



DEAS 90: 2023

ICS 65.120

DRAFT EAST AFRICAN STANDARD

Compounded poultry feed — Specification

EAST AFRICAN COMMUNITY

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Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards. XXXXXX.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 001, *Animal feeds and feeding stuffs*

This third edition cancels and replaces the second edition EAS 90:2000, which has been technically revised.

Attention is drawn to the possibility that some of the elements of this document may be subject of patent rights. EAC shall not be held responsible for identifying any or all such patent rights.

Introduction

To achieve efficient animal production, all nutrients should be provided in amounts necessary to meet the animal's nutritional requirements. The formulation of balanced diets that provide the correct amounts and proportions of these nutrients is essential to support the requirements for maintenance and production. Nutrient requirements become defined accurately through research trials so as to formulate diets more precisely. The standards presented in this document give the restrictions required for the prevention of poor animal performance.

Feeds may be produced by mixing various feeding stuffs or ingredients which may themselves vary in composition. The choice of raw materials mixtures will depend on locality, season and availability, economics, prices, quality and safety of the product. The chemical composition of feedstuffs plays an important role in formulation of balanced and economical rations for various classes of animals. This is only possible when knowledge of the chemical composition of feedstuffs is available. Studies on the nutritive value of feed stuffs available in the East African region show differences between analytical values.

Compounded poultry feed — Specification

1 Scope

This Draft East African Standard specifies the requirements for compounded poultry feeds used as a sole source of nutrients for poultry. This standard shall apply to feeds for the following categories of chicken and turkeys:

- a) chicks and poults;
- b) growers;
- c) broilers — Starters and finishers;
- d) layers; and
- e) breeders;

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5983-1, *Animal feeding stuffs — Determination of nitrogen content and calculation of crude protein content — Part 1: Kjeldahl method*

ISO 5985, *Animal feeding stuffs — Determination of ash insoluble in hydrochloric acid*

ISO 6490-1, *Animal feeding stuffs — Determination of calcium content — Part 1: Titrimetric method*

ISO 6491, *Animal feeding stuffs — Determination of phosphorus content — Spectrometric method*

ISO 6492, *Animal feeding stuffs — Determination of fat content*

ISO 6495, *Animal feeding stuffs — Determination of water-soluble chlorides content*

ISO 6496, *Animal feeding stuffs — Determination of moisture and other volatile matter content*

ISO 6497, *Animal feeding stuffs — Sampling*

ISO 6865, *Animal feeding stuffs — Determination of crude fibre content — Method with intermediate filtration*

ISO 9831, *Animal feeding stuffs, animal products, and faeces or urine — Determination of gross calorific value — Bomb calorimeter method*

ISO 13903, *Animal feeding stuffs — Determination of amino acids content*

ISO 14565, *Animal feeding stuffs — Determination of vitamin A content — Method using high-performance liquid chromatography*

ISO 14718, *Animal feeding stuffs — Determination of aflatoxin B₁ content of mixed feeding stuffs — Method using high-performance liquid chromatography*

ISO 17375, *Animal feeding stuffs — Determination of aflatoxin B₁*

ISO 16050, *Foodstuffs — Determination of aflatoxin B₁, and the total content of aflatoxins B₁, B₂, G₁ and G₂ in cereals, nuts and derived products — High-performance liquid chromatographic method*

ISO 27085, *Animal feeding stuffs — Determination of calcium, sodium, phosphorus, magnesium, potassium, iron, zinc, copper, manganese, cobalt, molybdenum, arsenic, lead and cadmium by ICP-AES*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 broiler starter feed feed designed to provide nutritional requirements for the broiler from 0 to 2 weeks;

3.2 broiler grower feed feed designed to provide nutritional requirements for the broiler from 2 to 3 weeks

3.3 broiler finisher feed feed designed to provide nutritional requirements for the broiler after 3 weeks of age

3.4 chick starter feed feed designed for young egg-type or breeder chickens up to 6-8 weeks of age

3.5 poults feed feed designed for young turkeys up to approximately 6 months of age

3.6 grower feed feed designed for egg-type or breeder chickens from 6-8 weeks of age up to the point of laying

3.7 layers feed feed designed for laying hens producing eggs

3.8 breeders feed

feed designed for chickens producing fertile eggs

4 Requirements

4.1 General quality requirements

4.1.1 All ingredients and raw materials shall not be decomposed or deteriorated and shall comply with the relevant East African standards. The common feed stuffs described in Annex A and their nutrient composition provided in Annex B may be used for purposes of formulating compounded poultry feeds.

4.1.2 Where soy bean meal is used, it shall have been subjected to adequate heat treatment to reduce the activity of trypsin inhibitor

4.1.3 Ingredients of animal origin shall be sterilised before use.

4.1.4 Vitamin preparations added to feed shall be in stabilised form.

4.1.5 Urea or any other nitrogenous substances shall not be added to or included in any poultry feed except such true protein and amino acids as required in this standard.

4.1.6 Compounded poultry feeds shall:

- a) be either in form of a meal, crumbs or pellets.
- b) be free from harmful levels of substances such as metallic objects, and adulterants
- c) not be, musty, rancid and shall not have any objectionable odours.
- d) be free from fungi, pathogenic microorganisms or insect infestation.

4.2 Specific requirements for poultry feed

4.2.1 The level of free fatty acids in poultry feeds should not exceed 15 % of the crude fat content at the time of manufacture.

4.2.3 Poultry feed shall meet the requirements of the nutrients and metabolizable energy in Table 1. Poultry feed may contain additional micronutrients and when added shall comply with the limits provided in Annex C.

Table 1 — Specific nutritional requirements for compounded poultry feeds

| Characteristic/nutrient | Broiler starter feed | | Broiler grower feed | | Broiler finisher feed | | Chick starter feed | | Poults feed | | Grower feed | | Layers feed | | Breeders feed | | Test method |
|--|----------------------|-----|---------------------|-----|-----------------------|-----|--------------------|-----|-------------|-----|-------------|-----|-------------|-----|---------------|-----|-------------|
| | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | |
| Metabolizable energy, Kcal/kg | 3000 | - | 3000 | - | 3000 | - | 2800 | - | 2900 | - | 2550 | - | 2600 | - | 2600 | - | ISO 9831 |
| Crude protein, % | 22 | - | 19 | - | 18 | - | 18 | - | 25 | - | 14 | - | 15 | - | 15 | - | ISO 5983-1, |
| Crude fibre, % | - | 7.5 | - | 7.5 | - | 7.5 | - | 7.5 | - | 7.5 | - | 7.5 | - | 7.5 | - | 7.5 | ISO 6865 |
| Acid insoluble ash %, max. | - | 4 | - | 4 | - | 4 | - | 4 | - | 4 | - | 4 | - | 4 | - | 4 | ISO 5985 |
| Crude fat , %, max. | - | 10 | - | 10 | - | 10 | - | 10 | - | 10 | - | 10 | - | 10 | - | 10 | ISO 6492 |
| Sodium chloride, % | 0.35 | - | 0.35 | - | 0.35 | - | 0.35 | - | 0.35 | - | 0.35 | - | 0.30 | - | 0.30 | - | ISO 6495 |
| Calcium ^c , % | 0.9 | - | 0.9 | - | 0.9 | - | 0.9 | - | 0.9 | - | 0.9 | - | 3.5 | - | 3.3 | - | ISO 6490-1 |
| Total Phosphorus ^a , % | 0.73 | - | 0.84 | - | 0.70 | - | 0.75 | - | 0.80 | - | 0.73 | - | 0.73 | - | 0.73 | - | ISO 6491 |
| Vitamin A, IU/kg | 8 000 | - | 10 000 | - | 8 000 | - | 6 000 | - | 10 000 | - | 4 000 | - | 5 000 | - | 5 000 | - | ISO 14565 |
| Methionine and cysteine, ^b %, min | 0.45 | - | 0.89 | - | 0.45 | - | 0.8 | - | 0.96 | - | 0.27 | - | 0.58 | - | 0.30 | - | ISO 13903 |
| Methionine | 0.6 | - | 0.5 | - | 0.5 | - | 0.4 | - | 0.4 | - | 0.4 | - | 0.36 | - | 0.36 | - | ISO 13903 |
| Moisture, % | - | 13 | - | 13 | - | 13 | - | 13 | - | 13 | - | 13 | - | 13 | - | 13 | ISO 6496 |
| Lysine, % | 1.2 | - | 1.2 | - | 1.1 | - | 1.1 | - | 1.6 | - | 0.6 | - | 0.6 | - | 0.6 | - | ISO 13903 |

- ^a Not more than a seventh of the total phosphorus content may be derived from plant origin.
- ^b Not more than half of the cystine and methionine requirement may be in the form of cystine.
- ^c The Calcium/phosphorus ratio shall be maintained between 1:1 and 2:1 with the exception of laying birds.

5 Feed additives and provisions related to their use

5.1 Additives in the following categories may be used in poultry feeds and if used, they shall comply with the requirements given in Annex D.

- a) antioxidants;
- b) emulsifiers;
- c) stabilisers;
- d) thickeners and gelling agents;
- e) binders;
- f) anti-caking agents and coagulants;
- g) enzymes; and
- h) aromatic and appetising substances.

NOTE Materials intended for mixing with animal feed as additives for use as feeding stuffs should specify the kind of and, if appropriate the age group of the animal for which the feed is intended. In addition the quantity in grams per kilogram (or percent by weight) of the complete feed which conform to the provisions of this standard should be stated in the label (see Clause 8).

5.2 No antibiotic, hormone substance, drug or mineral shall be added to or included in a feed other than such ingredients required to satisfy this standard and approved by World organization for animal health (OIE).

6 Contaminants

6.1 Aflatoxin

Compounded poultry feeds shall comply with the maximum aflatoxin requirements stated in Table 2 when tested in accordance with the methods specified therein.

Table 2 — Maximum limits for aflatoxin

| S/N | Aflatoxin | Type of poultry feed | Maximum limit, µg/kg | Test method |
|-----|-----------------|---|----------------------|------------------------|
| i. | Total aflatoxin | Broiler finisher feed, Layers feed, Breeders feed | 100 | ISO 16050 |
| | | Chick starter feed, Broiler starter feed, Grower feed, Poults feed, | 50 | |
| ii. | Aflatoxin B1 | Broiler finisher feed, Layers feed, Breeders feed | 20 | ISO 14718 ISO 17375 |
| | | Grower feed, Chick starter feed, Broiler starter feed, Poults feed, | 10 | |

6.2 Pesticide residues

Compounded poultry feeds shall comply with those maximum pesticide residue limits established by the Codex Alimentarius Commission for the ingredient used in compounded poultry feeds.

6.3 Heavy metals

Compounded poultry feeds shall comply with the limits of heavy metals as specified in the Table 3 when tested in accordance with the methods specified therein.

Table 3 — Limits for heavy metals in compounded poultry feed

| S/N | Heavy metal | Maximum limit, mg/kg | Test method |
|------|-------------|----------------------|-------------|
| i. | Arsenic | 2.0 | ISO 27085 |
| ii. | Lead | 5.0 | |
| iii. | Cadmium | 1.0 | |
| iv. | Mercury | 0.1 | |

7 Packaging

Poultry feeds for sale shall be packaged in suitable containers that are of sufficient strength, and sufficiently sealed so as to withstand reasonable handling without tearing, bursting or falling open. The containers shall be clean and not previously used.

8 Labelling

Each package of compounded poultry feed shall be legibly and indelibly labelled with the following:

- a) name of the feed example “broiler starter”;
- b) name and physical address of the manufacturer;;
- c) declared proportions of crude protein, crude fibre, crude fat, total ash, phosphorus, calcium, lysine, and methionine;
- d) additives if included shall be declared;
- e) net weight in metric units;
- f) directions and precautions for use;
- g) batch number /lot identification;
- h) manufacturing date;
- i) storage instruction; and
- j) expiry date.

9 Sampling

Representative samples shall be drawn in accordance with ISO 6497.

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Annex A (informative)

Description of common feedstuffs

| Product | Description | Main nutritional constituent |
|----------------------------------|--|------------------------------------|
| 1. Alfalfa meal | Alfalfa as grown, dried and processed, and to which no other matter has been added | Crude protein, crude fibre |
| 2. Barley meal | The meal obtained by grinding barley, as grown, which shall be the whole grain together only with such other substances as may reasonably be expected to have become associated with the grain in the field. | Crude protein, crude fibre |
| 3. Bean meal | The meal obtained by grinding commercially pure leguminous beans (other than soya bean). | Crude protein, crude fibre |
| | | |
| | | |
| 6. Brewery and distillery grains | The product obtained by drying the residue from distillery mash-tube, and to which no other matter has been added | Crude fibre, crude protein |
| 7. Cassava, dried | The dried root of the species <i>Manihot esculenta</i> | starch |
| 8. Clover meal | Clover as grown, dried and processed and to which no other matter has been added | Crude protein, crude fibre |
| 9. Coconut cake | The residue resulting after part removal of oil and of cortex from commercially pure coconut kernels | Crude protein crude fibre |
| 10. Cotton seed cake | The residue resulting after part removal of oil and of cortex from commercially pure cotton seed | Crude protein, crude fibre |
| 11. Sorghum meal | The meal obtained by grinding sorghum as grown which shall be the whole grain together only with such substances as may reasonably be expected to have become associated with the grain in the field. | Crude protein, crude fibre, starch |
| 12. Fish meal | A product, which may contain an added antioxidant but to which no other matter has been added, obtained by drying and grinding or otherwise treating fish or fish waste. | Crude protein, oil, total ash |

| | | |
|--------------------|---|------------------------------------|
| 13. Grass, meal | Any product which, (i) is obtained by artificially drying any of the following: grass, clover, lucerne, green cereal, or any mixture consisting of any of them, and (ii) is otherwise as grown (that is to say including any growths harvested there with but with no other substance added thereto), and contains not less than 13 % crude protein calculated on the assumption that it contain 10 % moisture. | Crude protein, crude fibre |
| 14. Groundnut cake | The residue resulting after part removal of oil and part of non-removal of cortex from commercially pure groundnuts | Crude protein, Oil, crude fibre |

| Product | Description | Main nutritional constituent |
|-------------------------------|---|---|
| 15. Maize | Maize kernel or crushed maize kernel as grown for commercial purposes | Crude protein, starch |
| 16. Maize germ meal | Consisting mainly of embryo of kernel not less than 10 % oil, and not more than 5 % ash | Crude protein, starch |
| 17. Maize and cob meal | Ground maize on the cob | Crude protein, oil, crude fibre |
| 18. Maize meal | Milled whole maize | Crude protein, oil, starch |
| 19. Maize gluten meal | A by-product resulting from removal of a bran starch and germ from maize | Crude protein, oil, |
| | | |
| 21. Milk powder/milk replacer | Dried milk from which a substantial amount of fat has been removed and to which no other substance is added | Crude protein |
| 22. Millet | Finger millet of the species <i>Eleusine coracana</i> | Crude protein, crude fibre, starch |
| 23. Mineral mixture | Mixture of substances used whether in the form powder or licks and purporting to be essential for livestock | Percent of the mineral and trace elements |
| 24. Molasses | A concentrated syrup product obtained in the manufacture of sugar from sugar cane to which no other matter has been added | Sugar as sucrose |
| 25. Oats, ground | The product obtained by grinding commercially pure oats | Crude protein, crude fibre |
| 26. Pea meal | The meal obtained by grinding or crushing commercially pure peas including pods | Crude protein, crude fibre |
| 27. Rice bran | The outside husk or rice kernel to which no other matter has been added | Crude protein, crude fibre, oil, starch |

| | | |
|---------------------|---|---|
| 28. Rice meal | The product obtained by grinding commercially pure rice after the removal of hulls and to which no other substance is added | Crude fibre, crude protein, oil, starch |
| 29. Rice polishings | The product obtained when polishing kernels after the removal of hulls and bran | Crude protein, oil, crude fibre, starch |
| 30. Sesame cake | The residue resulting after the part removal of oil from commercially pure simsim kernels | Crude protein, oil, crude fibre |
| 31. Soya bean meal | The residue resulting after the part removal of oil from commercially pure soya bean seeds | Crude protein, oil, crude fibre |
| 32. Sweet potatoes | The dried tubers of the species <i>Ipomea batatas</i> | Crude protein, crude fibre, starch |
| 33. Wheat meal | The meal obtained by grinding commercially pure wheat as grown and to which no other substance has been added | Crude protein, crude fibre, starch |
| 34. wheat bran | Outside husk of what kernel to which no other matter was added | Crude protein, crude fibre, starch |
| 35. Wheat pollard | A by-product of wheat separated during production of flour not mentioned otherwise in this schedule containing not more than 4 % of other than wheat vegetable substances | Crude protein, crude fibre, starch |
| 36. Yeast dried | The product obtained by drying of yeast or yeast residues, and to which no other matter has been added. | Crude protein |

Annex B
(informative)

Nutrient composition of common feed ingredients

| Ingredients | DM% | CP% | CF% | Ca% | P% | ME Kcal/kg | Lysine % | Methionine % |
|----------------------|------|------|------|------|------|------------|----------|--------------|
| Maize | 88 | 8 | 12 | 0.17 | 0.55 | 3000 | 0.53 | 0.29 |
| Maize bran | 88 | 9.4 | 13 | 0.04 | 1.03 | 2200 | 0.18 | 0.21 |
| Maize/cob meal | 88 | 7 | 8 | - | 0.30 | - | - | - |
| Rice bran | 88 | 13.5 | 6.5 | 0.06 | 1.43 | 3000 | 0.5 | 0.22 |
| Cassava meal | 88 | 2.8 | 4.0 | 0.3 | 0.05 | 3000 | - | - |
| Molasses | 75 | 3.0 | - | 0.75 | 0.08 | 2330 | - | - |
| Millet | 88 | 10.5 | 2.0 | 0.05 | 0.40 | 1392 | 0.2 | 0.27 |
| Sorghum | 88 | 9.0 | 2.1 | 0.03 | 0.28 | 3250 | 0.2 | 0.12 |
| Fish meal | 88 | 60.0 | 1.0 | 4.37 | 2.53 | 2310 | 4.08 | 1.70 |
| Cotton seed cake | 88 | 40.0 | 14 | 0.20 | 1.20 | 968 | 1.6 | 0.52 |
| Soya bean meal | 88 | 43.0 | 6 | 0.53 | 0.64 | 2800 | 2.84 | 0.65 |
| Limestone | 98 | - | - | 38.0 | - | - | - | - |
| Oyster shells | 98 | - | - | 35.0 | - | - | - | - |
| Wheat pollard | 98 | 15.0 | - | - | - | - | 0.60 | 0.35 |
| Wheat bran | 91.4 | 15.0 | 12.5 | - | 1.20 | - | 0.60 | 0.35 |
| Sunflower cake | 92 | 35.0 | 26.7 | - | - | - | 1.80 | 1.20 |
| Groundnut cake | 93 | 40.0 | 7.3 | - | - | - | 2.00 | 1.80 |
| Rice polishings | 92.5 | 12.0 | 4.2 | - | - | - | 4.0 | 0.40 |
| Dicalcium phosphate | - | - | - | 24 | 18 | - | - | - |
| Tricalcium phosphate | - | - | - | 38 | 19 | - | - | - |
| Alfalfa hay | 87.5 | 18.9 | 33.1 | - | - | - | - | - |
| Sugarcane bagasse | 90.5 | 1.7 | 50.3 | - | - | - | - | - |
| Sesame cake | 93 | 36.1 | 6.7 | - | - | - | - | - |
| Sugarcane tops | 33.5 | 6.2 | 29.5 | - | - | - | - | - |

| | | | | | | | | |
|------|----|------|-----|------|------|------|---|-----|
| Whey | 90 | 13.0 | 1.3 | 0.97 | 0.76 | 3100 | - | 0.2 |
|------|----|------|-----|------|------|------|---|-----|

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Annex C (informative)

Micronutrients requirements for poultry feeds

| Characteristic/ nutrient | Broiler starter feed | | Broiler finisher feed | | Chickfeed | | Poultstarter feed | | Chicken grower feed | | Layers feed | | Breeders feed | |
|---------------------------------|----------------------|-----|-----------------------|-----|-----------|-----|-------------------|-----|---------------------|-----|-------------|-------|---------------|------|
| | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max |
| Selenium, mg/kg | 0.20 | | 0.20 | - | 0.20 | -- | 0.20 | - | 0.40 | - | 0.20 | - | 0.20 | - |
| Manganese, mg/kg | 75 | 100 | 80 | 100 | 75 | 100 | 75 | 100 | 50 | 100 | 50 | - | 75 | - |
| Iodine, mg/kg | 1 | - | 1 | - | 1 | - | 2.00 | - | 1.00 | - | 1.00 | - | 2.00 | - |
| Zinc, mg/kg | 64 | 100 | 64 | 100 | 50 | - | 70 | 100 | 50 | 90 | 50 | - | 50 | - |
| Iron, mg/kg | 20 | - | 20 | | 20 | - | 30 | | 10 | - | 200 | - | 200 | - |
| Copper, mg/kg | 5 | 20 | 5 | 20 | 5 | - | 5 | 20 | 5 | - | 5 | - | 5 | - |
| Choline, mg/kg | 250 | - | 250 | | 200 | - | 400 | | | - | 1000 | - | 100 | - |
| Riboflavin, mg/kg | 8 | - | 8 | - | 8 | - | 10 | - | 4 | - | 4 | - | 12 | - |
| Pantothenic acid, mg/kg | 13 | - | 13 | - | 13 | - | 15 | - | 5 | - | 3.2 | - | 10 | - |
| Niacin, mg/kg | 40 | - | 40 | - | 40 | | 75 | | 10 | - | 10 | - | 10 | - |
| Biotin, mg/kg | 0.10 | - | 0.10 | - | 0.10 | | 0.10 | | 0.03 | - | | - | | -- |
| Folic acid, mg/kg | 1.50 | - | 1.50 | - | 1.50 | | 2.00 | | 1.00 | - | 0.50 | - | 1.00 | - |
| Vitamin B ₁₂ , mg/kg | 0.02 | - | 0.02 | - | 0.02 | | 0.02 | | 0.02 | - | 0.02 | - | 5.00 | - |
| Vitamin A, IU/kg | 12000 | - | 12000 | - | 10000 | - | 15000 | - | 10000 | - | 5000 | 10000 | 5000 | - |
| Vitamin D ₃ , IU/kg | 2000 | - | 2000 | - | 2000 | - | 3000 | - | 1500 | - | 1500 | 2500 | 1500 | 2500 |
| Vitamin E, IU/kg | 20 | 30 | 20 | 30 | 20 | 30 | 30 | - | 10 | - | | 5 | 7.50 | - |
| Vitamin K, IU/kg | 2 | - | 2 | | 2 | - | 2.0 | - | 2 | - | 2 | - | 2 | - |

| | | | | | | | | | | | | | | |
|--------------|------|---|------|---|------|---|------|---|------|---|------|---|------|---|
| Tryptophan % | 1.25 | - | 1.25 | - | 1.25 | - | 1.25 | - | 1.25 | - | 1.25 | - | 1.25 | - |
|--------------|------|---|------|---|------|---|------|---|------|---|------|---|------|---|

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Annex D (normative)

Recommended additives used in poultry feeds

D.1 Requirements for antioxidants

Poultry feeds shall contain no added antioxidant other than an antioxidant of a name or description specified in the first column of the table below or any other antioxidant as shall be approved by OIE, where an antioxidant if added should not exceed the maximum content, if any, specified in the second column of the Table D.1.

Table D.1 — Requirements for antioxidants

| Name or description | Maximum content in complete feed stuff, mg/kg |
|--|---|
| L-Ascorbic acid Sodium L-ascorbate Calcium di (L-ascorbate) 5,6-Diacetyl-L-ascorbic acid 6-Palmitoyl-L-ascorbic acid Tocopherol-rich extracts of a natural origin Synthetic alpha-tocopherol Synthetic gamma-tocopherol Synthetic delta-tocopherol | GMP |
| Propyl gallate Octyl gallate Dodecyl gallate | 100, singly or in combination |
| Butylated hydroxyanisole (BHA) | 150 |

D.2 Requirements for emulsifiers, stabilisers, thickeners and gelling agents

D.2.1 General

Poultry feed shall contain no added emulsifier, stabiliser, thickener or gelling agent other than an emulsifier, stabiliser, thickener or gelling agent of a name or description, specified in D.2.2 and D.2.3 or any other emulsifier, stabiliser, thickener or gelling agent as shall be approved by OIE.

D.2.2 Name or description

Lecithins; Alginic acid; Sodium alginate; Potassium alginate; Ammonium alginate; Calcium alginate; Propylene glycol alginate (propane-1,1-diol alginate) Agar; Carrageenan; Furcellaran; Locust bean gum (carob gum); Tamarind seed flour Gurar gum (gua flour); Tragacanth; Acacia (gum Arabic); Zanthan gum; D-glucitol (sorbitol); mannitol; Glycerol; Pectins; microcrystalline cellulose; Methylcellulose; Ethylcellulose; Hydroxypropyl cellulose; Hydroxypropylmethylcellulose; Ethylmethylcellulose; Carboxymethylcellulose; sodium salt; Sodium, potassium and calcium salts or edible fatty acids alone or in mixtures, derived from

edible fat or distilled fatty acids monoacyl and diacylglycerols esterified with the following acids: (a) acetic (b) lactic (c) citric (d) tartaric (e) monoacetyl tartaric and (f) diacetyl tartaric.

D.2.3 Sucrose esters or fatty acids

D.2.3.1 The following sucrose esters fatty acids may be added to poultry feeds:

- a) mixture of sucrose esters of monoacyl and diacylglycerols (sucroglycerides, polyglycerides);
- b) polyglycerol esters of non-polymerised edible fatty acids;
- c) propylene glycol esters of fatty acids (propane-1,2-diol esters of fatty acids);
- d) stearyl-2-lactic acid; sodium stearyl-1,2-lactylate; calcium stearyl-1,2-lactylate;
- e) stearyl-1-tartrate; glycerol poly (ethylene glycol) ricinolate; dextrans; sorbitan monostearate;
- f) sorbitan tristearate; sorbitan monolaurate; sorbitan mono-oleate; sorbitan monopalmitate;
- g) partial polyglycerol esters of polycondensed fatty acids of castor oil (polyglycerol polyricinoleate) polyoxyethylene (20) sorbitan monolaurate;
- h) polyoxyethylene (20) sorbitan monopalmitate, polyoxyethylene (20) sorbitan monostearate;
- i) polyoxyethylene (20) sorbitan tristearate, polyoxyethylene (20) sorbitan monooleate;
- j) polyoxyethylene (20) sorbitan trileate, polyoxyethylene (8) sorbitan stearate; and
- k) polyoxyethylene (40) stearate.

D.2.3.2 The additives listed shall conform to the requirements in Table D.2.

Table D.2 — Specifications for emulsifiers, stabilisers, thickeners and gelling agents

| Name or description | Maximum content in complete feed, mg/kg |
|---|---|
| Poly (ethylene glycol) (M.W 6 000) | 300 |
| Polyoxypropylene-polyoxyethelene polymers (M.W 6 800-9 000) | 50 |
| Propane-1,2-diol | 36 000 |

D.3 Requirements for binders, anti-caking agents and coagulants

D.3.1 General

Poultry feeds shall contain no added binder, anti-caking agent or coagulant other than a binder, anti-caking agent or coagulant of a name or description specified in D.3.2.

D.3.2 Name or description

Lignosulphonates; Colloidal silica; Silicic acid, precipitate and dried; Sodium aluminosilicate, Sodium, potassium and calcium stearate; Kaolin and Kaslinitic clays free of asbestos natural accruing mixtures of minerals containing at least 65 % complex hydrated aluminium silicates whose main constituent in Kasolinite;

Bentonite and other montmerillonitee clays; Vermiculite-hydrated silicate of magnesium, aluminium and iron; Citric acid; Kieselguhr (diatomaceous earth, purified); Calcium silicate (synthetic); Natural mixtures of steatite and chlorite free of asbestos.

D.4 Requirements for aromatic and appetising substances

Poultry feeds shall contain no added aromatic or appetising substance other than an aromatic or appetising substance of a name or description specified in Table D.3 and taking account of any such substance which is naturally present, without exceeding the maximum content specified.

Table D.3 — Requirements for aromatic and appetising substances

| Name or description | Maximum content in complete feed, mg/kg |
|--|---|
| Saccharin All natural products and corresponding synthetic products | GMP |

PUBLIC REVIEW DRAFT MARCH 2023