{40}H_{56}O_2$			
Canthaxanthin	$C_{40}H_{52}O_2$	(a) Poultry (b) Salmon, trout	80	Use permitted from the age of 6 months onwards. The mixture of canthaxanthin with astaxanthin is allowed

NAME OF DESCRIPTION	CHEMICAL FORMULA, DESCRIPTION	KIND OF ANIMAL	MAXIMUM CONTENT (mg/kg IN COMPLETE FEEDINGSTUFFS	CONDITIONS
				provided that the total concentration of the mixture does not exceed 100 mg/kg in the complete feeding stuff.
		c) Dogs, cats and ornamental fish	-	-
Zeaxanthin	$C_{40}H_{56}O_2$	Poultry	80 (alone or with other carotenoids and xanthophylls)	-
Citranaxanthin	$C_{33}H_{44}O$	Laying hens		
Astaxanthin	$C_{40}H_{52}O_4$	(a) Salmon, trout	100	Use only permitted from the age of 6 months onwards. The mixture of astaxanthin with canthaxanthin is allowed provided that the total concentration of the mixture does not exceed 100mg/kg in the complete feeding stuff.
		(b) Ornamental fish	-	-
Other colourants:				
Tartrazine	$C_{16}H_9N_4Na_3O_9S_2$	Ornamental fish	-	-
Sunset yellow FCF	$C_{16}H_{10}N_2NaNa_2O_7S_2$			
Ponceau 4R	$C_{20}H_{11}N_2Na_3O_{10}S_3$			
Erythrosine	$C_{20}H_6I_4Na_2O_5H_2O$			
Patent Blue V	Calcium salt of the disulphonic acid of m-hydroxytetraethyl diamino triphenylcarbinanhydride	(a) All species or categories of animals with the exception of dogs and cats	-	Permitted in farm feeding stuffs only in products processed from: (i) waste products of food stuffs, (ii) denatured cereals of manioc flour, or

NAME OF DESCRIPTION	CHEMICAL FORMULA, DESCRIPTION	KIND OF ANIMAL	MAXIMUM CONTENT (mg/kg IN COMPLETE FEEDINGSTUFFS	CONDITIONS
				(iii) other base substances denatured by means of these agents or coloured during technical preparation to ensure the necessary identification during manufacture
		(b) Dogs and cats		
Indigotine	$C_{16}H_8N_2Na_2O_8S_2$	Ornamental fish	-	-
Chlorophyll copper complex		Ornamental fish	-	-
Acid Brilliant Green BS, (Lissamine green)	Sodium salt of 4,4"s-bis (dimethylamino) diphenylmethylene –2-naphthol-3,6-disulphonic acid	(a) All spices or categories of animals with the exception of dogs, cats and ornamental fish.	-	Permitted in farm feedingstuffs only in products processed from: (i) waste products of foodstuffs, (ii) denatured cereals or manioc flour, or (iii) other base substances denatured by means of these agents or coloured during technical preparation to ensure the necessary identification during manufacture.
		(b) Dogs, cats and ornamental fish	-	-
Carbon black	C	Ornamental fish	-	-
Bixin	$C_{25}H_{30}O_4$			
Iron oxide, red	Fe_2O_3			

NAME OF DESCRIPTION	CHEMICAL FORMULA, DESCRIPTION	KIND OF ANIMAL	MAXIMUM CONTENT (mg/kg IN COMPLETE FEEDINGSTUFFS	CONDITIONS
All colourants (other than Patent Blue V and Acid Brilliant Green BS) at present permitted for use in human food	-	(a) All species or categories of animals with the exception of dogs and cats	-	Permitted in animals feedingstuffs only in products processed from: (i) waste products of foodstuffs, or (ii) other base substances, with the exception of cereals and manioc flour, denatured by means of these agents or coloured during technical preparation to ensure the necessary identification during manufacture
		(b) Dogs and cats	-	-

Table 2.5 Permitted Emulsifiers, Stabilisers, Thickeners and Gelling Agents

NAME OR DESCRIPTION
(a) acetic
(b) iactic
(c) citric
(d) tartaric
(e) monacetyltartaric and diacetyltartaric
Acacia (gum arabic)
Agar
Alginic acid
Ammonium alginate-Not permitted in aquarium fish feed
Calcium alginate
Calcium stearoyl-2 lactylate
Carboxymethylcellulose (sodium salt of carboxymethyl ether of cellulose)
Carrageenan
Cellulose powder

NAME OR DESCRIPTION
Dextrans
D-Glucitol (sorbitol)
Ethylcellulose
Ethylmethylcellulose
Furcellaran
Glycerol
Glycerol poly (ethylene glyclol) ricinoleate
Guar gum /(guar flour)
Hydroxypropylcellulose
Hydroxypropylmethylcellulose
Lecithins
Locust bean gum (carob gum)
Mannitol
Methylcellulose
Microcrystalline cellulose
mixture of sucrose esters of monoacyl and diacylglycerols (sucroglycerides)
Monoacyl and diacylglycerols (mono-and di-glycerides of fatty acids)
Monoacyl and diacylglycerols esterified with the following acids:
Pectins
polyglycerol esters of non-polymerised edible fatty adids
Potassium alginate
Propylene glycol alginate (propane –1,2-diol alginate)
propylene glycol esters of fatty acids (propane-1,2-diol esters of fatty acids)
Sodium alginate
Sodium stearoyl-2 lactylate
Sodium, potassium and calcium salts of edible fatty acid, alone or in mixtures, derived either from edible fats or distilled edible fatty acids
Sorbitan monolaurate
Sorbitan mono-oleate
Sorbitan monopalmitate
Sorbitan monostearate
Sorbitan monostearate
Sorbitan tristearate
Stearyl tartrate
Stearyl-2lactylic acid
sucrose esters of fatty acids (esters of saccharose and edible fatty acids)
Tamarind seed flour

NAME OR DESCRIPTION
Tragacanth
Xanthan gum

Table 2.5 (CONT)

NAME OR DESCRIPTION	KIND OF ANIMAL	MAXIMUM CONTENT (mg/kg in complete feeding stuff)	CONDITION
Gellan gum (Polytetrasaccharide containing glucose, glucuronic acid and rhamnose (2:1:1) produced by *Pseudonas elodea* (ATCC31466)	Dogs, cats	No limit	Canned feeds only
Polyoxyethylene (20) sorbitan monolaurate			
Polyoxyethylen (20) Sorbitan monopalmitate	All species of animals	5 000 (alone or with other polysorbates)	Milk replacer feeds only
Polyoxeyethylene (20) sorbitan monostearate			
Polyoxyethylene (20) sorbitan tristearate			
Plyoxyethyline (20) mono aleate			
Penta Sodium triposphate	Dogs, cats	5000	All farm feeds
Polyethyleneglycol esters of fatty acids from soya oil	Calves	6000	Milk replacer feeds only
Polyoxyethylated glycerides of tallow fatty acids	Calves	5000	Milk replacer feeds only

NAME OR DESCRIPTION	KIND OF ANIMAL	MAXIMUM CONTENT (mg/kg in complete feeding stuff)	CONDITION
Ethers of polyglycerol and of alcohols obtained by the reduction of oleic and palmitic acids	Calves	5000	Milk replacer feeds only
Propane-1,2-diol	Dairy cows	1200	All farm feeds
	Calves, Cattle for fattening, Lambs, Kids, Swine, Poultry	36000	
Poly (ethylene glycol) 6000	All species of animals	300	All farm feeds
Polyoxypropylene-polyoxyethylene polymers (M.W.6800-9000)		50	
Partial polyglycerol esters of polycondensed fatty acids of castor oil (polyglycerol polyricinoleate)	Dogs	No limit	All farm feeds
Cassia gum	Dogs, cats	17600	Canned feeds only

Table 2.6 Permitted Binders, Anticaking Agents and Coagulants

NAME OR DESCRIPTION	CHEMICAL FORMULA
Calcium silicate (synthetic)	$C_{18}H_{35}O_2K$ and $C_{36}H_{70}O_4Ca$ -
Citric acid	$C_6H_8O_7$

NAME OR DESCRIPTION	CHEMICAL FORMULA
Colloidal silica	-
Kaolin and kaolinitic clays free of asbestos (naturally occurring mixtures of mineral containing at least 65 %) complex hydrated aluminium silicates whose main constituent is kaolinite)	-
Kieselguhr (diatomaceous earth, purified)	-
Lignosulphonates	-
Natural mixtures of steatite and chlorite free of asbestos (min.purity of the mixture: 85%)	-
Silicic acid (precipitated and dried)	-
Sodium aluminosilicate (synthetic)	-
Sodium, pottassium and calcium stearates	$C_{18}H_{35}O_2Na$
Vermiculite (hydrated silicate of magnesium, aluminium and iron, expanded by heating, free of asbestos:-max.fluorine content-0.3%)	-

Table 2.6 (CONT)

NAME OR DESCRIPTION	KIND OF ANIMAL	MAXIMUM CONTENT (mg/kg in complete feeding stuff)	CONDITIONS
			amycin, nicarbazin, robenidine and maduramicin ammonium.
Bentonite and montmorillonite	All species of animal	20000	All feeding stuffs (mixing of antibiotic growth promoters and coccidiostats with feeding stuffs and ingredients in the presence of these additives is prohibited except for lylosin, monesin sodium, narasin, ipronidazole, la-

NAME OR DESCRIPTION	KIND OF ANIMAL	MAXIMUM CONTENT (mg/kg in complete feeding stuff)	CONDITIONS
			salocid sodium, avoparcin, flavophospholipol, salinomycin sodium, ronidazole and virgini-
Calcium sulphate dihydrate	All species of animals	30000	All feeding stuffs
Mixture of calcium aluminates containing between 35 and 51% of Al_2O_3 maximum molybdenum content of 20 mg/kg	Dairy cows, cattle for fattening, calves, lambs and kids	8000	All feeding stuffs
Natrolite-phonolite (natural mixture of aluminium silicates, alkalines and alkaline-earth and aluminium hydrosilicates, natrolite (43%-46%) and feldspar	All species of animals	25000	All feeding stuffs
Perlite	All species of animals	No limit	All feeding stuffs
Sepiolic clay ,hydrated magnesium silicate of sedimentary origin, containing at least 40% sepiolite and 25% illite. Asbestos free.	All species	20000	All feeding stuffs
Sepiolite, hydrated magnesium silicate of sedimentary origin, containing at least 60 % sepiolite and maximum 30 % montmorillonite asbestos free	All species of animals	20000	All feeding stuffs
Synthetic calcium aluminates.	Poultry, rabbits and pigs	20000	All feeding stuffs

ANNEXURE 3

Non-Protein Nitrogen Sources for Ruminants

NAME OR DESCRIPTION	PROTEIN EQUIVALENT %
Ammonia	515
Ammonium chloride	160
Ammonium sulphate	131.25
Biuret	225
Mono-ammonium phosphate	56.25
Urea	287
Urea phosphate	111
Uric acid	208

ANNEXURE 4

Undesirable Substances in Farm Feeds

SUBSTANCE, PRODUCTS	FARM FEEDS	MAXIMUM CONTENT IN mg/kg (ppm) relative to a farm feed with a moisture content of 120g/kg
(1)	(2)	(3)
Substances (ions or elements)		
1. Arsenic	Feed ingredients with the exception of:	2
	- Hays, straws, Lucerne, roughages and bagasse	4
	- phosphates and ingredients obtained from the processing of fish or other marine animals.	10
	Complete farm feeds with the exception of:	2
	- complete farm feeds for fish	4
	Supplements/concentrates with the exception of:	4
	- Mineral feeds, concentrates & pre-mixtures	12
2.Lead	Ingredients with the exception of:	10
	- green roughages	40
	- phosphates	30
	- yeasts	5
	Complete farm feeds	5

SUBSTANCE, PRODUCTS	FARM FEEDS	MAXIMUM CONTENT IN mg/kg (ppm) relative to a farm feed with a moisture content of 120g/kg
(1)	(2)	(3)
	Supplements/concentrates with the exception of:	10
	- Mineral feeds	30
3. Fluorine	Feed Ingredients with the exception of:	150
	- ingredients of animal origin	500
	- phosphates	95 per 1% P
	Complete farm feeds with the exception of:	150
	- complete feeds for lactating cattle, sheep and goats	30
	- other	50
	- complete feeds for pigs	100
	- complete feeds for poultry	350
	- complete feeds for chicks	250
	Mineral supplements for cattle, sheep and goats	2000
	Other Concentrates/supplements	125 per 1% P
4.Mercury	Feed ingredients except feed ingredients produced by the processing of fish or other marine animals	0,1
	Feed ingredients produced by the processing of fish or other marine animals	0,5

SUBSTANCE, PRODUCTS	FARM FEEDS	MAXIMUM CONTENT IN mg/kg (ppm) relative to a farm feed with a moisture content of 120g/kg
(1)	(2)	(3)
	Complete feeds except for dogs and cats.	0,1
	- Complete feeds for dogs and cats	0,4
	Concentrates/supplements except complementary food for dogs and cats	0,2
5. Nitrites	Fish meal	60 (expressed as sodium nitrite)
	Complete feeds excluding: - ingredients intended for pets except birds and aquarium fish.	15 (expressed as sodium nitrite)
6. Cadmium	Ingredients of vegetable origin	1
	Ingredients of animals origin except feeding stuffs for pets	2
	Phosphates	10 per 1% P
	Complete farm feeds for cattle, sheep and goats except complete feeds for calves, lambs and kids	1
	Other complete feeds except feeds for pets	0,5
	Mineral feeds	5
	Other Concentrates/ Supplements for cattle, sheep and goats	0,5

SUBSTANCE, PRODUCTS	FARM FEEDS	MAXIMUM CONTENT IN mg/kg (ppm) relative to a farm feed with a moisture content of 120g/kg
(1)	(2)	(3)
1. Aflatoxin B1	Feed ingredients with the exception of:	0.02
	- Groundnut, copra, palm-kernel, cotton seed, maize and products derived from the processing thereof	0,05
	Complete farm feeds for cattle, sheep and goats with the exception of:	0,05
	- dairy cattle	0,005
	- calves and lambs	0,01
	Complete feeds for pigs and poultry (except young animals)	0,02
	Other complete farm feeds	0,01
	Supplement/concentrates for cattle, sheep and goats (except for dairy animals, calves and lambs)	0,05
2. Hydrocyanic acid	Feed ingredients with the exception of:	50
	Linseed	250
	Linseed cakes	350
	Manioc products and almond cakes	100
	Complete feeds with the exception of:	50
	- complete feeds for chickens:	10

SUBSTANCE, PRODUCTS	FARM FEEDS	MAXIMUM CONTENT IN mg/kg (ppm) relative to a farm feed with a moisture content of 120g/kg
(1)	(2)	(3)
3. Free gossypol	Feed ingredients with the exception of:	20
	- cotton seed cakes	1 200
	- cotton seed	5 000
	Complete farm feeds with the exception of:	20
	- complete feeds for cattle, sheep and goats	500
	- complete feeds for poultry (except laying hens) and calves	100
	- complete feeds for rabbits and pigs (except piglets)	60
4. Theobromine	Complete farm feeds with the exception of:	300
	- complete feeds for adult cattle	700
5. Volatile mustard oil	Feed ingredients with the exception of:	100
	- rape seed cakes	4 000 (expressed as allyl isothiocyanate)
	Complete farm feeds with the exception of	150 (expressed as allyl isothiocyanate)
	- complete feeds for cattle, sheep and goats (except young animals)	1 000 (expressed as allyl isothiocyanate)

SUBSTANCE, PRODUCTS	FARM FEEDS	MAXIMUM CONTENT IN mg/kg (ppm) relative to a farm feed with a moisture content of 120g/kg
(1)	(2)	(3)
	- complete feeds for pigs (except piglets) and poultry	500 (expressed as allyl isothiocyanate)
6. Vinyl thiooxazolidone (vinyloxazolidine thione)	Complete feeds for poultry with the exception of:	1 000
	- complete feeds for laying hens	500
7. Rye ergot (*Clavicept purpurea*)	All farm feeds containing unground cereals	1 000
8. Weed seeds and unground and uncrushed fruit containing alkaloids, glucosides or other toxic substances separately or in combination including	All farm feeds	3 000
(a) *Lolium temulentum L*,		1 000
(b) *Lolium remotum Schrank*,		1 000
(c) *Datura stramonium L*.		1 000
9. Castor oil plant – *Ricinus communis L*.	All farm feeds	10 (expressed in terms of castor-oil plant husks)
10. *Crotalaria* spp.	All animals feeds	100
11. Aldrin singly or combined expressed as dieldrin	All farm feeds with the exception of:	0,01
	- fats	0,02
12. Dieldrin		
13. Camphechlor (Toxaphene)	All farm feeds	0,1
14. Chlordane (sum of cis-and trans-isomers and of oxychlordane, expressed as chlordane)	All farm feeds with the exception of:	0,02
	- fats	0,05

SUBSTANCE, PRODUCTS	FARM FEEDS	MAXIMUM CONTENT IN mg/kg (ppm) relative to a farm feed with a moisture content of 120g/kg
(1)	(2)	(3)
15. DDT (sum of DDT- TDE and DDE-isomers, expressed as DDT)	All farm feeds with the exception of:	0,05
	- fats	0,5
16. Endosulfan (sum of alpha- and beta-somers and of endosulfansulphate expressed as endosulfan)	All farm feeds with the exception of	0,1
	- maize	0,2
	- oilseeds	0,5
	- complete feeds for fish	0,005
17. Endrin (sum of endrin and delta-ketoi-endrin, expressed as endrin)	All farm feeds with the exception of:	0,01
	- fats	0,05
18. Heptachlor (sum of heptachlor and of heptachlor-epoxide, expressed as heptachor)	All farm feeds with the exception of:	0,01
	- fats	0,2
19. Hexachlorobenzene (HCB)	All farm feeds with the exception of:	0,01
	- fats	0,2
20. Hexachlorocyclo-hexane (HCH)	All farm feeds with the exception of fat	0.02
20.1 alpha-isomer	All farm feeds with the exception of:	0,02
	- fats	0,2
20.2 beta-isomer	Compound farm feed with the exception of:	0,01
	- feeding stuffs for dairy cattle	0,005
	Feed ingredients with the exception of:	0,01

SUBSTANCE, PRODUCTS	FARM FEEDS	MAXIMUM CONTENT IN mg/kg (ppm) relative to a farm feed with a moisture content of 120g/kg
(1)	(2)	(3)
	- fats	0,1
20.3 gamma-isomer	All farm feeds with the exception of:	0,2
	- fats	2,0
C. BOTANICAL IMPURITIES		
1. Apricots – *Prunus armeniaca L*.		
2. Bitter almond – *Prunus dulcis* (Mill.) D.A. Webb var. *amara* (DC.) Focke (= *Prunus amygdalus* Batsch var.*amara* (DC.) Focke)		
3. Unhusked beech mast – *Fagus silvatica* (L).		
4. Camelina – *Camelina sativa* (L). Crantz		
5. Mowrah, Bassia, Madhuca – *Madhuca longifolia* (L.) Macbr. (=*Bassia longifolia* L. = *Illipe malabroum* Eng1.) *Madhuca indica* Gmelin (= *Bassia latifolia* (Roxb.) = *Illipe latifolia* (Roscb.) F. Mueller)	All farm feeds	Seeds and fruit of the plant species listed opposite as well their processed derivatives may only be present in feed ingredients in trace quantities not quantitatively determinable.
6. Purghera – *Jatropha curcas* L.		
7. Croton – *Croton tiglium* L.		
8. Indian mustard – *Brassica juncea* (L.) Czern. and Coss.ssp. *integrifolia* (West.) Thell.		

SUBSTANCE, PRODUCTS	FARM FEEDS	MAXIMUM CONTENT IN mg/kg (ppm) relative to a farm feed with a moisture content of 120g/kg
(1)	(2)	(3)
9. Sareptian mustard – *Brassica juncea* (L.) Czern. and *Coss*.ssp. *juncea* 10. Chinese mustard – *Brassica Juncea* (L.) Czern and *Coss*. ssp. *Junica var lutea Batelin* 11. Black mustard – *Brassica nigra* (L.) Koch 12. Ethiopian mustard – *Brassica carinata* A. Braun		

ANNEXURE 5

Prohibited ingredients

Faeces, urine as well as separated digestive tract content resulting from the emptying of removal of the digestive tract.

Hide treated with tanning substances, including its waste.

Seeds and other plant propagating materials which, after harvest, have undergone specific treatment with plant protection products for their intended use (propagation), and any derived by-products.

Wood, sawdust and other materials derived from wood treated with wood protection products.

Sludge from sewage plants treating waste waters.

Solid urban waste, such as household waste.

Untreated waste from eating places.

The packaging and parts of packaging or the use of products from the agri-food industry.

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ANNEXURE 6

Permitted Stock Remedies

SPECIES	CLASS Of FARM FEED	ACTIVE INGREDIENT	INCLUSION RATE g/ton feed
Calves	Starter Grower Complete calf Ruminant creep	Avoparcin	25-50
		Flavophospholipol	6-12
		Lasalocid sodium	15-50
		Monensin sodium	10-33
		Narasin	5-13
		Oxytetracycline	50-300
		Salinomycin sodium	20
		Tetrachlorvinphos	60
		Tylosin	10
		Virginiamycin	60
		Zinc bacitracin	50-100
Calves	Milk replacers	Flavophospholipol	6-15
		Virginiamycin	60
		Zinc bacitracin	50-100
Lambs and kids	Milk replacers	Flavophospholipol	6-15
		Zinc bacitracin	50-100
Lambs and kids	Ruminant creep	Avoparcin	10-20
		Flavophospholipol	10
		Lasalocid sodium	15-50
		Monensin sodium	11-22
		Oxytetracycline	50-300
		Salinomycin sodium	15-20
		Zinc bacitracin	50-100
Sheep and goats	Finisher Ram Complete Drought	Avoparcin	10-20
		Flavophospholipol	10
		Lasalocid sodium	15-50
		Monensin sodium	11-22
		Salinomycin	15-20
		Zinc bacitracin	10-15
	Ewe and lamb	Avoparcin	10-20
		Flavophospholipol	10
		Lasalocid sodium	15-50
		Monensin sodium	11-22

SPECIES	CLASS Of FARM FEED	ACTIVE INGREDIENT	INCLUSION RATE g/ton feed
		Salinomycin sodium	15-20
		Zinc bacitracin	10-50
Cattle	DAIRY FEEDS		
	Complete Semi-complete Concentrates	Avoparcin	7,5-15
		Flavophospholipol	6
		Lasalocid sodium	4-20
		Monensin sodium	10-20
		Tetrachlorvinphos	60-150
	OTHER CATTLE FEEDS		
	Finisher Complete Bull Bull Drought	Avoparcin	25-50
		Flavophospholipol	6
		Lasalocid sodium	15-50
		Monensin sodium	10-33
		Narasin	5-13
		Salinomycin sodium	20
		Tetrachlorvinphos	60
		Tylosin	10
		Virginiamycin	20-40
		Zilpaterol	6
		Zinc bacitracin	10-50
Chickens	BROILER PRODUCTION		
	Pre-starter Starter Grower Finisher Post-finisher	Amprolium Ethopabate	125 8
		Avilamycin	5-15
		Avoparcin	10
		Clopidol	100
		Chlorotetracycline	1500-2000
		Cyromazine	5
		Diclazuril	1
		Dinitro-orthotoluamide	125
		Dinitro-orthotoluamide Ethopabate	125 8
		Flavophospholipol	2-5
		Fosfomycin	150-250
		Halofuginone	3
		Kitasamycin	5,5-11
		Lasalocid sodium	75-125
		Maduramicin ammonium	5

SPECIES	CLASS Of FARM FEED	ACTIVE INGREDIENT	INCLUSION RATE g/ton feed
		Monensin sodium	100-120
		Narasin	70-80
		Narasin Nicarbazin	40-50 40-50
		Nicarbazin	125
		Nitrovin	12
		Nitrovin Zinc bacitracin	12 20
		Olaquindox	10-20
		Oxytetracycline	100-200
		Robenidine	33
		Salinomycin sodium	50-70
		Semduramicin	20
		Tylosin	5
		Virginiamycin	20
		Zinc bacitracin	100
Chickens	EGG PRODUCTION		
	Chick starter Pullet grower Pullet developer	Amprolium Ethopabate	125 8
		Clopidol	100
		Cyromazine	5
		Dinitro-orthotoluamide	125
		Dinitro-orthotoluamide Ethopabate	125 8
		Flavophospholipol	2-5
		Fosfomycin	150-250
		Halofuginone	3
		Hygromycin	13,2
		Kitasamycin	5,5-11
		Lasalocoid sodium	75-125
		Monensin sodium	100-120
		Salinomycin sodium	50-70
		Tylosin	22-50
		Zinc bacitracin	100

SPECIES	CLASS Of FARM FEED	ACTIVE INGREDIENT	INCLUSION RATE g/ton feed
	Complete laying mash Complete laying mash (late phase)	Amprolium Ethopabate	125 8
		Cyromazine	5
		Flavophospholipol	2-5
		Hygromycin	13,2
		Tylosin	22-50
		Virginiamycin	20
		Zinc bacitracin	100
Chickens	Breeder	Amprolium Ethopabate	125 8
		Cyromazine	5
		Dinitro-orthotoluamide Ethopabate	125 8
		Flavophospholipol	2-5
		Fosfomycin	150-250
		Halofuginone	3
		Hygromycin	13,2
		Kitasamycin	5,5-11
		Tylosin	22-50
		Virginiamycin	80
		Zinc bacitracin	100
Turkeys	Starter Grower Developer Pre-breeder Breeder	Amprolium Ethopabate	125 8
		Cyromazine	5
		Diclazuril	1
		Dinitro-orthotoluamide	125
		Dinitro-orthotoluamide Ethopabate	125 8
		Halofuginone	2-3
		Monensin sodium (up to 16 weeks only)	90-100
		Oxytetracycline	100-200
		Zinc bacitracin	50
Turkeys	Finisher	Amprolium Ethopabate	125 8
		Cyromazine	5
		Diclazuril	1
		Dinitro-orthotoluamide	125
		Halofuginone	2-3

SPECIES	CLASS Of FARM FEED	ACTIVE INGREDIENT	INCLUSION RATE g/ton feed
		Oxytetracycline	100-200
		Zinc bacitracin	50
Pigs	Weaner	Avilamycin	40
	Creep	Avoparcin	40
		Carbadox	55
		Chlortetracycline	100-500
		Dimetridazole	225
		Flavophospholipol	15
		Hygromycin	13,2
		Kitasamycin	5,5-100
		Olaquindox	25-100
		Oxytetracycline	100-400
		Salinomycin sodium	90
		Tylosin	40
		Virginiamycin	50
		Zinc bacitracin	50-100
Pigs	Grower	Avilamycin	20-40
		Avoparcin	20
		Carbadox	55
		Chlortetracycline	100-500
		Dimetridazole	225
		Flavophosholipol	2-8
		Hygromycin	13,2
		Kitasamycin	5,5-55
		Narasin	15-30
		Nitrovin	12
		Olaquindox	25-50
		Oxytetracycline	100-400
		Salinomycin sodium	50
		Tylosin	20-40
		Virginiamycin	20
		Zinc bacitracin	50-100
Pigs	Finisher	Avilamycin	20-40
		Avoparcin	20
		Carbadox	55
		Chlortetracycline	100-500
		Dimetridazole	225
		Flavophospholipol	2-8

SPECIES	CLASS Of FARM FEED	ACTIVE INGREDIENT	INCLUSION RATE g/ton feed
		Kitasamycin	5,5-20
		Narasin	15-30
		Nitrovin	12
		Olaquindox	25-50
		Oxytetracycline	100-400
		Ractopamine	10-20
		Salinomycin sodium	15-30
		Tylosin	20
		Virginiamycin	20
		Zinc bacitracin	100
Pigs	Dry sow	Chlortetracycline	100-500
		Flavophospholipol	2-8
		Hygromycin	13,2
		Kitasamycin	22-100
		Oxytetracycline	100-400
		Zinc bacitracin	100
Pigs	Boar and lactating sow	Flavophospholipol	2-8
		Hygromycin	13,2
		Kitasamycin	22-100
		Zinc bacitracin	100
Ostriches	All feeds	Cyromazine	5
		Flavophospolipol	8
Horses	All feeds	Virginiamycin	40
Dogs and cats	All feeds	No registered products	
Rabbits	All feeds	Salinomycin sodium	30
Mice	All feeds	No registered products	
Water fowl	All feeds	Cyromazine	5
Pigeons	All feeds	No registered products	
Fish	All feeds	No registered products	

ANNEXURE 7

What are ASAVs/Sampling (ASVs)

- Analytical Sampling Variations (ASAVs) are guidelines for helping inspectors make routine decisions on acceptability of products appearing to be marginally acceptable.
- ASVs values are not intended to allow real deficiencies or excesses of the guaranteed ingredient.
- ASVs are not intended to cover sloppy work, poor sampling, or any deficiency in analytical or clerical procedures.
- ASVs are intended to apply to individual determinations made under routine conditions on a single sample. A history of seven or eight samples of a given product, each of which is slightly deficient from the guarantee, but none of which is deficient as much as the AV, is ample justification for the control official to take action.

Table 7.1 Acceptable analytical and sampling variations of moisture, protein, fat fibre, ash, Ca, P, Na, Cl, K, Mg and S in finished feeds

Registered Nutrient level (X), %	Variation (A) from X	Relative variation (RV) from (X), %
1	0.25	25.0
2	0.30	14.9
3	0.34	11.5
4	0.39	9.8
5	0.44	8.8
6	0.48	8.1
7	0.53	7.6
8	0.58	7.2
9	0.63	6.9
10	0.67	6.7
12	0.77	6.4
14	0.86	6.1
16	0.95	6.0
18	1.05	5.8
20	1.14	5.7
25	1.38	5.5
30	1.61	5.4
35	1.84	5.3
40	2.08	5.2
50	2.55	5.1
60	3.02	5.0
70	3.48	5.0
80	3.95	4.9

$A = 0.046875.X + 0.203125$ $RV = A/X \times 100$

Table 7.2 Acceptable analytical and sampling variations of moisture, protein, fat fibre, ash, Ca, P, Na, Cl, K, Mg and S in ingredients

Registered Nutrient level (X), %	Variation (A) from X	Relative variation (RV) from (X), %
1	0.25	25.0
2	0.30	14.9
3	0.34	11.5
4	0.39	9.8
5	0.44	8.8
6	0.49	8.1
7	0.50	7.2
8	0.52	6.5
9	0.54	6.0
10	0.55	5.6
12	0.59	4.9
14	0.62	4.5
16	0.66	4.1
18	0.69	3.9
20	0.73	3.6
25	0.82	3.3
30	0.90	3.0
35	0.99	2.8
40	1.08	2.7
45	1.16	2.6
50	1.25	2.5
60	1.42	2.4
70	1.60	2.3
80	1.77	2.2

6 to 80 %	A = 0.01738.X + 0.3810	RV = A/X x100
1 to <6%	A = 0.046875.X + 0.203125	RV = A/X x100

Table 7.3 Acceptable analytical and sampling variations of micro minerals, vitamins, medications, micro elements (0-1000 mg/kg) finished feeds and ingredients

Registered level (X) %	mg/kg	Variation (A) from X	Relative variation (RV) From X, %
0.10	1000	0.040	40.0
0.25	2500	0.075	30.0
0.50	5000	0.133	26.7
0.75	7500	0.192	25.6
1.00	10000	0.250	25.0

$A = 0.233333.X + 0.016667$ $RV = A/X \times 100$

Values < 0.10 % (1000 mg/kg) relative variation (RV) from X = 50%

ANNEXURE 8

General Feed Terms

Aerial parts. (Part) The above ground parts of plants.

Air ashed. (Process) Reduced by combusion in air to a mineral residue.

Ammoniated, ammoniating. (Process) Combined with or impregnated with ammonia or an ammonium compound.

Animal waste. Means a material composed of excreta, with or without bedding materials, and collected from poultry, ruminants or other animals except humans.

Antibiotics. A class of drug. They are usually synthesised by a living micro-organism and in proper concentration inhibit the growth of other micro-organisms.

Artificially dried. (Process). Moisture having been removed by other than natural means.

Aspirated, aspirating. Having removed chaff, dust, or other light materials by use of air.

Bagasse. (Part) Pulp from sugar cane. (See pulp.)

Barn-cured. (Process) Forage material dried with forced ventilation in an enclosure.

Beans. Seed of leguminous plants especially of *Phaseolus*, Dali Chos, and *Vigna*.

Biscuits. (Physical form) Shape and baked dough.

Blending (Process) To mingle or combine two or more ingredients of feed. It does not imply a uniformity of dispersions

Blocked, blocking. (Process) Having agglomerated individual ingredients or mixtures in to a large mass.

Blocks. (Physical form) Agglomerated feed compressed into a solid mass cohesive to hold its form.

Blood. (Part) Vascular fluid of animals.

Blood albumin. (Part) One of the blood proteins.

Bolls. (Part) The pods or capsules of certain plants, especially flax or cotton.

Bolted, bolting. (Process) Separated by means of a bolting cloth as flour from bran.

Bone. (Part) Skeletal parts of vertebrates.

Bran. (Part) Pericarp of grain.

Brand name. Any word, name, symbol or device or any combination thereof identifying the commercial feed of a distributor and distinguising it from that of others.

Bricks. (Physical form) Agglomerated feed, other than pellets, compressed into a solid mass cohesive enough to hold its form and weighing less than two pounds (see blocks.)

Browse. (Part) Small stems, leaves and/or flowers and fruits of shrubs, trees or woody vines.

Buttermilk. (Part) All residue from churning cream.

Byproduct. (Part) Secondary products produced in addition to the principle product.

Cake. (Physical form) The mass resulting from the pressing of seeds, meat or fish in order to remove oils, fats or other liquids.

Calcined, calcining. (Process) Treated at high temperature in the presence of air.

Canned. (Process) a term applied to a feed which has been processed, packaged, sealed, and sterilised for preservation in cans or similar containers.

Cannery residue. (Part) Residue suitable for feeding obtained in preparing a product for canning.

Carriers. An edible material to which ingredients are added to facilitate uniform incorporation of the latter into feeds. The active particles are absorbed, impregnated or coated into or onto the edible material in such a way as to physically carry the active ingredient.

Chaff. (Part) Glumes, husks, or other seed covering together with other plant parts separated from seed in threshing or processing.

Charcoal. Dark-coloured porous forms of carbon made from the organic parts of vegetable or animal substances, by their incomplete combustion.

Chipped, chipping. (Process) Cut or broken into fragments; also meaning prepared into small thin slices.

Chopped, chopping. (Process) Reduced in particle size by cutting with knives or other edged instruments.

Cleaned, cleaning. (Process) Removal of material by such methods as scalping, aspirating, magnetic separation, or by any other method.

Cleanings (Part), Chaff, weed seeds, dust and other foreign matter removed from cereal grains.

Commercial feed. As defined in the Uniform State Feed Bill. All materials except whole seeds unmixed or physically seeds, when not adultereated within the meaning of Section 7(a) for use as feed or for mixing in feed.

Condensed, condensing. (Process) Reduced to denser form by removal of moisture.

Conditioned, **conditioning**. (Process) Having achieved predetermined moisture characteristics and/or temperature of ingredients or a mixture of ingredients prior to further processing.

Cooked, cooking. (Process) Heated in the presence of moisture to alter chemical and/or physical characteristics or to sterilise.

Cracked, cracking. (Process) Particle size reduced by a combined breaking and crushing action.

Cracklings. (Part) Residue after removal of fat from adipose tissue or skin of animals by dry heat.

Crimped, crimping. (Process) Rolled by use of corrugated rollers. It may curtail tempering or conditioning and cooling.

Crumbled, crumbling. (Process) Pellets reduced to granular form.

Crumbles. (Physical form) Pelleted feed reduced to granular form.

Crushed, crushing. (Process) See rolled, rolling.

Cull. Material rejected as inferior to the process of grading or separating.

Culture. Nutrient medium inoculated with specific micro-organisms which may be in a live or dormant condition.

Cultured, culturing. (Process) Biological material multiplied or produced in a nutrient media.

Cure, curing, cured. (Process) To prepare for keeping for use, or to use, or to preserve. The process may be by drying, use of chemical preservatives, smoking, salting, or by use of other processes and/or materials for preserving.

Cut, cutting. (Process) See chopped, chopping.

D-activated, D-activating. Plant or animal sterol fractions which have been vitamin D activated by ultra-violet light or by other means.

Defluorinated, defluorinating. (Process) Having had fluorine removed.

Degermed. (Process) Having had the embryo of seeds wholly or partially separated from the starch endosperm.

Dehulled, dehulling. (Process) Having removed the outer covering from grains or other seeds.

Dehydrating, dehydrated. (Process) Having been freed of moisture by thermal means.

Dextrose equivalent (D.E.) (Physical form) is the reducing power calculated as dextrose, expressed as a percentage of the dry substance. It is used in conjunction with sugars and starch hydrolysates.

Digested, digesting. (Process) Subjected to prolonged heat and moisture, or to chemicals or enzymes with a result change of decomposition of the physical or chemical nature.

Diluent. (Physical form) An edible substance used to mix with and reduce the concentrate of nutrients and/or addives to make them more acceptable to animals, safer to use, and more capable of being mixed uniformly in a feed. (It may also be a carrier).

Dressed, dressing. (Process) Made uniform in texture by breaking or screening of lumps from feed and/or the application of liquid(s).

Dried, drying. (Process) Materials from which water or other liquid has been removed.

Dry-milled. (Process) Tempered with a small volume of water or steam to facilitate the separation of the various component parts of the kernel in the absence of any significant volume of free water.

Dry-rendered, dry-rendering. (Process) Residues of animal tissue cooked in open steam-jacketed vessels until the water has evaporated. Fat is removed by draining and pressing the solid residue.

Dust. (Part) Fine, dry pulverised particles of matter usually resulting from the cleaning or grinding of grain.

Ears. (Part) Fruiting heads of Zea maize, including only the cob and grain.

Emulsifer. A material capable of causing fat or oils to remain in liquid suspension.

Endosperm. (Part) Starchy part of seed.

Ensiled. (Process) Aerial parts of plants which have been preserved by ensiling. Normally the original material is finely cut and blown into an airtight chamber such as a silo, where it is pressed to exclude air and where it undergoes an acid fermentation that delays spoilage.

Etiolated. (Process) A material grown in the absence of sunlight, blanched, bleached, colourless or pale.

Evaporated, evaporating. (Process) Reduced to denser form; concentrated as by evaporation or distillation.

Eviscerated. (Process) Having had all the organs in the great cavity of the body removed.

Expanded, expanding. (Process) Subjected to moisture, pressure, and temperature to gelatinise the starch part. When extruded, its volume is increased, due to abrupt reduction in pressure.

Extracted, mechanical. (Process) Having removed fat or oil from materials by heat and mechanical pressure. Similar terms: expeller extracted, hydraulic extracted, “old process”.

Extracted, solvent. (Process) Having removed fat or oil from materials by organic solvents. Similar term: “new process.”

Extruded. (Process) A process by which feed has been pressed, pushed, or protruded through arifices under pressure.

Fat. (Part) A substance composed chiefly of triglycerides of fatty acids, and solid or plastic at room temperature.

Fatty acids. (Part) Aliphatic monobasic acids containing only the elements carbon, hydrogen, and oxygen.

Fermentation aid. A substance added to assist in providing proper conditions which results in action by yeasts, moulds or bacteria in a controlled aerobic or anaerobic process used for the manufacture of certain products.

Fermented, fermenting. (Process) Acted upon by yeasts, moulds, or bacteria in a controlled aerobic or an aerobic process in the manufacture of such products as alcohols, acids, vitamins of the B-complex group, or antibiotics.

Fines. (Physical form) Any materials which will pass through a screen whose openings are immediately smaller than the specified minimum crumble size or pellet diameter.

Flakes, flaking. (Process) See rolled.

Flakes (Physical form) An ingredient rolled or cut into flat pieces with or without prior steam conditioning.

Flour. **(Part)** Soft, finely ground and bolted meal obtained from the milling of cereal grains, other seeds, or products. It consists essentially of the starch and gluten of the endosperm.

Free choice. (AD LIB) A feeding system by which animals are given unlimited access to the separate components or groups of components constituting the diet.

Fused, fusing. (Process) Melted by heat.

Gelatinised, gelatinising. (Process) Having had the starch granules completely ruptured by a combination of moisture, heat and pressure, and in some instances, by mechanical shear.

Germ. (Part) The embryo found in seeds and frequently separated from the bran and starch endosperm during milling.

Gluten. (Part) The tough, viscid nitrogenous substance remaining when the flour or wheat or other grain is washed to remove the starch.

Gossypol. (Part) A phenol pigment in cottonseed toxic to some animals.

Grain. (Part) Seed from cereal plants.

GRAS. Abbreviation for the phase “Generally Recognised as Safe”. A substance which is generally recognised as safe by experts qualified to evaluate the safety of the substance for its intended use.

Grease. FAT/Animal fats with a titre below 40ĶC.

Grit. Coarse ground, insoluble, non-nutritive material (e.g. granite rock) for the *in vivo* mechanical grinding of feed by avian species.

Grits. (Part) Coarsely ground grain from which the bran and germ have been removed, usually screened to uniform particle size.

Groats. (Part) Grain from which the hulls have been removed.

Ground, grinding. (Process) Reduced in particle size by impact, shearing, or attrition.

Hay. (Part) The aerial part of grass or herbage especially cut and cured for farm feeding.

Heads. (Part) The seed or grain-containing parts of a plant.

Heat-processed, heat-processing. (Process) Subjected to a method of preparation involving the use of elevated temperatures with or without pressure.

Heat rendered, heat rendering. (Process) Melted, extracted, or clarified through use of beat. Usually, water and fat are removed.

Homogenised, homogenising. (Process) Particles broken down into evenly distributed globules small enough to remain emulsified for long periods of time.

Hulls. (Part) Outer covering of grain or other seed.

Husks. (Part) Leaves enveloping an ear of maize; or the outer coverings of kennels or seeds, especially when dry and membranous.

Hydrolysed, hydrolysing. (Process) Complex molecules having been split to more basic units by chemical reaction with water, usually by catalysis.

Iodinated. (Process) Treated with iodine.

Iodise, iodised. (Process) To treat with iodine or an iodide.

Irradiated, irradiating. (Process) Treated, prepared, or altered by exposure to a specific radiation.

Juice. (Part) The aqueous substance obtainable from biological tissue by pressing or filtering with or without addition of water.

Kernel. (Part) A whole grain. For other species, dehulled seed.

Kibbled, kibbling. (Process) Cracked or crushed baked dough, or extruded feed that has been cooked prior to or during the extrusion process.

Laboratory method. A technique or procedure of conducting scientific experiment, test, investigation or observation according to a definite established logical or systematic plan.

Lard. (Part) Rendered fat of swine.

Leached. (Process) The condition of a product following subjection of the material to the action of percolating water of other liquid.

Leaves. (Part) Lateral outgrowths of stems that constitute part of the foliage of a plant, typically a flattened green blade, and primarily functions in photosynthesis.

Lecithin. (Part) A specific phospholipid. The principal constituent of crude phosphatides derived from oil- bearing seeds.

Malt. (Part) Sprouted and steamed wholegrain from which the radicle has been removed.

Malted, malting. (Process) Converted into malt or treated with malt or malt extract.

Mash (Physical form) A mixture of ingredients in meal form. Similar term: mash feed.

Meal. (Physical form) An ingredient which has been ground or otherwise reduced in particle size.

Medicated feed. Any feed which contains drug ingredients intended or presented for the cure, mitigation, treatment, or prevention of diseases of animals other than man or which contains drug ingredients intended to affect the structure or any function of the body of animals other than man.

Antibiotics included in a feed growth promotion and/or efficiency levels are drug additives and feeds containing such antibiotics are included in the foregoing definition of “Medicated feed.”

Micro-ingredients. Vitamins, minerals, antibiotics, drugs and other materials normally required in small quantities and measured in milligrams, micrograms or parts per million (ppm).

Middlings (Part) A by-product of flour milling comprising several grades of granular particles containing different proportions of endosperm, bran, germ, each of which contains different levels of crude fibre.

Mill by-product. (Part) A secondary product obtained in addition to the principal product in milling practice.

Mill dust. (Part) Fine feed particles of underdetermined origin resulting from handling and processing feed and feed ingredients.

Mill run. (Part) The state in which a material comes from the mill, ungraded and usually uninspected.

Mineralise, mineralised. (Process) To supply, impregnate, or add inorganic mineral compounds to a feed ingredient or mixture.

Mixing. (Process) To combine by agitation two or more materials to a specific degree of dispersion.

Nutrient. A feed constituent in a form and at a level that will help support the life of an animal. The chief classes of feed nutrients are proteins, fats, carbohydrates, minerals and vitamins.

Offal. (Part) Material left as a by-product from the preparation of some specific product, less valuable parts and the by-products of milling.

Oil. (Part) A substance composed chiefly of tryglycerides of fatty acids, and liquid at room temperature.

Parboiling. A hydrothermal process in which the crystalline form of starch is changed into the amorphous form, due to the irreversible swelling and fusion of starch. This is accomplished by soaking, steaming, drying and milling to produce physical and chemical modifications.

Pearled, pearling. (Process) Dehulled grains reduced by machine brushing into smaller smooth particles.

Polished, polishing. (Process) Having a smooth surface produced by mechanical process usually by friction.

Pomace. (Part) Pulp from fruit. See pulp.

Precipitated, precipitating. (Process) Separated from suspension or a solution as a result of some chemical or physical change brought about by a chemical reaction, by cold or by any other means.

Preservative. A substance added to protect, prevent or retard decay, discoloration or spoilage under conditions of use or storage.

Pressed, pressing. (Process) Compacted or moulded by pressure; also meaning having fat, oil or juices extracted under pressure.

Presswater. The aqueous extract of fish or meat free from the fats and/or oils. Presswater is the result of hydraulic pressing of the fishing or meat followed by separation of the oil either by centrifuging or other means.

Product. (Part) A substance produced from one or more other substances as a result of chemical or physical change.

Protein. (Part) Any of a large class of naturally-occurring complex combinations of amino acids.

Pulp. (Part) The solid residue remaining after extraction of juices from fruit, roots, or stems. Similar terms: bagasse and pomace.

Pulverised, pulverising. (Process) See ground, grinding.

Range cake. (Physical form) See cake.

Range cubes. (Physical form). Large pellets designed to be fed on the ground. Similar term: range wafer.

Ration. The quantity of the total feed which is provided to one animal over a 24-hour period.

Raw. Food in its natural or crude state not having been subjected to heat in the course of preparation as food.

Refuse. (Part) Damaged, defective, or superfluous edible material produced during or left over from a manufacturing or industrial process.

Residue. Part remaining after the removal of a part of its original constituents.

Rolled, rolling. (Process) Having changed the shape and/or size of particles by compressing between rollers. It may entail tempering or conditioning.

Roots. (Part) Subterranean parts of plants.

Rumen contents. Contents of the first two compartments of the stomach of a ruminant.

Sauce. A multiple component fluid dressing or topping consisting of a combination of one or more ingredients imparting special characteristics or flavours. It may be formulated separately and added to another ingredient or combination of ingredients.

Scalped, scalping. (Process) Having removed large material by screening.

Scratch. (Physical form) Whole, cracked, or coarsely cut grain. Similar terms: scratch grain, scratch feed.

Screened, screening. (Process) Having separated various-sized particles by passing over and/or through screens.

Seed. (Part) The fertilised and ripened ovule of a plant.

Self fed. A feeding system where animals have continuous free access to some or all component(s) of a ration, either individually or as mixtures.

Separating. (Process) Classification of particles by size, shape, and/or density.

Separating, magnetic. (Process) Removing ferrous material by magnetic attraction.

Shells. (Part) The hard, fibrous, or calcareous covering of a plant or animal product, i.e. nut, egg, oyster.

Shoots. (Part) The immature aerial parts of plants, stems with leaves and other appendages in contrast to the roots.

Shorts. (Part) Fine particles of bran, germs, flour, or offal from the tail of the mill from commercial flour milling.

Sifted. (Process) Materials that have been passed through wire sieves to separate particles in different sizes. The separation of finer materials than would be done by screening.

Skimmed. (Process) Material from which floating solid material has been removed. It is also applied to milk from which fat has been removed by centrifuging.

Skin. (Part) Outer coverings of fruits or seeds, as the rinds, husks, or peels. May also apply to dermal tissue of animals.

Sludge. The suspended or dissolved solid matter resulting from the processing of animal or plant tissue for human food.

Solubles. Liquid containing dissolved substances obtained from processing animal or plant materials. It may contain some fine suspended solids.

Solvent extracted. (Process) A product from which oil has been removed by solvents.

Spent. Exhausted of active or effective properties, i.e. absorbing activity.

Spray dehydrated. (Process) Material which has been dried by spraying on the surface of a heated drum. It is recovered by scraping from the drum.

Stabilised. (Process) To retard degradation of ingredients. (The process used to be specified).

Stalk(s). (Part) The main stem of a herbaceous plant often with its dependent parts as leaves, twigs and fruit.

Starch. (Part) A white, granular polymer of plant origin. The principal part of seed endosperm.

Steamed, steaming. (Process) Having treated ingredients with steam to alter physical and/or chemical properties. Similar terms: steam cooked, steam rendered, tanked.

Steep-extracted, steep-extracting. (Process) Soaked in water or other liquid (as in the wet milling of corn) to remove soluble materials.

Steepwater. Water containing soluble materials extracted by steep-extraction, i.e. by soaking in water or other liquid (as in the wet milling of corn.)

Stem. (Part) The coarse, aerial parts of plants which serve as supporting structures for leaves, buds, fruit, etc.

Sterols. (Part) Solid cyclic alcohols which are the major constituents of the unsaponifiable part of animal and vegetable fats and oils.

Stick. See stickwater, presswater.

Stickwater, fish. (Part) The aqueous extract of cooked fish free from the oil. Stickwater contains the aqueous cell solutions of the fish and any water used in processing.

Stickwater, meat. (Part) The aqueous extract of meat free from the fat. Meat stickwater is the result of the wet rendering of meat products and contains the aqueous cell solution, the soluble glue proteins, and the water condensed from steam used in wet rendering.

Stillage. (Part) The mash from fermentation of grains after removal of alcohol by distillation.

Stover. (Part) The stalks and leaves of corn after the ears, or sorghum after the heads have been harvested.

Straw. (Part) The plant residue remaining after separation of the seeds in threshing. It includes chaff.

Sun-cured. (Process) Material dried by exposure in open air to the direct rays of the sun.

Syrup. (Part) Concentrated juice of a fruit or plant.

Titre. A property of fat determined by the solidification point of the fatty acids liberated by hydrolysis.

Toasted. (Process) Browned, dried, or parched by exposure to a fire, or to gas or electric heat.

Trace minerals. Mineral nutrients required by animals in micro quantities only (measured in milligrams per kilogram or smaller units).

Tubers (Part) Short, thickened fleshy stems or terminal part of stems or rhizomes that are usually formed underground, bear minute scaled leaves, each with a bud capable under suitable conditions of developing into a new plant, and constitutes the resting stage of various plants.

Twigs. (Part) Small shoots or branches, usually without leaves, part of stems of variable length or size.

Uncleaned. (Physical form) Containing foreign material.

Unsaponifiable matter. (Part) Ether soluble material extractable after complete reaction with strong alkali.

Vines. (Part) Any plant whose stems require support, or lie on the ground.

Viscera. (Part) All the organs in the great cavity of the body, excluding contents of the intestinal tract.

Viscera, **fish**. (Part) All organs in the great cavity of the body; it includes the gills, heart, liver, spleen, stomach, and intestines.

Viscera, mammals. (Part) All organs in the great cavity of the body; it includes the oesophagus, heart, liver, spleen, stomach, and intestines, but excludes the contents of the intestinal tract.

Viscera, poultry. (Part) All organs in the great cavity of the body; it includes the oesophagus, heart, liver, spleen, stomach, crop, gizzard, undeveloped eggs and intestines.

Vitaminise, vitaminised. (Process) To provide or supplement with vitamins.

Vitamins. Organic compounds that function as parts of enzyme systems essential for the transmission of energy and the regulation of metabolism of the body.

Wafered, wafering. (Process) Having agglomerated a feed of a fibrous nature by compressing into a form usually having a diameter or cross-section measurement greater than its length.

Waste. (Part) See refuse.

Water Extract. The aqueous phase containing dissolved materials resulting from the treatment (e.g. by mixing of boiling) of a solid with water. All or part of the solid matrix may be dissolved in the extract.

Weathered. (Process) A material which has been subjected to the action of the elements.

Wet. (Physical form) Material containing liquid or which has been soaked or moistened with water or other liquid.

Wet-milled. (Process) Steeped in water with or without sulphur dioxide to soften the kernel in order to facilitate the separation of the various component parts.

Wet-rendered, wet-rendering. (Process) Cooked with steam under pressure in closed tanks.

Whole. (Physical form) Complete, entire.

Whole pressed, whole pressing. (Process) Having the entire seed to remove oil.

Wilted. (Physical form). A product without turgor as a result of water loss.

Wort. (Part) The liquid part of malted grain. It is a solution of malt sugar and other water-soluble extracts from malted mash.

ANNEXURE 9

Farm Feed Guideline Tables

TABEL 9.1
RIGLYNE VIR KALFVOEDSEL
GUIDELINES FOR CALF FEEDS
AS IS IN g/kg

SPESIE SPECIE	KLAS VEEVOEDSEL CLASS ANIMAL FEED	RU-PROTEÏEN CRUDE PROTEIN	VOG MOISTURE	RU-VET CRUDE FAT	RUVESEL CRUDE FIBRE		KALSIUM CALCIUM	FOSFOR PHOSPHO RUS	PROTEÏEN/ PROTEIN EX NPN
		MIN	MAX	MIN - MAX	MIN	MAX	MAX	MIN	MAX
SUIWEL Kalwers DAIRY Calves	Aanvang Starter	180	120	25-80	-	90	16	6	0
	Groei Grower	150	120	25-80	-	90	16	6	150
	Volledige kalf Complete calf	150	120	25-70	100	150	8	3.5	150
ANDER Kalwers OTHER Calves	Herkouerkruipvoedsel Ruminant creep	130	120	25-70	100	150	10	4	150

TABEL 9.2
RIGLYNE VIR MELKVERVANGERS
GUIDELINES FOR MILK REPLACERS
AS IS IN g/kg

SPESIE SPECIE	**KLAS VEEVOEDSEL CLASS** ANIMAL **FEED**	**RUPROTEIN / CRUDE PROTEIN**	**VOG MOISTURE**	**RUVET CRUDE FAT**	**RUVESEL / CRUDE FIBRE**	**KALSIUM CALCIUM**	**FOSFOR PHOSPH ORUS**	**pH**	**LISIEN LYSINE**	**STYSEL STARCH**
		MIN	**MAX**	**MIN**	**MAX**	**MAX**	**MIN**	**MAX**	**MIN**	**MAX**
KALWERS CALVES	MELKVERVANGER MILK REPLACER	220	50	100	5	16	7		17	80
	AANGESUURDE MELKVERVANGER ACIDIFIED MILK REPLACER	200	50	100	5	16	7	4.8	17	80
LAMMERS LAMBS	MELKVERVANGER MILK REPLACER	190	50	190	5	16	8		15	80
	AANGESUURDE MELKVERVANGER ACIDIFIED MILK REPLACER	190	50	190	5	16	8	4.8	15	80

NOTES:

1. **Lactose level/ Laktosevlak (max) 450 g/kg**
2. **An approved anti-oxidant must be added. ‘n Goedgekeurde anti-oksidant moet bygevoeg word**

TABEL 9.3 (a)
RIGLYNE VIR SUIWELVOEDSEL
GUIDELINES FOR DAIRY FEEDS
AS IS IN g/kg

KLAS VEEVOEDSEL CLASS ANIMAL FEED	RU PROTEIEN / CRUDE PROTEIN	PROTEIEN/ PROTEIN EX NPN	VOG / MOISTURE	VET / FAT		RUVESEL / CRUDE FIBRE		KALSIUM / CALCIUM		FOSFOR PHOSPHORUS
	MIN	MAX	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
VOLLEDIGE /COMPLETE Suiwelvoedsel Dairy feeds	120	300	120	25	70	135	280	7	12	3
SEMI VOLLEDIGE/ SEMI COMPLETE Suiwelvoedsel Dairy feeds	120	300	120	25	75	120	200	-	15	4,5
GEKONSENTREERDE /CONCENTRATED Droë Koei Voedsel Dry Cow Feed	140	350	120	25	85	-	120	2.5	8	6
Droë Koei + anioniese soute (a) Dry Cow + anionic salts (a)	150	670	120	25	85	-	120	30	40	8.5
Suiwelvoedsel Dairy Feeds	120	350	120	25	100	-	120	8	15	5

a) Droe koei plus anioniese soute: maks inname= 3 kg per koei per dag op maksimum NPN insluiting
a) Dry cow plus anionic salts: max intake = 3 kg per cow per day at maximum NPN inclusion

TABEL9.3 (b)
AANBEVOLE MINERAALVLAKKE VIR SUIWELBEESTE (VOLLEDIGE VOERE)
RECOMMENDED MINERAL LEVELS FOR DAIRY CATTLE (COMPLETE FEEDS)

MINERAAL / MINERAL	AANBEVOLE VLAK RECOMMENDED LEVEL g/kg	Maksimum Veiligheidsvlak * Maximum Tolerable Level g/kg
Ca	5.0 – 10.0	18
P	3.0 - 4.5	9
Mg	1.8 - 2.7	4.5
K	8.0 - 9.0	27
Na	1.6 - 1.8	13.5
Cl	1.8 - 2.7	22
S	1.8 - 2.3	3.5
	mg/kg	**mg/kg**
Fe	45	900
Mn	36	900
Cu	9	90
Co	0.1	9
Zn	36	450
Mo	-	4.5
Se	0.27	1.8
I	0.55	45
F	-	36
As	-	45

* **Maximum tolerable level** is that dietary level that, when fed for a limited period, will not impair animal performance and should not produce unsafe residues in human food derived from the animal.

TABEL 9.4 (a)
RIGLYNE VIR HERKOUERVOEDSEL
GUIDELINES FOR RUMINANT FEED
AS IS IN g/kg

SPESIE/ SPECIES	KLAS VEEVOEDSEL/ CLASS FARMFEED	RUPROTEIN CRUDE PROTEIN	PROTEIEN / PROTEIN EX NPN	VOG/ MOISTURE	VET FAT		RUVESEL CRUDE FIBRE		KALSIUM CALCIUM *	FOSFOR PHOSPHORUS
		MIN	MAX	MAX	MIN	MAX	MIN	MAX	MAX	MIN
BEESTE CATTLE	Afrond Finisher	120	400	120	25	75	-	120	10	3
	Volledig Complete	100	400	120	25	70	110	200	12	2.5
	Bul Bull	130	400	120	25	75	-	150	10	3.5
	Droogte Drought	100	400	120	15	70	120	250	15	3
SKAPE SHEEP	Afrond Finisher	130	400	120	25	75	-	150	10	3
	Ram Ram	130	400	120	25	75	-	150	15	2
	Ooi en lammer Ewe and lamb	130	400	120	25	70	-	150	15	3
	Volledig Complete	100	400	120	25	70	110	200	10	2
	Droogte Drought	100	400	120	15	70	120	250	15	2

Ļ Ca : P ratio / verhouding 1.0 - 3.0 :1 (Beeste)

* Ca : P ratio / verhouding 1.0 - 4.0 :1 (Skape)

TABEL 9.4(b)
AANBEVOLE MINERAALVLAKKE VIR HERKOUERVOEDSEL (VOLLEDIGE VOERE)
RECOMMENDED MINERAL LEVELS FOR RUMINANT FEED (COMPLETE FEED)
AS IS g/kg

AANBEVOLE MINERAAL VLAKKE / RECOMMENDED MINERAL LEVELS SKAPE / SHEEP			AANBEVOLE MINERAALVLAKKE RECOMMENDED MINERAL LEVELS BEESTE (SUIWEL UITGESLUIT) / CATTLE (DAIRY EXCLUDED)		
MINERAAL MINERAL	**AANBEVOLE VLAK RECOMMENDED LEVEL g/kg**	**MAKSIMUM VEILIGHEIDSVLAK MAXIMUM TOLERABLE LEVEL g/kg**	**MINERAAL /MINERAL**	**AANBEVOLE VLAK RECOMMENDED LEVEL g/kg**	**MAKSIMUM VEILIGHEIDSVLAK/MAXIMUM TOLERABLE LEVEL g/kg**
Ca	2.0 - 15.0	18.0	Ca	3.0 - 15.0	18.0
P	2.0 - 3.6	5.4	P	2.5 - 4.5	9.0
Mg	0.9 - 1.8	4.5	Mg	1.0 - 2.0	3.6
K	4.5 - 7.2	27.0	K	5.5 - 6.3	27.0
Na	0.9 - 1.8	31.5	Na	0.5 - 0.9	36.0
Cl	1.35 - 2.7	49.5	Cl	1.1 - 1.4	54.0
S	1.35 - 2.3	3.6	S	0.7 - 1.4	3.6
	mg/kg	**mg/kg**		**mg/kg**	**mg/kg**
Fe	27	450	Fe	45	900
Mn	18	900	Mn	36	900
Cu	6.3	22.5	Cu	9.0	90
Co	0.1	9	Co	0.1	9
Zn	18	675	Zn	27	450
Mo	-	9	Mo	-	4.5
Se	0.1	1.8	Se	0.09	1.8
I	0.1	45	I	0.45	45
F	-	54	F	-	45
As	-	50	As	-	45

TABEL 9.5
RIGLYNE VIR VOLSTRUISVOEDSEL
GUIDELINES FOR OSTRICH FEED
AS IS IN g/kg

SPESIE SPECIE	KLAS VEEVOEDSEL CLASS FARM FEED	RU PROTEIEN CRUDE PROTEIN	VOG MOISTURE	RU-VET CRUDE FAT	RUVESEL CRUDE FIBRE	KALSIUM CALCIUM		FOSFOR PHOSPHORUS	LISIEN LYSINE
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MIN
VOLSTRUISE **OSTRICHES**	Onderhoud Maintenance	100	120	15	350	8	18	5	3
	Vroeë aanvang Pre- starter	190	120	25	100	12	15	6	10
	Aanvang Starter	170	120	25	135	12	15	6	9
	Groei Grower	150	120	25	200	10	16	5	7.5
	Afrond Finisher	120	120	25	250	9	18	5	5.5
	Slag Slaughter	100	120	20	300	8	18	5	4
	Teelt (ad lib) Breeder (ad lib)	120	120	25	250	20	30	5	5.8
	Teelt (beperk) Breeder (restricted)	130	120	25	200	25	35	6	7

TABEL 9.6(a)
RIGLYNE VIR PERDEVOEDSEL
GUIDELINES FOR HORSE FEED
AS IS IN g/kg

SPESIE SPECIE	KLAS VEEVOEDSEL CLASS FARM FEED	RU PROTEIN CRUDE PROTEIN	VOG MOISTURE	RU -VET CRUDE FAT	RU VESEL CRUDE FIBRE		FOSFOR (1) PHOSPHOROUS (1)
		MIN	MAX	MIN	MIN	MAX	MIN
PERDE HORSES	**VOLLEDIGE COMPLETE**						
	Volwasse Perde Full grown Horses	100	120	25	150	350	2
	Teelmerries Brood mares	120	120	25	150	350	3
	Speenvullens Weanlings	140	120	25	100	150	3.5
	Jaaroud Vullens Yearlings	120	120	25	150	250	2.5
	GEKONSENTREERDE CONCENTRATED						
	Volwasse perde [2] Full grown Horses[2]	100 [2]	120	25		120	3
	Teelmerries Brood Mares	140	120	25		120	4
	Speenvullens Weanlings	160	120	25		120	5
	Jouroud Vullens Yearlings	140	120	25		120	3.5

1. Ca : P 1,2 - 2,0 : 1
2. Gekonsentreerde perdevoere met „n 100 g/kg proteien is slegs geskik vir perde wat ligte werk doen en moet gevoer word saam met goeie kwalitiet ruvoer.
   Concentrated horse feeds with a protein content of 100 g/kg is only suitable for horses on light work and must be fed in conjunction with good quality roughage.

TABEL 9.6 (b)
AANBEVOLE MINERAALVLAKKE VIR PERDE
RECOMMENDED MINERAL LEVELS FOR HORSES
AS IS (g/kg)

MINERAAL /MINERAL	AANBEVOLE VLAK RECOMMENDED LEVEL g/kg	MAKSIMUM VEILIGHEIDSVLAK /MAXIMUM TOLERABLE LEVEL g/kg
Ca	2.4 - 6.30	18.0
P	2.0 - 3.6	9.0
Mg	0.72 - 1.35	2.7
K	2.7 - 3.9	27.0
Na	0.9 - 2.7	11.0
Cl	1.35 - 4.05	17.0
S	1.35	11.0
	mg/kg	**mg/kg**
Fe	36	900
Mn	36	900
Cu	9	720
Co	0.1	9
Zn	36	450
Mo	-	4.5
Se	0.1	1.8
I	0.1	4.5
F	-	36
As	-	45

TABEL 9.7
RIGLYNE VIR ANDER VEEVOEDSEL
GUIDELINES FOR OTHER FARM FEED
AS IS IN g/kg

SPESIE SPECIE	KLAS VEEVOEDSEL CLASS FARM FEED	RU-PROTEIN CRUDE PROTEIN	VOG /MOISTURE	RU-VET CRUDE FAT	RUVESEL CRUDE FIBRE		KALSIUM CALCIUM	FOSFOR PHOSPHOROUS
		MIN	MAX	MIN	MIN	MAX	MAX	MIN
KONYNE / RABBITS & CHINCHILLAS	Volledige Konyn Complete rabbit	140	120	25	120	170	15	5
	Konyn (produksie) Rabbit (production)	180	120	25	100	150	15	5
	Chinchilla Chinchilla	160	120	25	120	170	15	5
VISSE FISH	**Forel: Trout**:							
	Aanvang Starter	450	120	80		40	30	7
	Groei en teelt Grower & breeder	380	120	60		40	30	7
	Anderr Vis (a) Other Fish (a)	300	120	50		40	30	7
MUISE MICE	Muis & rot Mice & rat	160	120	25		60	18	7
DUIWE PIGEONS	Volledige Duiwe Complete Pigeon	130	120	25		70	25	6

(a) Other Fish feeds and species: Must meet the requirements of the specific species as established by a recognised authority in animal nutrition. References must accompany the application and the product must be classed according to the specie eg Class: Koi feed or Class: Baboon feed

(b) Ander visvoedsels en spesies: Moet voldoen aan die behoefte van die betrokke spesie soos bepaal deur „n erkende autoriteit in dierevoeding. Verwysings en stawende data moet ingedien word om die aansoek te staaf. Die produk moet ooreenkomstig tot die betrokke spesie geklas word. Bv Klas: Koivoedsel of Klas: Bobbejaanvoedsel

TABEL 9.8
RIGLYNE VIR AANVULLENDE GRAANMENGSELS VIR DUIWE EN VoëLS
GUIDELINES FOR SUPPLEMENTARY GRAIN MIXES FOR PIGEONS AND BIRDS

KLAS VEEVOEDSEL/CLASS FARM FEED	GRAAN / GRAIN		PROTEIENGEWAS /PROTEIN SEEDS	
	MIN	MAX	MIN	MAX
Wedvlug- en broeimengsels Race and breed mixtures	500 [1]	700	300	500
Onderhoudsmengsels Maintenance mixtures	500	700	100	300
Voëlsaad Bird seed	500	950	-	50
Gemengde pluimveegraan Mix poultry grain	700			

TABEL 9.9 (a)
RIGLYNE VIR PLUIMVEEVOEDSEL
GUIDELINES FOR POULTRY FEED
AS IS IN g/kg

SPESIE SPECIE	KLAS VEEVOEDSEL CLASS FARM FEED	PROTEIEN PROTEIN	VOG MOISTURE	RUVET CRUDE FAT	RUVESEL CRUDE FIBRE	KALSIUM CALCIUM		FOSFOR PHOSPHOROUS	LISIEN LYSINE
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MIN
HOENDERS CHICKENS	**EIERPRODUKSIE EGG PRODUCTION**								
	Kuikenaanvang (2) Chick Starter	180	120	25	70	8	12	6	7
	Jonghen-groei (2) Pullet Grower	150	120	25	80	8	15	5	6
	Jonghen -uitgroei (2) Pullet developer	120	120	25	100	7	15	5	4.5
	Volledige Lêmeel Complete laying mash	150	120	25	70	35	45	5	6
	Volledige Lêmeel (laat fase)Complete laying mesh (late phase)	130	120	25	70	30	45	5	5

SPESIE SPECIE	KLAS VEEVOEDSEL CLASS FARM FEED	PROTEIEN PROTEIN	VOG MOISTURE	RUVET CRUDE FAT	RUVESEL CRUDE FIBRE	KALSIUM CALCIUM		FOSFOR PHOSPHOROUS	LISIEN LYSINE
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MIN
PLUIMVEE POULTRY	**BRAAIKUIKENPRODUKSIE BROILER PRODUCTION**								
	Vroeë aanvang Pre starter	210	120	25	50	8	12	6	13
	Aanvang Starter	200	120	25	50	8	12	6	12
	Groei Grower	180	120	25	60	7	12	5.5	10
	Afronding Finisher	160	120	25	70	6	12	5	9
	Na-Afronding Post finisher	160	120	25	70	6	12	5	9
	Teelt Breeder	130	120	25	70	25	40	5	6
	Onderhoud (1) Maintenance	120	120	25	90	6	12	5	5.5

SPESIE SPECIE	KLAS VEEVOEDSEL CLASS FARM FEED	PROTEIEN PROTEIN	VOG MOISTURE	RUVET CRUDE FAT	RUVESEL CRUDE FIBRE	KALSIUM CALCIUM		FOSFOR PHOSPHOROUS	LISIEN LYSINE
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MIN
KALKOENE TURKEYS	Aanvang Starter	280	120	25	70	8	14	8	12
	Groei Grower	220	120	25	70	8	14	7	12
	Uitgroei Pullet developer	165	120	25	100	8	14	6.5	8
	Afronding Finisher	130	120	25	100	8	14	6	6
	Voorteelt Pre breeder	145	120	25	100	8	14	6.5	6.5
	Teell Breeder	150	120	25	100	20	30	6	5

1. Ongemedikeerd / Onttrekkingsvoedsel
2. 2. Ca: P verhouding /ratio 1,1 - 2,0 ;1

TABEL 9.9(b)
AANBEVOLE MINERAALVLAKKE VIR KUIKENS
RECOMMENDED MINERAL LEVELS FOR CHICKENS
AS IS g/kg

MINERAAL MINERAL	AANBEVOLE VLAK/RECOMMENDED LEVEL g/kg	MAKSIMUM VEILIGHEIDSVLAK/MAXIMUM TOLERABLE LEVEL g/kg
Ca (1)	7 – 15	18
P (totaal)	5 – 9	12.5
Mg	0.45 – 0.54	5.4
K (2)	5-10	18
Na (totaal)(2)	1.4 - 2.7	7.2
Cl	1.8 - 3.7	8
	mg/kg	**mg/kg**
Fe	80	900
Mn	60	1800
Cu	8	270
Co	0.36	9
Zn	40	900
Mo	-	135
Se	0.15	1.8
I	0.35	270
F	-	180
As	-	45

1. Ca : P verhouding /ratio 1,1 -2,0 :1
2. Maksimum veiligheidsvlak mits water vrylik beskikbaar is. Maximum tolerable level provided that fresh water is freely available

TABEL 9.9 (c)
AANBEVOLE MINERAALVLAKKE VIR LêHENNE
RECOMMENDED MINERAL LEVEL FOR LAYERS
AS IS (g/kg)

MINERAAL MINERAL	AANBEVOLE VLAK/RECOMMENDED LEVEL g/kg	MAKSIMUM VEILIGHEIDSVLAK /MAXIMUM TOLERABLE LEVEL g/kg
Ca	30 – 45	54
P (totaal)	5 – 7	12.5
Mg	0.27 - 0.45	7.2
K	5-10	18
Na (totaal)	1.35 - 2.7	7.2
Cl	1.35 - 3.7	8
	mg/kg	**mg/kg**
Fe	80	900
Mn	60	1800
Cu	8	270
Co	0.36	9
Zn	40	900
Mo	-	135
Se	0.15	1.8
I	0.35	270
F	-	180
As	-	45

TABEL 9.10 (a)
RIGLYNE VIR VARKVOEDSEL
GUIDELINES FOR PIG FEED
AS FED (g / kg)

KLAS VEEVOEDSEL/ CLASS FARM FEED	RU-PROTEIEN CRUDE PROTEIN	VOG MOISTURE	RUVET CRUDE FAT	RUVESEL CRUDE FIBRE	KALSIUM CALCIUM		FOSFOR PHOSPHORUS	LISIEN LYSINE
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MIN
Kruip Creep	190	120	25	40	8	10	6.5	12
Speen Weaner	180	120	25	50	7.5	10	6	11
Groei Grower	150	120	25	80	6	10	5	8.5
Afrond Finisher	140	120	25	80	6	10	4.5	7
Droë sog en beer Dry sow and boar	120	120	25	85	7.5	12	6	5
Lakterende sog Lactating sow	150	120	25	80	8	12	6	7.5

TABEL 9.10 (b)
AANBEVOLE MINERAALVLAKKE VIR VARKE
RECOMMENDED MINERAL LEVELS FOR PIGS
AS IS (g / kg)

MINERAAL/MINERAL	AANBEVOLE VLAK/RECOMMENDED LEVEL g/kg	MAKSIMUM VEILIGHEIDSVLAK/MAXIMUM TOLERABLE LEVEL g/kg
Ca	6 - 12	27_2
P	4.5 - 8	13.5
Mg	0.27 - 0.36	2.7
K	4-8	18
Na	1.3 - 5	18
Cl	1.9 - 8.5	27
	mg/kg	**mg/kg**
Fe	130	2700
Mn	20	360
Cu (1)	5-9	$225_{(1)}$
Co	-	9
Zn	50-150	900
Mo	-	900
Se	0.27	1.8
I	0.14-0.36	360
F	-	135
As	-	45

1. Maksimum vlak kan hoër wees afhangende van die sinkvlak
   Maximum level can be higher depending on the zinc level in the feed
2. Vir varke ligter as 40 kg, maksimum van 15 g/kg
   For pigs lighter than 40 kg, maximum of 15 g/kg

TABEL 9.11
RIGLYNE VIR SUPPLEMENTVEEVOEDSEL VIR HERKOUERS
GUIDELINES FOR SUPPLEMENTS FOR RUMINANTS

ALGEMEEN / GENERAL

- Aanbevole innames moet op die etiket verklaar word.
  Recommended intakes must be declared on the label

- Die doel van die produk moet omskryf word in die naam en/of klas en/of voeraanbeveling
  The purpose of the product must be clearly defined in the name and/or class and/or feeding recommendations

- Spoorminerale is gebasser op 25% (min) tot 200% (max) van NRC daaglikse behoefte.
  Traceminerals are based on 25%(min) to 200% (max) of NRC daily requirements

- Mineraalsupplemente: Ca : P verhouding moet 1 : 1 - 4 : 1 wees
  Mineral supplements: Ca : P ratio must be 1 : 1 - 4 :1

- In die geval van supplementveevoedsels wat afwyk van die riglyne en in die geval van supplementvoedsels van ander spesies moet stawende data ingedien word om te bevestig dat die produk veilig en geskik is vir die doel waarvoor hy aangewend word

  In the case of supplement feeds that deviate from the guidelines and in the event of supplements for other species, substantiating data must be submitted to verify that the product is safe and suitable for the intended purpose.

TABEL 9.11 (a)
SKAPE
SHEEP
AS IS (g / kg)

SUPPLEMENT-VEEVOEDSEL SUPPLEMENT FARM FEED	MINERAAL SUPPLEMENT MINERAL SUPPLEMENT	PROTEIEN SUPPLEMENT PROTEIN SUPPLEMENT	ENERGIE SUPPLEMENT ENERGY SUPPLEMENT	SPOORMINERAAL SUPPLEMENT TRACE MINERAL SUPPLEMENT
MINERALE / MINERAL Inname / dag g (min) In take / day g (min) **Ca** **P** **Mg** **K** **S**	 1- 32 1 – 5 0,23 –7,0 1,1 – 32 0,7 - 10			
RU PROTEIEN **CRUDE PROTEIN** Inname / dag g (min) In take / day g (min)		25		
METABOLISEERBARE ENERGIE (BERAAM) **METABOLIZABLE ENERGY (ESTIMATED)** Inname / dag MJ (min) In take / day MJ (min)			1,5	
TRACE MINERALS **SPOORMINERALE** Intake per day (mg) Inname per dag (mg) **Fe** **Co** **Cu** **Mn** **Zn** **I** **Se** **Mo**				 7 – 200 0.025 – 0,8 1.6 – 40 4.5 - 160 4.5 – 132 0.025 – 3.2 0.025 – 0.8 0 - 2

RIGLYNE VIR NPN INSLUITINGS IN SUPPLEMENTVEEVOEDSELS (SKAPE)
GUIDELINES FOR NPN INCLUSION IN SUPPLEMENT FEED (SHEEP)

	MAKSIMUM INNAME PER DAG / MAXIMUM IN TAKE PER DAY (g)	
	PROTEIENEKWIVALENT/PROTEIN EQUIVALENT	**STIKSTOF/ NITROGEN - (N)**
Onderhoud / Maintenance	44	7
Produksie (Energie) / Production (Energy)	56	9

TABEL 9.11 (b)
BEESTE / CATTLE
AS IS (g / kg)

SUPPLEMENT-VEEVOEDSEL SUPPLEMENT FARM FEED	MINERAAL SUPPLEMENT MINERAL SUPPLEMENT	PROTEIEN SUPPLEMENT PROTEIN SUPPLEMENT	ENERGIE SUPPLEMENT ENERGY SUPPLEMENT	SPOORMINERAAL SUPPLEMENT TRACE MINERAL SUPPLEMENT
MINERALE / MINERAL Inname / dag g (min) Intake / day g (min) **Ca** **P** **Mg** **K** **S**	 7.5 – 120 6 – 40 2.5 – 32 14 –112 3 - 24			
RU -PROTEIEN/CRUDE PROTEIN: Inname / dag g (min) Intake / day g (min)		150		
METABOLISEERBARE ENERGIE (BERAAM): **METABOLIZABLE ENERGY (ESTIMATED)** Inname / dag MJ (min) Intake / day MJ (min)			8	
SPOORMINERALE /TRACEMINERALS: Inname per dag (mg) Intake per day (mg) **Fe** **Co** **Cu** **Mn** **Zn** **I** **Se** **Mo**				 100 – 800 0,2 –1,6 20– 160 40 – 640 60 – 480 1 – 8 0,2 – 1,6 0 - 20

RIGLYNE VIR NPN INSLUITINGS IN SUPPLEMENTVEEVOEDSELS (BEESTE)
GUIDELINE FOR NPN INCLUSION IN SUPPLEMENT FARM FEED (CATTLE)

	MAKSIMUM INNAME PER DAG (g) MAXIMUM IN TAKE PER DAY	
	PROTEIENEKWIVALENT/PROTEIN EQUIVALENT	STIKSTOF NITROGEN - (N)
Onderhoud / Maintenance	220	35
Produksie (Energie) / Production (Energy)	300	48