

**Mozzarella Cheese — Specification**

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Ministry of Agriculture, Livestock and Fisheries — State Department of Livestock  
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**REVISION OF KENYA STANDARDS**

In order to keep abreast with the progress in the industry, Kenya Standards shall be regularly reviewed. Suggestions for improvements to published standards, addressed to the Managing Director, Kenya Bureau of Standards, are welcome.

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# **Mozzarella Cheese — Specification**

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# DKS 2193: 2015

## Foreword

This Kenya Standard was prepared by the Milk and Milk Products Technical Committee under the guidance of the Standards Project Committee and it is in accordance with the procedures of the Kenya Bureau of Standards.

Cheese is a very nutritious food which consists of a concentration of the constituents of milk, principally fat, casein and insoluble salts, together with water, in which small amounts of soluble salts, lactose, and albumin from milk are coagulated.

There are various types of cheese that are produced and marketed worldwide. This Kenya Standard specifies the requirements for the type of semi-soft cheese being marketed in Kenya as mozzarella cheese.

This standard includes a list of food additives, terminology and classification of cheeses, amongst other technical requirements which are important in checking cheese under the regulatory system to prevent adulteration.

PUBLIC REVIEW DRAFT

## Mozzarella Cheese— Specification

### 1 Scope

This Kenya Standard applies to mozzarella cheese intended for direct consumption or for further processing, in conformity with the description in Clause 2 of this standard.

### 2 Normative references

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

KS ISO 707, *Milk and milk products — Guidance on sampling*

KS 2455, *General Standard- Food Safety*

KS EAS 69, *Pasteurized milk- Specification*

KS ISO 1735, *Cheese and processed cheese products — Determination of fat content — Gravimetric method (Reference method)*

KS ISO 1740, *Milk fat products and butter — Determination of fat acidity (Reference method)*

KS ISO 2962, *Cheese and processed cheese products — Determination of total phosphorus content — Molecular absorption spectrometric method*

KS ISO 5534, *Cheese and processed cheese — Determination of the total solids content (Reference method)*

KS ISO 5943, *Cheese and processed cheese products — Determination of chloride content — Potentiometric titration method*

KS CAC/GL 21, *Recommended international code of hygienic practice for foods for infants and children*

KS CAC/GL 23, *Guidelines for use of nutrition claims*

CODEX STAN 208, *Codex Standard for cheese in brine*

KS EAS 38, *Labelling of prepackaged foods*

KS 2194:2009 – *Good Manufacturing practice guide lines and the Dairy industry*

KS ISO 6611, *Milk and milk products — Enumeration of colony-forming units of yeasts and/or moulds — Colony-count technique at 25 degrees C*

KS ISO 14501:2007 *Milk and milk powder - Determination of aflatoxin M content - Clean-up by immunoaffinity chromatography and determination by high-performance liquid chromatography*

AOAC 942.17, *Arsenic in foods Molybdenum blue method*

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*AOAC 999.10, Lead, Cadmium, Copper, Iron, and Zinc in foods, Atomic Absorption Spectrophotometry after dry ashing*

AOAC 962.16 Beta-lactam Antibiotics in milk

AOAC 980.21, Aflatoxin M1 in milk and cheese-thin layer chromatographic method

*AOAC 980.21, organochlorine and organophosphorous pesticide residues in milk and milk products  
Code of hygienic practice for milk and milk products*

## 2 Description

Mozzarella is an unripened cheese in conformity with the KS 28 part 1, General Standard for Cheese. It is a smooth elastic cheese with a long stranded parallel-orientated fibrous protein structure without evidence of curd granules. The cheese is rindless and may be formed into various shapes.

Mozzarella with 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.

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

Mozzarella is made by "pasta filata" processing, which consists of heating curd of a suitable pH value 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.

## 3 Essential composition and quality factors

### 3.1 Raw materials

Cow milk and products obtained from cow milks complying with relevant Kenya standards

### 3.2 Permitted ingredients

- Starter cultures of harmless lactic acid and/ or flavour producing bacteria and cultures of other harmless microorganisms;
- Rennet or other safe and suitable coagulating enzymes;
- Potable water; complying with KS EAS 12
- Vinegar;
- Sodium chloride; and potassium chloride as a salt substitute; complying with KS CODEX STAN 150
- Safe and suitable enzymes to enhance the ripening process;
- Safe and suitable processing aids

Rice, corn and potato flours and starches: Notwithstanding the provisions in KS 28-1:2009, these substances can be used in the same function as anti-caking agents for treatment of the surface of cut, sliced, and shredded products 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 **Clause 6**.

### 3.3 Composition

Milk constituent	Minimum content (m/m)	Maximum content (m/m)	Reference level (m/m)
<b>Milk fat in dry matter:</b>			
With high moisture	20 %	Not restricted	40 % to 50 %
with low moisture	18 %	Not restricted	40 % to 50 %
<b>Dry matter:</b>	Depending on the fat in dry matter content.		
	<b>Corresponding minimum dry matter content (m/m)</b>		
	<b>Fat in dry matter content (m/m):</b>		
		With low moisture	With high moisture
	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 %	

**6 Food additives**

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 below may be used and only within the functions and limits specified.

**Table 3**

Additive functional class:	Justified use:	
	Cheese mass	Surface/rind treatment
Colours:	X1	—
Bleaching agents:	—	—
Acids:	—	—
Acidity regulators:	X	—
Stabilizers:	—	—
Thickeners:	—	—
Emulsifiers:	—	—
Antioxidants:	—	—
Preservatives:	X	X
Foaming agents:	—	—
Anti-caking agents:	—	X2

1 Only to obtain the colour characteristics, as described in Clause 3

2 For the surface of sliced, cut, shredded or grated cheese, only

X The use of additives belonging to the class is technologically justified

— The use of additives belonging to the class is not technologically justified

**Table 4**

INS No.	Name of additive	Maximum level
<b>Colours</b>		
160a(i)	beta-Carotene (Synthetic)	35 mg/kg singly or in combination
160a(iii)	beta-Carotene (Blakeslea trispora)	
160e	beta-apo-8'-Carotenal	
160f	beta-apo-8'-Carotenoic acid, methyl or ethyl ester	
160a(ii)	Carotenes, vegetable	600 mg/kg
<b>Preservatives</b>		
1105	Lysozyme	Limited by GMP
200	Sorbic acid	1000 mg/kg based on sorbic acid. Surface treatment only <sup>a)</sup>
201	Sodium sorbate	



202	Potassium sorbate	
203	Calcium sorbate	
234	Nisin	12.5 mg/kg
235	Pimaricin (Natamycin)	2 mg/dm <sup>2</sup> Not present at a depth of 5 mm. Surface treatment only <sup>a)</sup>
251	Sodium nitrate	35 mg/kg singly or in combination (expressed as nitrate ion)
252	Potassium nitrate	
280	Propionic acid	3000 mg/kg Surface treatment only <sup>a)</sup>
281	Sodium propionate	
282	Potassium propionate	
<b>Acidity regulators</b>		
170(i)	Calcium carbonate	Limited by GMP
504(i)	Magnesium carbonate	Limited by GMP
575	Glucono delta-lactone	Limited by GMP
<b>Anticaking agents</b>		
460(i)	Microcrystalline cellulose	Limited by GMP
460(ii)	Powdered cellulose	Limited by GMP
551	Silicon dioxide, (amorphous)	10000 mg/kg singly or in combination Silicates calculated as silicon dioxide
552	Calcium silicate	
553(i)	Magnesium silicate	
553(iii)	Talc	
554	Sodium aluminosilicate	
556	Calcium aluminium silicate	
559	Aluminium silicate	
a) For the definition of cheese surface and rind see Annex to KS 28-1:2008.		

## 5. Hygiene Requirements

- 5.1** It is recommended that the products covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of KS 2194:2009 and other relevant Kenya standards and regulations. The products should comply with any microbiological criteria established in accordance with KS CAC/GL 21.
- 5.2** The products shall comply with any microbiological criteria established in accordance with Table 2 below.

**Table 2 — Microbiological requirements for Mozzarella cheese**

S/N	Quality	Requirements	Test method
	Total plate count /g	$2 \times 10^4$ cfu/g	KS ISO 4833
	<i>Listeria monocytogenes</i> max,	Nil per gram	KS ISO 4833

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	Salmonella spp	<i>Nil per gram</i>	<i>KS ISO 4833</i>
	Shigella	<i>Nil per gram</i>	<i>KS ISO 4833 KS ISO 21567</i>
	Clostridium botulinum	<i>Nil per gram</i>	<i>KS ISO 4833</i>
	Staphylococcus aureus	<i>Nil per gram</i>	<i>KS ISO 4833</i>
	E.coli	<i>Nil per gram</i>	<i>KS ISO 4833</i>
	<i>Faecal coliforms:, max</i>	<i>Nil per gram</i>	<i>KS ISO 4832</i>
	<i>Non-faecal coliforms, max</i>	<i>10 cfu/g</i>	<i>KS ISO 4832</i>
	<i>Mould, max</i>	<i>100 cfu/g gram</i>	<i>KS ISO 6611</i>
	<i>Yeast, max</i>	<i>100 cfu/g</i>	<i>KS ISO 6611</i>

## 7 Contaminants

The products covered by this Standard shall comply with the maximum levels of CODEX STAN 193 and the maximum residue limits for pesticides and veterinary drugs established by the Codex Alimentarius Commission (CAC)

### 7.1 Heavy metals

The products covered by this standard shall comply with the maximum limits in Table 5

**Table 5 — Limits for heavy metal contaminants for Mozzarella cheese**

SL No	Heavy metal	MRL (Max.)	Test method
i).	Arsenic (AS)	0.1 ppm	AOAC 942.17
ii).	Lead (PH)	0.02 ppm	AOAC 999.10
iii).	Mercury (Hg)	1.0 ppm	AOAC 999.10
iv).	Copper (Cu)	5.0 ppm	AOAC 999.10
v).	Zinc (Zn)	50 ppm	AOAC 999.10
vi).	Tin (Sn)	250 ppm	AOAC 999.10

vii).	Cadmium as Cd,	1.5 ppm	AOAC 999.10
viii).	Iron (fe),	0.5 ppm	AOAC 999.10

## 7.2 Pesticide residues

All cheeses shall have the maximum residue limits in table 6

**Table 6 - maximum pesticide residue Limits for Mozzarella cheese**

S/N	Parameter	Requirements	Test method
<i>i</i>	ORGANOCHLORINE Group	0.01 ppm	KS ISO 3890-1:2009
<i>ii</i>	ORGANOPHOSPHOROUS Group	0.01 ppm	AOAC 960.40

## 7.3 Mycotoxin residues

Mozzarella cheese shall not have more than 0.5ppb aflatoxin m1 content when tested according to KS ISO 14501:2007/ AOAC 980.21, Aflatoxin M1 in milk and cheese- thin layer chromatographic method

## 7.4 Total Antibiotic residues

Mozzarella cheese shall not have more than 10.0 ppb total antibiotic residues as (beta lactam) content when tested according to AOAC 962.16 Beta-lactam Antibiotics in milk

## 7.5 Veterinary Drug Residues

**Table 6- maximum veterinary drug residue Limits for mozzarella cheese**

S/N	Parameter	Requirements/ MRL	Test method
<i>i</i>	Chloramphenicol	ND	AOAC 972.17
<i>ii</i>	Nitrofurans(including metabolites)	ND	AOAC 960.63
	Ronidazole	ND	AOAC 969.56
	Metronidazole	ND	AOAC 991.17
	Fenbendazole	100ppb	AOAC 991.17
	Albendazole	100ppb	AOAC 991.17
	Phenylbutazone	ND	AOAC 991.17

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## **8 Labelling**

In addition to the provisions of the KS EAS 38 Labelling of prepackaged foods, the following specific provisions apply:

### **8.1 Name of the food**

The name mozzarella may be applied in accordance with KS EAS 38, provided that the product is in conformity with this standard.

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 the KS 28, General standard for cheese shall apply.

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

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

### **6.2 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.

### **6.3 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.

### **6.4 Labelling of non retail containers**

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.