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DRAFT MALAWI STANDARD

Mozzarella – Specification

NOTE: This is a draft proposal and it shall neither be used nor regarded as a Malawi Standard

Mozzarella – Specification

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FOREWORD

This Draft Malawi standard has been prepared to provide requirements for mozzarella.

The draft standard is identical to the international standard, Codex Stan 262:2006, *Standard for mozzarella*, with the exception of **Table 3** (Microbiological limits for mozzarella) which has been adopted from Kenyan Standard: KS 28-1:2014, *Cheese – Specification, Part 1: General*.

Acknowledgement is made for the use of the information.

TECHNICAL COMMITTEE

This draft Malawi standard was prepared by the *Technical Committee MBS/TC 23, Milk and milk products* and the following companies, organizations and institutions were represented:

- Blantyre Agricultural Development Division (Ministry of Agriculture)
- Department of Animal Health and Livestock Development (Ministry of Agriculture);
- Consumers Association of Malawi;
- Dairibord Malawi Limited;
- Lilongwe Dairy (2001) Limited;
- Lilongwe University of Agriculture and Natural Resources (Bunda Campus);
- Malawi Bureau of Standards;
- The Polytechnic (University of Malawi);
- Shire Highlands Milk Producers Association;
- Suncrest Creameries.

NOTICE

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

DRAFT MALAWI STANDARD

Mozzarella – Specification

1 SCOPE

This standard applies to Mozzarella intended for direct consumption or for further processing, in conformity with the description in section 3 of this standard.

2 NORMATIVE REFERENCES

The following standards contain provisions, which through reference in this text, constitute provisions of this 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 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 75: *Milk and milk products – Methods of sampling and analysis;*

MS 189: *Cheese – Specification;*

MS 237: *Food additives – General standard;*

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

MS 625: *Nutritional claims – Guidelines;*

MS 744: *General standard for the use of dairy terms;*

MS 935: *Principles for the establishment and application of microbiological criteria for foods;*

MS 1113: *Code of hygienic practice for milk and milk products;*

CODEX STAN 221: *Unripened cheese including fresh cheese;*

ISO 4832: *Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of coliforms – Colony-count technique;*

ISO 4833-1: *Microbiology of the food chain – Horizontal method for the enumeration of microorganisms – Part 1: Colony count at 30 degrees C by the pour plate technique.*

3 DESCRIPTION

3.1 Mozzarella is an unripened cheese in conformity with MS 189 and CODEX STAN 221. It is a smooth elastic cheese with a long stranded parallel-orientated fibrous protein structure without evidence of curd granules. The cheese is rindless¹ and may be formed into various shapes.

¹ The cheese has been kept in such a way that no rind is developed (a “rindless” cheese).

3.2 Mozzarella with a high moisture content is a soft cheese with overlying layers that may form pockets containing liquid of milky appearance. It may be packed with or without the liquid. The cheese has a near white colour.

3.3 Mozzarella with a low moisture content is a firm/semi-hard homogeneous cheese without holes and is suitable for shredding.

3.4 Mozzarella is made by “pasta fi lata” processing, which consists of heating curd of a suitable pH value (4.5-5.8) kneading and stretching until the curd is smooth and free from lumps. Still warm, the curd is cut and moulded, then firmed by cooling. Other processing techniques, which give end products with the same physical, chemical and organoleptic characteristics are allowed.

4 ESSENTIAL COMPOSITION AND QUALITY FACTORS

4.1 Raw materials

Cows' milk or buffaloes' milk, or their mixtures, and products obtained from these milks.

4.2 Permitted ingredients

- (a) Starter cultures of harmless lactic acid and/ or flavour producing bacteria and cultures of other harmless micro-organisms
- (b) Rennet or other safe and suitable coagulating enzymes
- (c) Sodium chloride and potassium chloride as a salt substitute
- (d) Safe and suitable processing aids
- (e) Vinegar
- (f) Potable water
- (g) Rice, corn and potato flours and starches: Notwithstanding the provisions in MS 189, these substances can be used in the same function as anti-caking agents for treatment of the surface of cut, sliced, and shredded Mozzarella with a low moisture content only, provided they are added only in amounts functionally necessary as governed by Good Manufacturing Practice, taking into account any use of the anti-caking agents listed in section 5.

4.3 Composition

Table 1 – Compositional requirements for mozzarella

Milk constituent	Minimum content (m/m)	Maximum content (m/m)	Reference level (m/m)
Milkfat in dry matter:			
with high moisture	20 %	Not restricted	40 % to 50 %
with low moisture	18 %	Not restricted	40 % to 50 %
Dry matter	Depending on the fat in dry matter content, according to the following requirements below.		

Fat in dry matter content (m/m):	Corresponding minimum dry matter content (m/m):	
Equal to or above 18 % but less than 30 %:	34 %	–
Equal to or above 20 % but less than 30 %:	–	24 %
Equal to or above 30 % but less than 40 %:	39 %	26 %
Equal to or above 40 % but less than 45 %:	42 %	29 %
Equal to or above 45 % but less than 50 %:	45 %	31 %
Equal to or above 50 % but less than 60 %:	47 %	34 %
Equal to or above 60 % but less than 85 %:	53 %	38 %

Compositional modifications beyond the minima and maxima specified above for milkfat and dry matter are not considered to be in compliance with section 4.3.3 of MS 744.

5 FOOD ADDITIVES

5.1 Only those additives classes indicated as justified in the table below may be used for the product categories specified. Within each additive class, and where permitted according to the table, only those food additives listed in MS 237 may be used and only within the functions and limits specified. **Annex A** provides permitted additives that were applicable at the time of publishing this standard.

Table 2 – Additives permitted for use in mozzarella

S/N	Additive functional class	Mozzarella with low moisture content		Mozzarella with high moisture content	
		Cheese mass	Surface treatment	Cheese mass	Surface treatment
1	Colours	X ^(a)	–	X ^(a)	–
2	Bleaching agents	–	–	–	–
3	Acidity regulators	X	–	X	–
4	Stabilizers	X	–	X	–
5	Thickeners	X	–	X	–
6	Emulsifiers	–	–	–	–
7	Antioxidants	–	–	–	–
8	preservatives	X	X	X	
9	Foaming agents	–	–	–	–
10	Anti-caking agents	–	X ^(b)	–	

Note 1: (a) Only to obtain the colour characteristics, as described in Section 3.

Note 2: (b) For the surface of sliced, cut, shredded or grated cheese, only.

Note 3: X The use of additives belonging to the class is technologically justified.

Note 4: – The use of additives belonging to the class is not technologically justified.

6 CONTAMINANTS

6.1 The products covered by this standard shall comply with the maximum Levels for contaminants that are specified for the product in MS 302.

6.2 The milk used in the manufacture of the products covered by this Standard shall comply with the Maximum Levels for contaminants and toxins specified for milk in MS 302 and with the maximum residue limits for veterinary drug residues and pesticides established for milk by the Codex Alimentarius Commission.

7 HYGIENE

7.1 It is recommended that the product covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of MS 1113 and other relevant Codex texts such as Codes of hygienic practice and Codes of practice. The products should comply with any microbiological criteria established in accordance with MS 935.

In addition to the provisions of section **7.1**, mozzarella shall comply with the microbiological limits in **Table 2** below:

Table 2 – Microbiological limits for mozzarella

S/N	Microorganism	Maximum limit	Test method
1	Listeria monocytogenes, max, per g	0	ISO 4833
2	Salmonella spp, max, per g	0	ISO 4833
3	Shigella, max, per g	0	ISO 4833
4	Clostridium botulinum, max, per g	0	ISO 4833
5	Staphylococcus aureus, max, per g	0	ISO 4833
6	E.coli, max, per g	0	ISO 4833
7	Faecal coliforms:, max, per g	0	ISO 4832
8	Non-faecal coliforms, max	0	ISO 4832

8 LABELLING

In addition to the provisions of MS 19 and MS 744, the following specific provisions apply:

8.1 Name of the food

The name Mozzarella may be applied in accordance with section **4.1** of MS 19, provided that the product is in conformity with this standard. Where customary in the country of retail sale, alternative spelling may be used.

The use of the name is an option that may be chosen only if the cheese complies with this standard. Where the name is not used for a cheese that complies with this standard, the naming provisions of MS 189 apply.

The designation of Mozzarella with a high moisture content shall be accompanied by a qualifying term describing the true nature of the product.

The designation of products in which the fat content is below or above the reference range but above the absolute minimum specified in section **4.3** of this standard shall be accompanied by an appropriate qualification describing the modification made or the fat content (expressed as fat in dry matter or as percentage by mass whichever is acceptable in the country of retail sale), either as part of the name or in a prominent position in the same field of vision. Suitable qualifiers are the appropriate characterizing terms specified in section **8.2.1** of MS 189 or a nutritional claim in accordance with MS 625.

The designation may also be used for cut, sliced, shredded or grated products made from cheese which cheese is in conformity with this Standard.

8.2 Country of origin

The country of origin (which means the country of manufacture, not the country in which the name originated) shall be declared. When the product undergoes substantial transformation in a second country, the country in which the transformation is performed shall be considered to be the country of origin for the purpose of labelling.

8.3 Declaration of milkfat content

The milk fat content shall be declared in a manner found acceptable in the country of retail sale, either (i) as a percentage by mass, (ii) as a percentage of fat in dry matter, or (iii) in grams per serving as quantified in the label, provided that the number of servings is stated.

8.4 Labelling of non-retail containers

Information specified in section 8 of this Standard and sections 4.1 to 4.8 of MS 19 and, if necessary, storage instructions, shall be given either on the container or in accompanying documents, except that the name of the product, lot identification, and the name of the manufacturer or packer shall appear on the container, and in the absence of such a container, on the product itself. However, lot identification and the name and address may be replaced by an identification mark, provided that such mark is clearly identifiable with the accompanying documents.

9 METHODS OF SAMPLING AND ANALYSIS

Sampling and analysis of milkfat products shall be done in accordance with MS 75.

APPENDIX – ADDITIONAL INFORMATION

The additional information below does not affect the provisions in the preceding sections which are those that are essential to the product identity, the use of the name of the food and the safety of the food.

Mozzarella with a high moisture content

1. Method of manufacture

- 1.1 The principal starter culture micro-organisms are *Streptococcus thermophilus* and/or *Lactococcus* spp.
- 1.2 Products made from buffalo's milk shall be salted in cold brine.

Annex

Maximum levels for additives used in mozzarella

At the time of publication of this standard, the following were the permitted additives to be used in Mozzarella cheese. Users are encouraged to refer to MS 237 or the Codex Alimentarius Commission for the most recent maximum limits.

Table 3: Maximum levels for additives used in mozzarella

INS No.	Name of additive	Maximum level
Preservatives		
200	Sorbic acid	1,000 mg/kg singly or in combination as sorbic acid
201	Sodium sorbate	
202	Potassium sorbate	
203	Calcium sorbate	
234	Nisin	12.5 mg/kg
235	Natamycin (pimaricin)	Not exceeding 2 mg/dm ² and not present in a depth of 5 mm
280	Propionic acid	Limited by GMP
281	Sodium propionate	
282	Calcium propionate	
283	Potassium propionate	
Acidity regulators		
170(i)	Calcium carbonate	Limited by GMP
260	Acetic acid, glacial	
261(i)	Potassium acetate	
261(ii)	Potassium diacetate	
262(i)	Sodium acetate	Limited by GMP
263	Calcium acetate	
270	Lactic acid, L-, D- and DL-	
296	Malic acid, DL-	
325	Sodium lactate	
326	Potassium lactate	
327	Calcium lactate	
330	Citric acid	
338	Phosphoric acid	880 mg/kg as phosphorous
350(i)	Sodium hydrogen DL-malate	Limited by GMP
350(ii)	Sodium malate	
351(i)	Potassium hydrogen malate	
351(ii)	Potassium malate	Limited by GMP
352(ii)	Calcium malate, D, L-	
500(i)	Sodium carbonate	
500(ii)	Sodium hydrogen carbonate	
500(iii)	Sodium sesquicarbonate	
501(i)	Potassium carbonate	
501(ii)	Potassium hydrogen carbonate	
504(i)	Magnesium carbonate	
504(ii)	Magnesium hydrogen carbonate	
507	Hydrochloric acid	
575	Glucono-delta-lactone	
577	Potassium gluconate	
578	Calcium gluconate	

INS No.	Name of additive	Maximum level
Stabilizers		
331(i)	Sodium dihydrogen citrate	Limited by GMP
332(i)	Potassium dihydrogen citrate	
333	Calcium citrates	
339(i)	Sodium dihydrogen phosphate	4,400 mg/kg, singly or in combination, expressed as phosphorus
339(ii)	Disodium hydrogen phosphate	
339(iii)	Trisodium phosphate	
340(i)	Potassium dihydrogen phosphate	
340(ii)	Dipotassium hydrogen phosphate	
340(iii)	Tripotassium phosphate	
341(i)	Calcium dihydrogen phosphate	
341(ii)	Calcium hydrogen phosphate	
341(iii)	Tricalcium phosphate	
342(i)	Ammonium dihydrogen phosphate	
342(ii)	Diammonium hydrogen phosphate	
343(ii)	Magnesium hydrogen phosphate	
343(iii)	Trimagnesium phosphate	
450(i)	Disodium diphosphate	
450(iii)	Tetrasodium diphosphate	
450(v)	Tetrapotassium diphosphate	
450(vi)	Dicalcium diphosphate	
451(i)	Pentasodium triphosphate	
451(ii)	Pentapotassium triphosphate	
452(i)	Sodium polyphosphate	
452(ii)	Potassium polyphosphate	
452(iv)	Calcium polyphosphate	
452(v)	Ammonium polyphosphate	4,400 mg/kg, singly or in combination, expressed as phosphorus
406	Agar	Limited by GMP
407	Carrageenan	
407a	Processed euchema seaweed (PES)	
410	Carob bean gum	
412	Guar gum	
413	Tragacanth gum	
415	Xanthan gum	
416	Karaya gum	
417	Tara gum	
440	Pectins	
466	Sodium carboxymethyl cellulose (Cellulose gum)	
Colours		
140	Chlorophylls	Limited by GMP
141(i)	Chlorophyll copper complexes	5 mg/kg singly or in combination
141(ii)	Chlorophyllin copper complex, sodium and potassium salts	
171	Titanium dioxide	Limited by GMP
Anticaking agents		
460(i)	Microcrystalline cellulose (cellulose gel)	Limited by GMP
460(ii)	Powdered cellulose	
551	Silicon dioxide, amorphous	10,000 mg/kg singly or in combination as silicon dioxide

INS No.	Name of additive	Maximum level
552	Calcium silicate	10,000 mg/kg singly or in combination as silicon dioxide
553(i)	Magnesium silicate, synthetic	
554	Sodium aluminosilicate	
556	Calcium aluminium silicate	
559	Aluminium silicate	

THE MALAWI BUREAU OF STANDARDS

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