KENYA STANDARD

DKS 28-2:2019
ICS 67.100.30

Cheese — Specification

Part 2:
Cheddar

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TECHNICAL COMMITTEE REPRESENTATION

The following organizations were represented on the Technical Committee:

Kenya Dairy Board
Ministry of Health — Food safety Unit
State Department of Livestock
Government Chemist's Department
Egerton University — Department of Dairy and Food Science Technology
Kenya Industrial Research and Development Institute (KIRDI)
Sameer Agriculture and Livestock (K) Limited
New Kenya Cooperative Creameries (NKCC)
National Public Health Labs
Department of veterinary services
Brookside Dairy Ltd.
Eldoville Dairies Ltd.
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Bio Food Products Ltd.
Happy Cow Ltd.
Kibidav Ltd
Accelerating Agriculture and Livestock Enterprises Ltd
Kenya Bureau of Standards — Secretariat

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In order to keep abreast of progress in 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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Foreword

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

Cheese is the ripened or unripened soft, semi-hard, hard, or extra-hard milk product, which consists of high concentration of the constituents of milk, principally fat, casein and soluble salts, together with water in which small amounts of soluble salts, lactose, and albumin from milk is coagulated. The milk is coagulated by means of rennet and/or other protease enzymes. it is therefore important to use milk of good quality to obtain high quality cheese.

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There are various types of cheese that are produced and marketed worldwide. This Part 2 of this Kenya Standard specifies the requirements for the type of hard cheese being marketed in Kenya as cheddar cheese.

During the preparation of this standard, reference was made to the following document:

Standard for cheddar, CXS 263-1966

Acknowledgement is hereby made for the assistance derived from these sources.

KENYA STANDARD **DKS 28-2:2019**

Cheese — Specification

Part 2:

Cheddar

1 Scope

This Kenya Standard specifies the requirements, sampling and test methods for cheddar cheese intended for direct consumption and/ or for further processing.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

AOAC 999.10, Official method for lead, cadmium, zinc, copper, and iron in foods Atomic Absorption Spectrophotometry after microwave Digestion
KS CODEX STAN 192, Codex general standard for food additives
KS CODEX STAN 193, Codex general Standard for Contaminants and Toxins in Food and Feed
KS CXS 206-1999, General Standard for the Use of Dairy Terms
KS CODEX STAN 208, Codex Standard for cheese in brine
KS EAS 153 –Drinking (portable) water specification
KS EAS 38, Labelling of prepackaged foods
KS EAS 805, Use of Nutrition and health claims
KS 28-1, General standard for cheese
KS 229, Standard for edible salt
KS 1552, Code of hygienic practice for milk and milk products
KS ISO 707, Milk and milk products — Guidance on sampling
KS ISO 1735, Cheese and processed cheese products - Determination of fat content - Gravimetric method (Reference method)
KS ISO 4833, Microbiology of food and animal feed Stuffs-Horizontal method for the enumeration of microorganisms-colony count Technique at 30
KS ISO 4832, Microbiology of food and animal feeding stuffs- Horizontal method for the enumeration of coliforms-colony-count technique
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 Sodium chloride content Potentiometric titration method
KS ISO 6785:2001, Milk and milk products – Detection of Salmonella spp
KS ISO 6888–1:1999 Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) – Part 1: Technique using Baird-Parker agar medium
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/TS 6733, Milk and milk products -- Determination of lead content -- Graphite furnace atomic absorption spectrometric method
KS ISO 11290-2, Microbiology of the food chain — Horizontal method for the detection and enumeration of Listeria monocytogenes and of Listeria spp. — Part 2: Enumeration method
KS ISO 14501, Milk and milk powder - Determination of aflatoxin M content - Clean-up by immunoaffinity chromatography and determination by high-performance liquid chromatography
KS ISO 7251, Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of presumptive Escherichia coli — Most probable number technique
KS ISO 55381: Milk and milk products - Sampling - Inspection by attributes.
KS ISO 16649–2:2001, Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of beta-glucuronidase-positive Escherichia coli – Part 1: Colony-count technique at 44°C using 5-bromo-4-chloro-3-indolyl Beta-D-glucuronide

3 Product description

Cheddar is a ripened hard cheese in conformity with the *General Standard for Cheese* (KS 28-1). The body has a near white or ivory through to light yellow or orange colour and a firm-textured (when pressed by thumb), smooth and waxy texture. Gas holes are absent, but a few openings and splits are acceptable. The cheese is manufactured and sold with or without[1] rind which may be coated.

For Cheddar ready for consumption, the ripening procedure to develop flavour and body characteristics is normally from 5 weeks at 7–15 °C depending on the extent of maturity required. Alternative ripening conditions (including the addition of ripening enhancing enzymes) may be used, provided the cheese exhibits similar physical, biochemical and sensory properties as those achieved by the previously stated ripening procedure. Cheddar intended for further processing need not exhibit the same extent of

ripening when justified through technical and/or trade needs.

4. Essential composition and quality factors

4.1 Raw materials

Cows' milk or buffaloes milk, or their mixtures, and products obtained from these milks, complying with the relevant Kenya Standards

4.3 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;
- Sodium chloride; and potassium chloride as a salt substitute; complying with KS 229
- Potable water; complying with KS EAS 153
- 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 the *General Standard for Cheese* (KS 28-1), 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 section 6.

[1)] This is not to mean that the rind has been removed before sale, instead the cheese has been ripened and/or kept in such a way that no rind is developed (a "rindless" cheese). Ripening film is used in the manufacture of rindless cheese. Ripening film may also constitute the coating that protects the cheese**.** For rindless cheese see also the Annex to the KS 28-1.

4.3 Compositional requirements

The following compositional requirements in table 1 shall be applicable for cheddar cheese.

Table 1 — Compositional requirements for cheddar cheese

Milk constituent	Minimum content (m/m)	Maximum content (m/m)	Reference level (m/m)	Test method
Milkfat in dry matter	22%	Not restricted	48% to 60%	KS ISO 1735
Dry matter	Depending on the fat in dry matter content, according to the table below.			
	Fat in dry matter content *(m/m)*		**Corresponding minimum dry matter content** *(m/m)*	
	Equal to or above 22% but less than 30 %		49%	KS ISO 5534
	Equal to or above 30% but less than 40 %		53%	
	Equal to or above 40% but less than 48%		57%	
	Equal to or above 48% but less than 60%		61%	
	Equal to or above 60%		66%	
Salt % max.	3 %			KS ISO 5943

Compositional modifications beyond the minima and maxima specified above for milk fat and dry matter are not considered to be in compliance with section 4.3.3 of the *General Standard for the Use of Dairy Terms* (KS CXS 206-1999).

5 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.

Additive functional class:	Justified use	
	Cheese mass	Surface/rind treatment
Colours:	X[(a)]	–
Bleaching agents:	–	–
Acidity regulators:	X	–
Stabilizers:	–	–
Thickeners:	–	–
Emulsifiers:	–	–

Antioxidants:	–	–
Preservatives:	X	X
Foaming agents:	–	–
Anti–caking agents:	–	X[(b)]

(a) Only to obtain the colour characteristics, as described in Section 2. (b) 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 — List of food additives

INS no.	Name of additive	Maximum level
Colours		
101(i)	Riboflavin, syntenthic	300 mg/kg
140	Chlorophylls	Limited by GMP
160a(i)	Carotene, *beta*-, synthetic	35 mg/kg singly or in combination
160a(iii)	Carotene, *beta*-,*Blakeslea trispora*	
160e	Carotenal, *beta*-apo-8'-	
160f	Carotenoic acid, ethyl ester, *beta*-apo-8'-	
160a(ii)	Carotenes, *beta*-,vegetable	600 mg/kg
160b(ii)	Annatto extracts – norbixin-based	25 mg/kg
Preservatives		
1105	Lysozyme	Limited by GMP
200	Sorbic acid	1 000 mg/kg based on sorbic acid. Surface treatment only *
202	Potassium sorbate	
203	Calcium sorbate	
234	Nisin	12.5 mg/kg
235	Natamycin (pimaricin)	2 mg/dm^{2}Not present at a depth of 5 mm. Surface treatment only *
251	Sodium nitrate	35 mg/kg singly or in combination (expressed as nitrate ion)
252	Potassium nitrate	
280	Propionic acid	3 000 mg/kg surface treatment only *
281	Sodium propionate	
282	Potassium propionate	
Acidity regulators		

170(i)	Calcium carbonate	Limited by GMP
504 (i)	Magnesium carbonate	Limited by GMP
575	Glucono delta-lactone	Limited by GMP
Anticaking agents		
460(i)	Microcrystalline cellulose (Cellulose gel)	Limited by GMP
460(ii)	Powdered cellulose	Limited by GMP
551	Silicon dioxide, amorphous	10 000 mg/kg singly or in combination, silicates calculated as silicon dioxide
552	Calcium silicate	
553(i)	Magnesium silicate, synthetic	
553(iii)	Talc	

6 Hygiene

6.1 It is recommended that the products covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of the *General Principles of Food Hygiene* (KS EAS 39), the *Code of Hygienic Practice for Milk and Milk Products* (KS 1552) and other relevant texts such as Codes of Hygienic Practice and Codes of Practice. The products should comply with any microbiological criteria established in accordance with the *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* (KS CXG 21-1997).

6.2 The products shall comply with microbiological criteria established in accordance with Table 4 when tested in accordance with the test methods prescribed therein.

S/N	Quality	Requirement ,	Test method
i)	Total coliforms ,CFU/g, max	100	KS ISO 4832
ii)	*Listeria monocytogenes, CFU/25g*	Absent	KS ISO 11290-2
iii)	*Salmonella spp.CFU/25g*	Absent	KS ISO 6785
iv)	*Staphylococcus aureus, CFU/g*	Absent	KS ISO 6888-1
v)	*Escherichia coli*, cfu/g	Absent	KS ISO 7251
	Yeast and moulds, CFU/g, max	10	KS ISO 6611

7 Contaminants

The products covered by this standard shall comply with the maximum levels for contaminants that are specified for the product in the General Standard for Contaminants and Toxins in Food and Feed (CXS 193-1995).

7.1 Heavy metals

When tested in accordance with AOAC 999.10, the level of lead (Pb) shall not exceed 0.02 mg/kg.

7.2 Pesticide residues

All cheeses shall conform to maximum limits residues set by Codex Alimentarius Commission.

7.3 Mycotoxin residues

When tested in accordance with ISO 14501 the level of Aflatoxin M1 shall not exceed 0.50 µg/kg.

7.4 Veterinary drugs residues

Cheeses shall conform to maximum tolerable residue limits for antibiotics and other veterinary drugs set by Codex Alimentarius Commission.

8 Packaging

Cheddar cheese shall be packed in food grade material that ensures product safety and integrity.

9 Labelling

In addition to the provisions of the General Standard for the Labelling of Prepackaged Foods (KS EAS 38) and the General Standard for the Use of Dairy Terms (KS CXS 206-1999), the following specific provisions apply

9.1 Name of the food

The name cheddar may be applied in accordance with KS EAS 38, provided that the product is in compliance 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 KS 28-1 shall apply.

The designation of products in which the fat content is below or above the reference range but above the absolute minimum specified in 4.3 of this standard shall be accompanied by an appropriate qualification describing the modification made or the fat content expressed as percentage by mass, 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 KS 28-1 or nutritional claim in accordance with the *Guidelines for Use of Nutritional and Health Claims* (KS EAS 805).

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

[1)]For instance, repackaging, cutting, slicing, shredding and grating are not regarded as substantial transformation.

the country in which the transformation is performed shall be considered to be the country of origin for the purpose of labelling.

9.3 Declaration of milk fat content

The milk fat content shall be declared in a manner found acceptable in the country of sale to the final consumer, 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.

9.4 Country of manufacture (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[1)] in a second country,

9.5 The name and address of the manufacturer, packer, distributor, importer, exporter or vendor of the food shall be declared.

9.6 Net contents

The net contents shall be declared by weight in either the metric ("Système International" units) or as required by the country in which the product is sold.

9.7 List of Ingredients

A complete list of ingredients shall be declared on the label in descending order of proportion.

9.8 storage instructions or conditions for use

9. 9 date of manufacture

9.10 Expiry date;

9.11 batch code/number

9.12 lot identification

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.

10 Methods of sampling and analysis

10.1 Sampling shall be carried out in accordance with the latest version of KS ISO 707"Milk and Milk products - Guidance on sampling" and in KS ISO 55381IDF 113: Milk and milk products - Sampling - Inspection by attributes.

10.2 Analysis for cheese shall be carried out in accordance with the standards listed in Clause 2 of this standard.

Annex A
(informative)

Information on usual patterns of manufacturing cheddar

The information below is intended for voluntary application by commercial partners and not for application by governments.

A.1 Method of manufacture

A.1.1 Starter cultures consist of non-gas forming lactic acid producing bacteria.

A.1.2 After coagulation, the curd is cut and heated in its whey to a temperature above the coagulation temperature. The curd is separated from the whey and stirred or cheddared. In traditional manufacture the curd is cut into blocks which are turned and progressively piled, keeping the curd warm, which results in the curd becoming compressed, smooth and elastic. After cheddaring the curd is milled. When the desired acidity is reached the curd is salted. The curd and salt are then mixed and moulded. Other processing techniques, which give end products with the same physical, chemical and organoleptic characteristics, may be applied.