

ICS 67.060

DMS 937:2020
Second edition

DRAFT MALAWI STANDARD

Degermed maize (corn) meal and maize (corn) grits – Specification

Note: This is a draft proposal and should not be regarded or used as a Malawi standards

Degermed maize (corn) meal and maize (corn) grits – Specification

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Price based on 4 pages

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FOREWORD

This draft standard is a first revision of MS 937:2014, *Degermed maize (corn) meal and maize (corn) grits – Specification*. The revision of this standard is being done to incorporate technical changes that have been done to the base documents.. In preparing this standard, reference was made to the following standards:

CODEXSTAN 155:1985 (Revised in 1995, Amended in 2019), *Standard for degermed maize (corn) meal and maize (corn) grits; and*

ARS 467:2016, *Degermed maize meal and maize grits*.

Acknowledgement is made for the use of the information.

TECHNICAL COMMITTEE

This draft standard was prepared by the Technical Committee MBS/TC 16, *Cereals, pulses, legumes and their products*, and the following companies, organizations and institutions were consulted:

Agricultural Development and Marketing Corporation (ADMARC)
University of Malawi – Chancellor College
F&F Industries Limited
HMS Foods and Grains
Malawi Bureau of Standards
Ministry of Agriculture – Bvumbwe Agricultural Research Services
Ministry of Health
Ministry of Industry
Moon Puffs
Unity Super Meal

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.

DRAFT MALAWI STANDARD

Degermed maize(corn) meal and maize(corn) grits – Specification

1 SCOPE

1.1 This draft standard applies to degermed maize (corn) meal and to degermed maize (corn) grits for direct human consumption milled from kernels of common maize, *Zea mays* L.

1.2 It does not apply to whole maize (corn) meal, maize (corn) flours, quick grits, hominy grits, selfrising maize (corn) meals, enriched maize (corn) meals, enriched maize (corn) grits, bolted maize (corn) meals, maize (corn) flakes, and alkaline treated maize (corn) products.

1.3 This draft standard does not apply to maize (corn) meals for use as a brewing adjunct, to maize (corn) meals used for manufacturing of starch and any industrial use, nor to maize (corn) meal for use as an animal feed

2 NORMATIVE REFERENCES

The following standards contain 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 19: *Labelling of pre-packed foods – General standard*;

MS 21: *Food and food processing units – Code of hygienic conditions*;

MS 146: *Cereals and pulses – Methods of sampling as grain*;

MS 302: *Contaminants and toxins in foods- General standard*;

MS 610: *Cereals and cereal products — Determination of moisture content (Basic reference method)*;

ISO 1871: *Food and feed products – general guidelines for the determination of nitrogen by Kjeldahl method*;

ISO 2171: *Determination of ash content*;

ISO 3310-1: *Test sieves – Technical requirements and testing, Part 1: Test Sieves of metal wire cloth*;

ISO 6579: *Methods for the microbiological examination of foods, Part 6: Examination for Salmonella Spp.*;

ISO 6888: *Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species)*;

ISO 7251: *Microbiology of food and animal feeding stuffs – Horizontal method for the detection and enumeration of presumptive Escherichia coli – Most probable number technique*;

ISO 13690: *Cereals, pulses and milled products – Sampling of static batches*

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

ISO 21527-2: *Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of yeasts*

and moulds – Part 2: Colony count technique in products with water activity less than or equal to 0.95; and

AOAC Official Method 2001.04: *Determination of fumonisins B1 and B2 in corn and corn flakes – Liquid chromatography with immunoaffinity column cleanup.*

3 TERMS AND DEFINITIONS

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

3.1

degermed maize (corn) meal

is the food prepared from fully mature, sound, degermed kernels of maize (corn), *Zea mays* L., cleaned from impurities, mould, seeds of weeds and other cereals by a grinding process in which the grain is comminuted to a suitable degree of fineness and from which bran and germ are removed. In its preparation, coarse particles of the ground maize kernel may be separated, reground and recombined with all of the material from which they were separated

3.2

degermed maize (corn) grits

is the food prepared from fully mature, sound, degermed, kernels of maize (corn), *Zea mays* L., cleaned from impurities, mould, seeds of weeds and other cereals, by a grinding process in which the grain is comminuted to a suitable degree of fineness and from which bran and germ are almost completely removed.

4 ESSENTIAL COMPOSITION AND QUALITY REQUIREMENTS

4.1 General requirements

4.1.1 Degermed maize meal and degermed maize grits shall be safe and suitable for human consumption.

4.1.2 Degermed maize meal and degermed maize grits shall be free from abnormal flavours, odours, and living insects.

4.1.3 Degermed maize meal and degermed maize grits shall be free from filth (impurities of animal origin, including dead insects) in amounts which may represent a hazard to human health.

4.2 Quality factors

4.2.1 Degermed maize meal and degermed maize grits shall comply with composition and quality requirements stipulated in **Table 1**.

Table 1: Composition and quality factors for degermed maize meal and maize grits

1	2	3	4
S/No	Composition /quality factor	Limit	Method of test
1	Moisture content. %m/m, max	15	ISO 5498
2	Acid insoluble ash, % m/m, on dry weight basis	0.1	ISO 5985
3	Crude protein, % min on dry weight basis	7	ISO 1871
4	Crude fat % max, on dry weight basis	2.25	ISO 5986
5	Total aflatoxin (AFB1+AFB2+AFG1 +AFG2), ppb, max	10	ISO 16050
6	Aflatoxin B1 only, ppb, max	5	
7	Total fumonisin (FB1+FB 2+FB3), ppm, max	2	AOAC
8	Granularity		
	Degermed maize meal	95 % or more shall pass through a 0.85 sieve; 45 % or more shall pass through a 0.71 mm sieve; – and – 25 % or less shall pass through a 0.210 sieve	AOAC 965.22 (Type I method with sieve specifications as in ISO 3310/I-1982 test sieves)
	Degermed maize grits	95% or more through a 2.00 mm sieve; 20 % or less through a 0.71 mm sieve	AOAC 965.22 (Type I method with sieve specifications as in ISO 3310/I-1982 test sieves)

4.2.2 The products shall comply with the microbiological limits given in **Table 2**.

Table 2 – Microbiological limits for degermed maize meal and maize grits

1	2	3	4
S/No.	Type of microorganism	Maximum limit	Method of test
(i)	Total viable count, cfu/g, max	10 ⁵	ISO 4833
(ii)	<i>Salmonella</i> in 25 g, max	Absent	ISO 6579
(iii)	<i>E. coli</i> per g, max	Absent	ISO 7251
(iv)	<i>Vibrio cholerae</i> per g, max	Absent	ISO/TS 21872
(v)	Coliforms g (per 100 g), cfu/g, max	Absent	ISO 4832
(vi)	<i>Staphylococcus aureus</i> per 10 g, max	10 ²	ISO 6888
	<i>Bacillus Cereus</i> , per 25 g, max	Absent	ISO 7932
(vii)	<i>Moulds and yeast</i> , per g, max	10 ³	ISO 21527-2

5 HYGIENE

5.1 Products covered in this draft standard shall be prepared and handled in accordance with the appropriate sections of the MS 21 and other Codes of Practice recommended by the Codex Alimentarius Commission which are relevant to this product.

5.2 To the extent possible in good manufacturing practice, the product shall be free from objectionable matter.

6 CONTAMINANTS

6.1 Heavy metals

The products shall comply with maximum limits of heavy metals in accordance with MS 302.

6.2 Pesticide residues

Degermed maize meal and degermed maize grits shall comply with those maximum pesticide residue limits established by the Codex Alimentarius Commission for this commodity.

6.3 Mycotoxin limits

Degermed maize meal and degermed maize grits shall comply with those maximum mycotoxin limits set in Table 1 above, and those established by the Codex Alimentarius Commission for this commodity when tested according to ISO 16050.

7 PACKAGING AND LABELING

7.1 Packaging

7.1.1 Degermed maize meal and degermed maize grits shall be packed in suitable packages which will safeguard the hygienic, nutritional, technological and organoleptic qualities of the products.

7.1.2 The containers, including packaging material, shall be made of food grade materials. They shall not impart any toxic substance or undesirable odour or flavour to the product.

7.3 When the product is packaged in sacks, these must be clean, sturdy and strongly sewn or sealed.

7.2 Labelling

In addition to the provisions prescribed in MS 19, each package shall be legibly and indelibly marked with the following:

7.2.1 Product name as “degermed maize (corn) meal”, or “maize (corn) grits”

7.2.2 Name, address and physical location of the producer/ packer/importer;

7.2.3 Lot/batch/code number;

7.2.4 Net weight, in kg; and

7.2.5 Best before date.

7.3 Labelling of non-retail containers

Information for non-retail containers shall either be given on the container or in accompanying documents, except that the name of the product, lot identification and the name and address of the manufacturer or packer shall appear on the container. However, lot identification and the name and address of the manufacturer or packer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

8 METHODS OF ANALYSIS AND SAMPLING

8.1 Sampling for testing as required in this draft proposal shall be done according to MS 146 and ISO 13690.

8.2 Testing shall be done in accordance with the methods indicated against each requirement in **Tables 1 and 2** or other equivalent methods.

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.

