

ICS 67.060

DMS 234:2018
Second edition

DRAFT MALAWI STANDARD

Bun – Specification

NOTE – This is a draft Malawi standard and shall neither be used nor regarded as a Malawi

Bun – Specification

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FOREWORD

This draft Malawi standard has been prepared by MBS/TC 19, the Technical Committee on *Bread and confectioneries*, to provide requirements for bun.

This draft Malawi standard is the first revision of MS 234, first published in 1993. The revision is also as a result of a revision that was done on the base document.

In preparing this draft Malawi standard, reference was made to an Indian Standard, IS 8556:2005, *Bun – Specification*.

Acknowledgement is made for the use of the information.

TECHNICAL COMMITTEE

This draft Malawi standard was prepared by MBS/TC 19, the Technical Committee on *Bread and confectioneries*, and the following companies, organizations and institutions were represented:

Bakelines Limited;

Bakemans Confectioneries;

Bakers Pride;

Universal Industries Limited;

Rab Processors;

Blantyre City Assembly;

Chancellor College;

Lilongwe University of Agriculture and Natural Resources;
University of Malawi – The Polytechnic;
Mother Holding Limited; and
Peoples Trading Centre.

NOTICE

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

DRAFT MALAWI STANDARD

Bun – Specification

1 SCOPE

This draft Malawi standard provides the requirements and methods of sampling and test for buns.

2 NORMATIVE REFERENCES

The following standards contain provisions, which through reference in this text; constitute provisions of this draft Malawi 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 Malawi 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 30, *Fortified wheat flour – Specification*;

MS 31, *Bread – Specification*;

MS 188, *Edible salt – Specification*;

MS 214, *Drinking water – Specification*;

MS 237, *Food additives – General standard*;

MS 366, *Honey – Specification*; and

MS 1257, *Baker's yeast – Specification*.

3 TERM AND DEFINITION

For the purposes of this draft standard, the following definition shall apply;

**3.1
bun**

a baked flour confectionery product of various shapes but usually with a round top and flat bottom made from basic ingredients which include wheat flour or other edible flours, shortening, sugar, edible common salt, baker's yeast, potable water with/without any other optional ingredients

4 REQUIREMENTS**4.1 General requirements**

4.1.1 The bun shall be baked in round, elliptical or in any other shape determined by market demand as agreed to between the purchaser and the vendor. It may be smooth and golden to light brown in colour.

4.1.1.1 The bun shall have a volume/mass ratio not less than 2.5 when tested by the method prescribed in Annex F. The crumb shall have a characteristic colour of the ingredients used with fine pores uniformly distributed throughout. It shall be free from clots or unmixed lumps of dough.

4.1.1.2 There shall be no hollow between the crust and the crumb.

4.1.1.3 The flavour shall be characteristic of fresh, well-baked bun. It shall be free from bitterness or any other objectionable taste.

4.1.1.4 The bun shall be free from mould and rope growth, and from any harmful or injurious foreign matter.

4.1.2 The mass shall not differ from the mass declared by the manufacturer by more than ± 5 percent. The mass shall be determined by weighing 10 buns simultaneously and calculating their mean.

4.1.3 The bun shall also comply with the requirements given in Table 1.

Table 1 – Requirements for bun

1	2	3	4
S/N	Characteristic	Requirement	Method of test
1	Total solid content, % m/m, min.	60	Annex B
2	pH	5 – 6	Annex C
3	Acid insoluble ash, % m/m (on dry basis), max.	0.1	Annex D
4	Crude fibre percent, % m/m (on dry basis), max.	0.5	Annex E

4.2 Ingredients

4.2.1 Essential ingredients

The following materials shall be used in the preparation of the bun:

4.2.1.1 Wheat flour complying with MS 30 or other edible flours complying with relevant standards;

4.2.1.2 Baker's yeast complying with MS 1257;

4.2.1.3 Edible salt complying with MS 188;

4.2.1.4 Portable water complying with MS 214; and

4.2.1.5 Edible fat.

4.3. Optional Ingredients

In addition to the essential ingredients specified in 4.2.1, any of the following ingredients may be added to the bun dough:

4.3.1 Milk and milk products;

4.3.2 Honey complying with MS 366;

4.3.3 Liquid glucose;

4.3.4 Ascorbic acid;

4.3.5 Dextrose monohydrate;

4.3.6 Malt products;

- 4.3.7 Edible starches and puree;
- 4.3.8 Emulsifying agents - permitted in MS 237;
- 4.3.9 Stabilizing agents - permitted in MS 237;
- 4.3.10 Lime water;
- 4.3.11 Fungal alpha amylase;
- 4.3.12 Lysine hydrochloride;
- 4.3.13 Glycerine;
- 4.3.14 Sugar and sugar products;
- 4.3.15 Sorbitol;
- 4.3.16 Edible oil seed flour concentrates and isolates;
- 4.3.17 Dry fruits;
- 4.3.18 Casein, or vital gluten;
- 4.3.19 Glazed cherries/raisins;
- 4.3.10 Vitamins;
- 4.3.11 Minerals;
- 4.3.12 Ammonium chloride; and
- 4.3.13 Sesame seeds.

5 HYGIENE

The bun shall be manufactured in premises maintained under hygienic conditions in accordance with MS 21.

6 FOOD ADDITIVES

Only those food additives permitted for use in food as per set maximum levels in MS 237, shall be used.

7 PACKAGING

The bun shall be packed in suitable food grade wrapper to preserve its freshness.

8 LABELLING

In addition to the provisions of MS 19, the following information shall be clearly marked on each package. If printed, the ink used shall be non-toxic and non-transferable:

- 8.1 Name of the material "bun";
- 8.2 Name and address of the manufacturer;
- 8.3 Trade-name, if any;

- 8.4 Mass of the bun;
- 8.5 Date of manufacture; and
- 8.6 Number of days within which bread shall have to be consumed/used from the date of manufacture.

9 SAMPLING AND METHODS OF TEST

9.1 Sampling

Representative samples of the material shall be drawn and the criteria for ascertaining conformity of the material to the requirements of this specification shall be as prescribed in Annex A.

9.2 Methods of tests

9.2.1 Tests shall be carried out as prescribed in the appropriate Annexes specified in Table 1.

9.2.2 Quality of reagents. Unless specified otherwise, pure chemicals and distilled water shall be employed in tests.

Note: 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the test results.

ANNEX A
(Normative)

SAMPLING OF BUNS

A.1 GENERAL REQUIREMENTS

A.1.1 The samples shall be placed in clean and dry glass bottles and shall be stored in such a manner that the material is not unduly affected.

A.1.2 Each container containing the samples shall be sealed air-tight and marked with full details of sampling, such as date and time of sampling, batch or code number, name of the manufacturer, and other relevant particulars.

A.1.3 Unless otherwise agreed to between the purchaser and the vendor, sampling shall be done at the bakery.

A.1.4 Sampling shall be done by a person agreed to between the purchaser and the vendor, and if desired by them, in the presence of the purchaser (or his representative) and the vendor (or his representative).

A.1.5 Samples shall be tested within 36 hrs of sampling.

A.2 SCALE OF SAMPLING

A.2.1 Lot - All the buns in a consignment belonging to the same batch of manufacture shall constitute a lot. If the consignment is declared to consist of different batches of manufacture, the buns of the same batch shall be grouped together and each group shall constitute a separate lot.

A.2.1.1 Buns shall be tested from each lot for ascertaining their conformity to the requirements of this specification.

A.2.2 The number of buns to be tested from each lot shall depend on the size of the lot and shall be in accordance with Table 2.

TABLE 2 – SCALE OF SAMPLING

1	2	3	4
S/N	No. of packets in the lot	Sample size for visual examination and volume/mass ratio	Sample size for chemical analysis
1	N	n_1	n_2
2	Up to 1000	8	3
3	1001 – 3000	13	4
4	3001 – 5000	20	5
5	5001 and above	32	6

A.2.3 The packets shall be chosen at random from the lot. In order to ensure the randomness of selection, random number tables may be used. In the absence of a random number table, the following procedure may be adopted:

Starting from any packet, count them as 1, 2, 3,... up to r and so on in one order, where r is the integral point of N/n , N being the total number of packets in the lot and $n = (n_1 + n_2)$ the number of packets to be selected (see Table 2), Every r th packet thus counted shall be withdrawn to give required number of packets in the sample.

A.3 TEST SAMPLES AND REFEREE SAMPLE

A.3.1 Buns selected according to **A.3.3** shall be divided into two sets according to n_1 and n_2 of Table 2.

A.3.2 Buns divided according to n_1 of Table 2 from the selected sample shall constitute test sample for visual examination, mass and volume/mass ratio.

A.3.3 Each of the buns divided according to n_2 of Table 2 from the selected sample (see **A.3.1**) shall be cut diagonally. One of the portions from every loaf shall be taken. Portions so obtained shall be reduced to small pieces and mixed together so as to form a composite sample. This composite sample shall be divided into three equal parts, one for the purchaser, and another for the vendor and the third for the referee. These shall be immediately transferred to thoroughly dried glass bottles, sealed air-tight and labelled with all the particulars of sampling given in **A.1.2**.

A.3.4 The other portion of the buns shall constitute individual samples. Each portion of bun shall be reduced to small pieces and shall be divided into three equal parts. These parts shall be immediately transferred to thoroughly dried glass bottles, sealed air-tight and labelled with all the particulars of sampling given in **A.1.2**. The material in each such sealed glass bottle shall constitute a test sample.

A.3.5 These individual samples shall be separated into three sets of test samples in such a way that each set has a sample representing each selected bun. One of these three sets shall be marked for the purchaser, another for the vendor, and the third for the referee.

A.3.6 Referee sample shall consist of the composite sample and a set of individual test samples marked for the purpose and shall bear the seals of the vendor and shall be kept at a place agreed to between the two.

A.4 NUMBER OF TESTS

A.4.1 All samples of buns (see **A.3.2**) shall be inspected for visual characteristics (see **4**), namely, colour of the crust, blisters on the crust, hollowness between the crust and the crumb. Each bun shall be tested for volume (see **4.1.1.1**) according to Annex **F**. Each bun shall also be weighed (see **4.1.2**) individually and the mass recorded.

A.4.2 Tests for the determination of total solid content shall be conducted on individual samples (see **A.3.4**).

A.4.3 The test for determination of pH, acid insoluble ash, and crude fibre shall be conducted on the composite sample prepared under **A.3.3**.

A.5 CRITERION FOR CONFORMITY

A.5.1 A lot shall be declared to have conformed to this specification if **A.5.1.1** to **A.5.1.3** are satisfied:

A.5.1.1 A lot shall be declared to have satisfied the requirements of visual characteristics given under **4.1.1** volume (see **4.1.1.1**), and mass (see **4.1.2**), if each of the buns tested under **A.4.1** satisfies the corresponding requirements;

A.5.1.2 For individual samples, the lot shall be declared to have satisfied the requirement of total solid content, if each of the test results (see **A.4.2**) shows a total solid content of not less than 60%; and

A.5.1.3 For composite samples, the lot shall be declared to have satisfied the requirements of pH, acid insoluble ash and crude fibre if the test results on the composite sample satisfy the corresponding requirements given in Table 1.

ANNEX B
(Normative)

DETERMINATION OF TOTAL SOLIDS CONTENT

B.1 PROCEDURE

B.1.1 Take three slices one from the centre and one each from the ends (last but one for each end) and cut into fine pieces and accurately weigh about 10 g in a suitable moisture dish of porcelain or silica which has been previously dried in an air-oven.

B.1.2 Place the dish with contents in an air-oven maintained at 105 ± 2 °C for about 4 hrs. Cool in a desiccator and weigh.

B.1.3 Heat again in an air-oven at 105 ± 2 °C for 30 minutes.

B.1.4 Cool in a desiccator and weigh. Repeat this process of heating, cooling and weighing, till the difference between two consecutive weighings is less than 10 mg.

B.1.5 From the loss in mass, calculate the percentage of moisture. Preserve the sample for determination of crude fibre.

B.2 CALCULATION

Find the average of moisture content of the two sets of slices. The total solids content, % m/m, shall be obtained by subtracting the percentage of moisture content from 100.

ANNEX C
(Normative)

DETERMINATION OF pH OF AQUEOUS EXTRACT

C.1 APPARATUS

pH meter.

C.2 PROCEDURE

C.2.1 Preparation of aqueous extract of the material. Grind to a fine paste about 10 g of the material in a glass pestle and mortar, add 100 ml of water and mix thoroughly. Allow the mixture to stand for about 15 min.

C.2.2 Determination of pH of aqueous extract. Determine the pH of the solution by using the pH meter.

ANNEX D
(Normative)

DETERMINATION OF ACID INSOLUBLE ASH

D.1 REAGENT

Dilute hydrochloric acid prepared by diluting concentrated hydrochloric acid with water in a ratio of 2:5.

D.2 APPARATUS

D.2.1 Muffle furnace, at 600 ± 20 °C.

D.2.2 Water bath.

D.2.3 Dish, porcelain or platinum.

D.2.4 Desiccator.

D.3 PROCEDURE

D.3.1 Weigh accurately 5.10 g of finely powdered bun in a previously weighed porcelain or platinum dish. Ignite the material in the dish with a suitable flame until it chars.

D.3.2 Place the ignited bun in the muffle furnace and heat at 600 ± 20 °C for at least 1 hr.

D.3.3 Remove the dish from the furnace and cool.

D.3.4 Wet the ash with a suitable amount of hydrochloric acid, and place on a water bath for 10 min.

D.3.5 Filter through a No.1 sinter glass crucible. Wash the crucible with water until the washings are free from acid.

D.3.6 Dry the crucible in an air-oven for 2 hrs.

D.3.7 Cool in a desiccator and weigh. Repeat the process until the difference between two successive weighings is less than 1 mg.

D.3.8 Take the lowest mass.

D.4 CALCULATION

Acid insoluble ash, % m/m on dry basis (A)

$$A = \frac{m_2}{m_1} \times 100$$

Where,

m_1 is mass of sample; and

m_2 is mass of insoluble matter.

ANNEX E
(Normative)

DETERMINATION OF CRUDE FIBRE

E.1 REAGENTS

E.1.1 Petroleum ether, initial boiling temperature 35 °C and 38 °C, dry flask end point 52 °C to 60 °C, at least 95 % distilling at ≤ 54 °C and 60 % distilling at ≤ 40 °C specific gravity at 60 °F 0.630 to 0.660; evaporation residue ≤ 0.002 % weight.

E.1.2 Dilute sulphuric acid, 1.25 % w/v solution in water.

E.1.3 Sodium hydroxide solution, 1.25 % w/v solution in water.

E.1.4 Ethanol, 95 % v/v suitable industrial methylated spirit may be used for routine purposes.

E.2 APPARATUS

E.2.1 Soxhlet apparatus.

E.2.2 Muffle furnace, capable of being maintained at 600 ± 20 °C.

E.3 PROCEDURE

E.3.1 For this determination, use the sample remaining after the determination of the total solids content (see Annex B).

E.3.2 Weigh accurately about 2.5 g of the sample and place in a soxhlet apparatus.

E.3.3 Extract for 1 hr with petroleum ether. Transfer the fat free material to a 1 litre flask.

E.3.4 Add 200 ml of hot dilute sulphuric acid into the flask. Connect the flask to a water-cooled reflux condenser and heat, so that the contents of the flask begin to boil within 1 min.

E.3.5 Now and then, rotate the flask frequently and boil for exactly 30 min.

E.3.6 Filter the contents of the flask through a fine linen (about 18 threads to the centimetre) held in a funnel.

E.3.7 Wash the residue on the linen with boiling water until the washings are no longer acid to litmus. Then wash the residue on the linen into the flask with 200 ml of boiling sodium hydroxide solution.

E.3.8 Fit a condenser to the flask and reflux for 30 min. Remove the condenser and filter the contents of the flask through the filtering cloth. Thoroughly wash the residue with boiling water.

E.3.9 Transfer the residue to a gooch crucible prepared with a thin but compact layer of ignited asbestos. Wash the residue thoroughly first with hot water and then with 15 ml of ethanol (95 % v/v).

E.3.10 Dry the crucible and contents at 105 ± 2 °C in an air-oven to constant weight, cool in a desiccator and weigh.

E.3.11 Ignite the contents of the crucible in a muffle furnace at 600 ± 20 °C until all carbonaceous matter is burnt. Cool the crucible containing the ash in a desiccator and weigh.

E.4 CALCULATION

E.4.1 Crude fibre expressed on dry basis % w/w (CF)

$$CF = 100 \times \frac{m_1 - m_2}{m}$$

Where,

m_1 is mass, in g, of gooch crucible and contents before ashing;

m_2 mass, in g, of gooch crucible containing asbestos and ash; and

m is mass, in g, of the moisture-free material taken for the test.

ANNEX F
(Normative)

DETERMINATION OF VOLUME/MASS RATIO

F.1 APPARATUS

F.1.1 Wooden box.

F.1.2 Rape seeds.

F.1.3 Weighing scale.

F.1.4 Volumeter.

F.2 PROCEDURE

F.2.1 Determination of density of rape seeds. Weigh a 500 ml graduated cylinder on the weighing scale. Fill it to the 500 ml mark with rape seeds and reweigh. Take the average of three readings. Calculate the density of the seeds in the following manner:

Density of seeds, (d), g/ml is calculated as follows:

$$D = \frac{(B - A)}{500}$$

Where,

B is average mass, in g, of the cylinder filled with the seeds up to the 500 ml level; and

A is mass, in g, of the cylinder.

F.2.2 Determination of volume of bun. Weigh the bun after it is cooled to room temperature and record the weight. Fill the wooden box with rape seeds and level the top surface of the seeds by a wooden plate. Weigh the box with the seeds. Take two readings and record the average. Empty out the seeds leaving a thin layer at the bottom of the box. Place the bun on this layer of seeds and fill the rest of the space in the box with rape seeds. Level off the surface of the seeds by a wooden plate. Weigh the box again. Take two readings and record the average.

NOTE 1: Do not press the bun while keeping in the box.

F.2.3 Determination of volume. The volume of bun may also be determined by the volumeter which is a mechanical device for measuring the volume of bun quickly.

F.3 CALCULATION

F.3.1 Volume, in ml, of bun (V) is calculated as follows:

$$V = \frac{(C - E)}{D}$$

Where,

C is average mass, in g, of the box filled with seeds and mass of bun;

E is average mass, in g, of the box filled with bun, with seeds in the residual space; and

D is density (g/ml) of rape seeds.

F.3.2 From the above, calculate volume/mass ratio for the bun.

THE MALAWI BUREAU OF STANDARDS

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To bring the advantages of standardisation 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.

