ICS 65.120

DMS 240:2017
Second edition

DRAFT MALAWI STANDARD

Pig feed – Specification

Note: This is a draft standard and it shall neither be used nor regarded as a Malawi standard

ICS 65.120 DMS 240:2017

Pig feed – Specification

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FOREWORD

This draft standard is the first revision of MS 240:1995. The revision of this standard is being done after consideration of several issues that need to be amended and readdressed. It has been prepared by the MBS/TC 34, *Meat and meat products* to provide requirements for pig feed.

In preparing this standard reference was made to the following standards:

Indian standard, IS 7472 1986 (Reaffirmed in 2001)*, Pig feed – Specification.*

Acknowledgement is made for the use of the information.

TECHNICAL COMMITTEE

This draft standard was prepared by the Technical Committee *MBS/TC 34, Meat and meat products, and the* following companies, organizations and institutions were represented:

Central Poultry Feeds Limited;

Kamphonji Enterprises Limited;

Lilongwe University of Agriculture and Natural Resources;

Malawi Bureau of Standards;

Ministry of Agriculture, Irrigation and Water Development - Blantyre Veterinary Laboratory;

Ministry of Agriculture, Irrigation and Water Development - Department of Animal Health and Livestock Development; and

University of Malawi – Chancellor College.

NOTICE

This standard shall be reviewed every five years, or earlier when it is necessary, in order to keep abreast of progress. Comments are welcome and shall be considered when the standard is being reviewed.

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1 SCOPE

This draft standard specifies the requirements and methods of sampling and tests for pig feed.

2 NORMATIVE REFERENCES

The following standard contains provisions, which through reference in this text, constitute provisions of this draft standard. All standards are subject to revision and, since any reference to a standard is deemed to be a reference to the latest edition of that standard, parties to agreements based on this draft standard are encouraged to take steps to ensure the use of the most recent edition of the standard indicated below. Information on current valid national and international standards can be obtained from the Malawi Bureau of Standards.

MS 289: *Animal feeds and feeding stuffs – Methods of sampling and tests*

Part 1: Sampling

Part 2: General methods;

Part 3: Minerals and trace elements;

Part 4: Microbiological methods;

MS 722: *Labelling, presentation and advertising of prepacked goods for ultimate consumers; and*

MS 1259: *Code of practice for good animal feeding; and*

Association of Official Analytical Chemists methods (AOAC).

3 TYPES AND DEFINITIONS OF PIG FEEDS

For the purpose of this draft standard, the following types and their definitions shall apply:

3.1
pig starter / creep feed
a ration intended for suckling piglets from the age of two weeks to approximately 20 Kg live weight, when the litter is with sow

3.2
pig growth meal
A ration to be fed from weaning to 35 Kg live weight

3.3
pig finishing meal/ breeding meal
a ration intended for pigs over 35 Kg live weight

4 COMPOSITIONAL REQUIREMENTS AND QUALITY FACTORS

4.1 General

Pig feeds shall be in form of pellets, cubes, crumbs or meal. The feeds shall be free from rancidity, musty odour, harmful constituents such as dust, metallic pieces, adulterants, insect infestation and visible fungus growth.

4.2 Ingredients

4.2.1 All ingredients of the feed shall be of high quality and free from rancidity, insects and fungus infestations, adulterants and foreign material. Materials of animal origin shall have been sterilized prior to use.

4.2.2 Ingredients of pig feed shall conform to the requirements specified in Table 1

Table 1: Requirements of ingredients for pig feeds

1	2	3
Ingredient	**Composition**	
	Minimum	**Maximum**
Blood meal (% m/m)	-	3
Oil seed cake meal (% m/m)	-	5
Fish meal* (% m/m)	2	-
Meat and bone meal, (% m/m)		4
Common salt, (% m/m)	-	5
*Fish meal shall be used in early weaning meals		

4.2.3 Prohibited ingredients. Urea and other non-protein nitrogenous substances shall not be added to the product because these might not be digested by the pigs and can be toxic. Charcoal in any form shall not be incorporated in a meal.

4.2.4 No flavourings which do not add any nutritional value of the diet shall be added to any feed.

4.2.5 Growth stimulants, antibiotics and related compounds added to a feed, shall be used at the levels accepted by the Department of Animal Health and Livestock Development, and the registration number shall be quoted on application for MBS Certification Mark.

4.2.6 If antibiotics and other additives are incorporated into the feeds, these shall be declared on the label. The level of antibiotics shall not exceed 100 ppm.

4.3 Final product

4.3.1 Moisture content. The maximum moisture content shall be stated on the label and the composition of the feed shall be based on the stated moisture content.

4.3.2 Pig feed shall comply with compositional and nutritive requirements as stipulated in Table 2.

Table 2: compositional and nutritive requirements for pig feed

1	2	3	4	5
Characteristic / Nutrient	**Pig starter/Creep, feed**	**Pig growth meal**	**Pig finishing/breeding meal**	**Method of test**
Moisture content, (% m/m), max	11	11	11	MS 289-2
Crude fibre, (% m/m), max	5	6	8	MS 289-2
Crude fat, (% m/m)	2	2	2	MS 289-2
Crude protein, (% m/m), min	20	18	16	MS 289-2
Total ash,(% m/m), max	8	8	8	MS 289-2
Acid insoluble ash (% m/m), max	4	4	4	MS 289-2
Metabolizable energy (Kcal/Kg), min	3600	3170	3170	Annex B
Calcium (Ca)*, (% m/m), min	0.6	0.6	0.6	MS 289-3
Available phosphorus· (P) *, (% m/m), min	0.6	0.4	0.5	MS 289-3
Copper (Cu) *, mg/Kg, min	8	6	6	MS 289-3
Iron (Fe) *, mg/Kg, min	100	90	80	MS 289-3
Manganese (Mn)*, mg/Kg, min	30	30	20	MS 289-3
Zinc (Zn) *, mg/Kg, min	50	50	50	MS 289-3
Chlorine, mg/Kg, min	900	900	800	AOAC
Niacin, mg/Kg	17	14	10	AOAC
Pantothenic acid, mg/Kg	11	10	10	AOAC
Riboflavin, mg/Kg	3.0	2.4	2.2	AOAC
Vitamin B_{12} activity, µg/Kg	15	11	11	AOAC
Vitamin A, IU/Kg	1700	1300	1300	AOAC
Vitamin D, IU/Kg	190	180	130	AOAC
Note: For elements marked with * , the values specified are on moisture free-basis				

5 HYGIENE

Pig feeds shall be prepared and handled in accordance with MS 1259.

6 PACKING AND MARKING

6.1 Packing

Pig feeds shall be packed in containers which are good and clean and which shall preferably be non returnable.

6.2 Marking

In addition to the requirements of MS 722, the following particulars shall be marked either on the container or the label attached thereto:

6.2.1 Name and type of the product in accordance clause **3;**

6.2.2 Name and address of the manufacturer;

6.2.3 Batch or code number;

6.2.4 The date of manufacture and expected date of expiry;

6.2.5 The declared percentage of the following:

a) Crude protein;

b) Crude fibre;

c) Crude fat;

d) Calcium;

e) Phosphorus; and

f) Moisture;

6.2.6 Quantity of antibiotics and other additives if added;

6.2.7 If copper sulphate has been added, the amount added in mg/Kg and a warning that the feed must not be given to adult breeding stock; and

6.2.8 Net mass of contents, when packed.

7 METHODS OF SAMPLING AND TESTS

The method of drawing a representative sample of the material and criteria for conformity, and the methods of testing for compliance with this standard shall be done in accordance with MS 289 (Parts 1- 4).

ANNEX A
(Informative)

INGREDIENTS OF PIG FEEDS

A.1 Grain and Seeds

Bajra, Bajri (Pennisetum *typhoides)*

Barley (Hordeurn *vulgare)*

Black gram (Phaseolus *mungo)*

Chinna, Cheena (Panicum *miliaceum)*

Kulthi or Horse gram (*Dolichos biflorus)*

Jowar, Cholam (Sorghum *vulgare)*

Oats, (Avena *sterilis)*

Panwar *(Cassiu tora)*

Ragi (Eleusive *coracana)*

Maize

Sawan (Echionochloa *colona)*

A.2 Grain by-products

Arhar chuni

Black gram chuni

Gram chuni

Gram sievings

Maize bran, maize gluten and maize gluten feed

Rice bran or solvent extracted rice bran and polishings

Wheat bran

A.3 Oil cakes and meals

Copra cake, coconut cake (expeller-pressed or solvent extracted);

Cottonseed oil cake (decorticated) (expeller-pressed or solvent extracted)-up to 5 percent by mass;

Groundnut oil cake (expeller-pressed or solvent extracted);

Guar (Cyamopsis *tetragonoloba)* - up to 5 percent by mass;

Maize germ oil cake;

Mustard cake;

Safflower (*Carthamus tinetorius)* cake (expeller-pressed or solvent extracted);

Sesamum (*Sesamun indicum orientale)* cake (expeller-pressed or solvent extracted);

Soyabean oil cake;

Cowpeas

Pigeons peas

Sunflower oil cake.

A.4 Tubers and roots

Tapioca flour

A.5 Animal products

Blood meal

Fish meal

Liver residue

Meat meal and meat scrap

A.6 Greens

Berseem (Trifolium *alexandrium)* leaf meal

Lucerne *(Medicago sativa)* leaf meal

Panwar (Cassia *tora)* leaf meal

Dhaincha (*Sesbania grandfflore) (*dried)

Spinach (dried)

Centrosema

Stylo.

A.7 Minerals, vitamins and supplements

Bonemeal (steamed)

Common salt

Dicalcium phosphate (fluorine content not to exceed 0.05 percent) or monocalcium phosphate

Limestone

Oyster shells

Vitamins (mineral-stablized)

A.8 Waste, materials and industrial by-products

Brewers' grains

Dried yeast and yeast sludge

Mango seed kernel

Mahua flower residue

Molasses (Khandsari type)

Penicillin mycelium residue

Dried silkworm pupae

ANNEX B

(Normative)

DETERMINATION OF METABOLIZABLE ENERGY

B.1 APPARATUS

B.1.1 Brooder, battery or floor type.

B1.2 Glass bottles, stoppered, wide-mouthed.

B.2 REAGENTS

B.2.1 Acetic acid - 2 %.

B.2.2 Sulphuric acid - 5 %.

B.3 PROCEDURE

B.3.1 Place 25 three-week old healthy chicks (white leghorn or Rhode Island Red) in a brooder and rear them on the experimental feed for an &day acclimatization period. Then on the second day of the fifth week, give the chicks the requisite amount of accurately weighed experimental feed at a fixed hour in the morning. Simultaneously, spread the polyethylene sheets on the faeces trays for the collection of excreta. Collect a representative sample of feed for dry matter percentage and proximate analysis. Next day at the same hour collect the remaining feed and the faeces excreted and weigh them. A representative sample of the remaining feed is again collected for dry matter percentage. The difference in dry mass of feed offered, and the remaining feed gives the amount of dry matter consumed during 24 hours. Collect the aliquots from excreta, after mixing it well, for dry matter and nitrogen estimation separately (one-twentieth and one-hundredth parts respectively) in widemouthed and glass-stoppered bottles, and keep them in a refrigerator.

For nitrogen estimation, samples in duplicate should be preserved in 5 % sulphuric acid.

NOTE - The age of the birds during the collection period may vary from 5 to 10 weeks, but this does not affect the ME value significantly.

B.3.2 Repeat the same procedure on the next two alternate days and ~001 together the three-day samples of excreta for the analysis. For dry matter estimation, add about 10 ml of 2 % acetic acid for every 50 g of the excreta and dry it in an oven at about 80°C till constant mass is obtained. Find out the total dry matter voided in three days.

B.3.3 Analyze the samples of feed and the excreta for their crude protein, ether extract, total ash and total carbohydrate content. Calculate on dry matter basis.

B.4 CALCULATION

B.4.1 Calculate gross calories in feed and excreta. The calorific values of crude protein, ether extract and total carbohydratesare 5’65, 9.40 and 4.15 Cal/g respectively.

Metabolizable energy per kg = $E_{diet} - E_{excreta} - N \times 8.22$ of feed

where

E_{diet} is the gross calories per g of feed (dry matter);

$E_{excreta}$ is the gross calories in excreta per g of the feed (dry matter) consumed; and

N is nitrogen retention in g per g of feed (dry matter) consumed. This is obtained by subtracting total nitrogen excreted from the total nitrogen consumed per gram of the feed (dry matter).

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THE MALAWI BUREAU OF STANDARDS

The Malawi Bureau of Standards is the standardizing body in Malawi under the aegis of the Ministry of Industry and Trade. Set up in 1972 by the Malawi Bureau of Standards Act (Cap: 51:02), the Bureau is a parastatal body whose activities aim at formulating and promoting the general adoption of standards relating to structures, commodities, materials, practices, operations and from time to time revise, alter and amend the same to incorporate advanced technology.

CERTIFICATION MARK SCHEME

To bring the advantages of standardization within the reach of the common consumer, the Bureau operates a Certification Mark Scheme. Under this scheme, manufacturers who produce goods that conform to national standards are granted permits to use the Bureau's "Mark of Quality" depicted below on their products. This Mark gives confidence to the consumer of the commodity's reliability