

ICS 67.060

DMS 213:2022
Third edition

DRAFT MALAWI STANDARD

Groundnuts – Specification

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

Groundnuts – Specification

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FOREWORD

This draft Malawi standard has been prepared by MBS/TC 51, *Edible nuts and seeds and their products*, to provide requirements for raw groundnuts. It is a third edition of MS 213, *Groundnuts – Specification*.

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

Codex Stan 200:1995 (Amended in 2019), *Codex standard for peanuts; and*

EAS 888:2018, *Raw and roasted groundnuts for table use – Specification*.

Acknowledgement is made for the use of the information.

TECHNICAL COMMITTEE

This draft Malawi standard was prepared by the Technical Committee MBS/TC 51, *Edible nuts and seeds and their products*, and the following companies, organizations and institutions were consulted:

Auction Holdings Limited Commodity Exchange;

Consumers Association of Malawi;

Conforzi Plantations Limited;

Eastern Produce Malawi Limited;

Estrell Trading;

Export Trading Group;

Kawaladzi Estate Co. Limited;

Lilongwe University of Agriculture & Natural Resources;

Ministry of Agriculture – Bvumbwe Agricultural Research Station;

Ministry of Health – Department of Nutrition, HIV & AIDS;

Ministry of Industry and Trade;

National Smallholder Farmers' Association of Malawi;

Thyolo Nut Company;

Trademark East Africa;

Treenut Growers Association; and

University of Malawi.

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

Groundnuts – Specification

1 SCOPE

This standard applies to groundnuts (also known as peanuts) either in the pod or in the form of kernels, obtained from varieties of the species *Arachis hypogaea* L, intended for processing or for direct human consumption.

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 302: *Contaminants and toxins in foods – General standard;*

MS 804: *Code of hygienic practice for groundnuts.*

MS 1757: *Oilseeds – Manual or automatic discontinuous Sampling;*

MS 1796: *Pulses – Determination of impurities, size, foreign odours, insects, species and varieties – Test methods; and*

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.*

3 TERMS AND DEFINITIONS

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

3.1**groundnut/peanut**

fruit of the plant *Arachis hypogaea*

3.2**shelled groundnut kernels**

raw groundnuts with their shells removed, and which have not been subjected to roasting and/or various forms of chemical treatment

3.3**unshelled groundnuts**

groundnuts with part or all of the hull (shell) attached

3.4**mature pod**

kernels which are firm and fully developed

3.5**damage/defects**

kernel that is rancid, mouldy, pest infested, soiled and/ or decayed

3.6**Other defects**

groundnut kernel that has skin discolouration, flesh discolouration and / or sprouted kernels

3.7

whole kernel

groundnut kernel that is not split or broken

3.8

split kernel

separated 'half' of a groundnut kernel

3.9

broken kernel

more than one fourth of the groundnut kernel is broken off

3.10

foreign matter

pieces or loose particles of any substance other than groundnut kernels or skins

4 ESSENTIAL COMPOSITION AND QUALITY REQUIREMENTS

4.1 General requirements

4.1.1 Shelled groundnut kernels shall be mature and uniform in shape, size and colour according to variety and grade.

4.1.2 The kernels shall be free from foreign matter such as stones, dirt or any contamination.

4.1.3 The kernels shall be free from extraneous matter.

4.1.4 The kernels shall be free from foreign odours and undesirable flavour and/or taste.

4.2 Specific quality requirements

Shelled groundnut kernels shall comply with the quality requirements in **Table 1**.

Table 1: Requirements for shelled groundnuts kernels

| 1 | 2 | 3 |
|-----|---|-------------|
| S/N | Characteristic | Requirement |
| 1 | Free fatty acids, %, m/m, max | 2 |
| 2 | Total ash, % m/m, on dry weight basis, max. | 2 |
| 3 | Moisture content, (%m/m), max | 9.0 |

4.3 Grading

Shelled groundnut kernels may be classified as Grade 1, Grade 2 or Grade 3 according to **Table 2**.

Table 2: Grade requirements for groundnut kernels

| 1 | 2 | 3 | 4 | 5 | 6 |
|-----|---|---------|---------|---------|-------------|
| S/N | Characteristics | Limits | | | Test method |
| | | Grade 1 | Grade 2 | Grade 3 | |
| 1 | Damaged kernels, % by mass, max. | 0.5 | 1.0 | 1.0 | MS 1796 |
| 2 | Other defects, % by mass, max. | 0.5 | 1.0 | 1.0 | |
| 3 | Split/broken kernels, % by mass, max. | 1.0 | 2.0 | 3.0 | |
| 4 | Foreign matter, % by mass, max. | 0.1 | 0.2 | 0.3 | |
| 5 | Total tolerance for factors 1, 2, 3 and 4, % max. | 2.0 | 3.0 | 4.0 | |

5 HYGIENE

The product covered by the provisions of this draft standard shall be prepared and handled in accordance with MS 804.

6 CONTAMINANTS

6.1 Heavy metals

Groundnut kernels shall comply with maximum limits of heavy metals in accordance with MS 302.

6.2 Pesticides residues

Groundnut kernels shall comply with the latest maximum residual limits for pesticides established by the Codex Alimentarius Commission for this product.

6.3 Aflatoxins

Total Aflatoxin shall not exceed 10 µg/kg while aflatoxin B1 shall not exceed 5 µg/kg when tested in accordance with ISO 16050.

7 PACKAGING AND LABELLING

7.1 Packaging

Groundnut kernels shall be packaged in food grade containers and sealed in a manner that ensures the safety and quality requirements specified in this standard are maintained throughout the shelf life of the product.

7.2 Labelling

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

7.2.1.1 Name of the product as "groundnuts" or "peanuts" or "groundnuts in-pod" or "peanuts in-pod";

7.2.2.2 Variety shall be declared;

7.2.2.3 If graded, grade shall be declared;

7.2.2.4 Crop year;

7.2.2.5 Net weight in metric units; and

7.2.2.6 Name and address of packer.

8 METHODS OF SAMPLING AND TESTS

8.1 Representative samples of the groundnut kernels shall be done in accordance with MS 1757.

8.2 Testing shall be done in accordance with the methods indicated in **Table 2**, Annexes **A** and **B** or **equivalent methods**.

Annex A
(Normative)

Determination of moisture

A.1 Grinding

A.1.1 General requirements

The grinding mill should grind evenly and should not be operated at such a high speed that the ground material is heated.

Air currents that might cause loss of moisture shall be reduced to a minimum.

A.1.2 Particle size

The mill-setting shall be such that at least 50 % of the ground material passes through a sieve with meshes of 3.4 mm.

A.1.3 Drying

Two stages of drying shall be applied when moisture content of groundnut kernels is higher than 20 %.

A.2 Determination

A.2.1 Preferred method

The air-oven 130 °C method shall be used.

A.2.2 Equipment

A.2.2.1 Dishes of non-corrosive metal (thickness approximately 0.5 mm) with side rounded at base and flat bottom, fitted with covers which seat so snugly that loss of moisture is reduced to a minimum.

The dimensions of the materials are applied per cm², to ensure close fitting of the cover, the rim of the dish should be levelled by rubbing with an abrasive.

A.2.2.2 An electrically heated oven with adequate ventilation and thermostatic control which permits the temperature to be maintained at 130 °C.

The heating capacity of the oven must be such that after pre-heating capacity to temperature 130 °C, followed by opening and loading with dishes, the oven will again reach 130 °C within 45 min (preferably within 30 min).

A.2.2.3 A desiccator (with a suitable desiccant), preferably fitted with a thick metal plate to promote rapid cooling of the dishes.

A.2.2.4 A balance on which accurate weighings can be made in grams to three decimal places.

A.2.3 Procedure

Weigh the dish with its cover. Weigh out 4 g to 5 g of the sample previously mixed. Place the working sample in the dish, distributing it evenly over the bottom surface. Put the cover on the dish and weigh again. Place the dish on top of its cover in an oven-heated before-hand to 130 °C. In order to limit the loss of heat, the dishes must be placed in the oven rapidly. From the time that the oven again reaches 130 °C, the drying period should be 60 min at this temperature. After termination of the drying period, cover the dishes immediately and place them in a desiccator to cool for 30 min to 45 min. Weigh the dishes with their contents and covers. All weighings should be made to an accuracy of 0.001.

$$\text{Moisture} = (M_2 - M_3) \times \frac{100}{M_2 - M_1}$$

Where,

M_1 is the weight in g of the dish and its cover,

M_2 is the weight in g of the dish, its cover and its contents; and

M_3 is the weight in g of the dish, covers the contents after drying, then moisture content calculated on wet basis and expressed in percentage is:

The determination shall be made in duplicate. The results of duplicate determinations shall not differ by more than 0.2 %. Should the difference be greater than this, the determination shall be repeated in duplicate.

A.2.4 Two-stage drying

Weigh out approximately 50 g of the sample. Then transfer this working sample to a suitable weighed container and place in an air-oven at a temperature of 130 °C for 5 min to 10 min. The length of this preliminary drying period will depend on the amount of moisture. It may be necessary to remove the sample from the oven, the objective being to reduce the moisture content to 12 % to 15 %. Spread the partly dried seeds in an open tray and leave exposed in the laboratory for 2 h. Transfer the material to the container in which it was oven dried, and weigh. Calculate the loss of moisture as stated in **A.2.3**.

The determination shall be made in duplicate, with the weighings being made to an accuracy of 10 mg. Grind separately the two partly-dried working samples, and on the ground material from each, make a single moisture determination as stated above, and calculate the loss of moisture.

From the results obtained in the first and second stages of the procedure, calculate the moisture content of the sample if S_1 is the moisture lost in stage 1 and S_2 is the moisture lost in stage 2, each expressed as a percentage, then the original moisture content of the sample, calculated on the wet basis and expressed as percentage, is:

$$S_1 + S_2 - \frac{(S_1 \times S_2)}{100}$$

Annex B
(Normative)

Determination of fat

B.1 Reagents

B.1.1 Petroleum ether, of boiling range 40 °C to 60 °C.

B.1.2 Hexane, food grade.

B.2 Procedure

Weigh accurately about 2.5 g of the dried sample and extract with petroleum ether or hexane, food grade, in a Soxhlet or other suitable extractor. The extraction period may vary from 4 h at a condensation rate of 5.6 drops per second. Dry the extract on a steam bath for 30 min, cool in a desiccator and weigh. Continue at 30 min intervals this alternative drying and weighing until the difference between two successive weighings is less than one-milligram.

Note the lowest mass.

B.3 Calculation and expression of results

Crude fat (on moisture-free basis), % by mass = $100 \times \frac{(m_1 - m_2)}{m_3}$

where;

m_1 = is the mass in grams of the extraction flask with the dried extract;

m_2 = is the mass in grams of extraction flask;

m_3 = is the mass in grams of the dried sample taken for the test.

THE MALAWI BUREAU OF STANDARDS

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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.

