

Cheese — Specification

Part 3: Gouda

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Egerton University — Department of Dairy and Food Science Technology
Kenya Industrial Research and Development Institute (KIRDI)
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Cheese — Specification

Part 3: Gouda

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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.

There are various types of cheese that are produced and marketed worldwide. This Part 3 of this Kenya Standard specifies the requirements for the type of semi-hard cheese being marketed in Kenya as Gouda cheese.

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

standard for Gouda cheese, CXS 266-1966

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

Cheese — Specification

Part 3: Gouda

1 Scope

This Kenya Standard specifies the requirements, sampling and methods of test for gouda 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 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

Gouda is a ripened semi-hard cheese in conformity with the *General Standard for Cheese* (KS 28-1). The body has a near white or ivory through to yellow colour and a firm textured (when pressed by thumb) texture, suitable for cutting, with few to plentiful, more or less round pin's head to pea sized (or mostly up to 10 mm in diameter) gas holes, distributed in a reasonable regular manner throughout the interior of the cheese, but few openings and splits are acceptable. The shape is of a flattened cylinder with convex sides, a flat block, or a loaf. The cheese is manufactured and sold with a dry rind, which may be coated. Gouda of flat block or loaf shape is also sold without rind.

For Gouda ready for consumption, the ripening procedure to develop flavour and body characteristics is normally from 3 weeks at 10–17°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. Gouda intended for further processing and Gouda of low weights (< 2.5 kg) need not exhibit the same degree 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 relevant Kenya Standards.

4.2 Permitted ingredients

The following ingredients shall be permitted in gouda cheese:

- a) Starter cultures of harmless lactic acid and/ or flavour producing bacteria and cultures of other harmless micro-organisms;

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- b) Rennet or other safe and suitable coagulating enzymes;
- c) Sodium chloride; and potassium chloride as a salt substitute complying with KS 229;
- e) Potable water complying with KS EAS 153;
- f) Safe and suitable enzymes to enhance the ripening process;
- g) Safe and suitable processing aids; and
- h) Rice, corn and potato flours and starches: Notwithstanding the provisions in 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 in Table 5.

4.3 Compositional requirements

Gouda cheese shall have compositional requirements given in Table 1.

Table 1 — Compositional requirements for gouda cheese

SL No	Milk constituent	Requirement		Test method
		Minimum content (m/m)	Maximum content (m/m)	
i)	Milk fat in dry matter	30 %	Not restricted	Reference level (m/m) 48% to 55%
ii)	Dry matter	Depending on the fat in dry matter content, according to the table below.		KS ISO 5534
		Fat in dry matter content (m/m)	Corresponding minimum dry matter content (m/m)	
		Equal to or above 30 % but less than 40%	48%	
		Equal to or above 40 % but less than 48%	52%	
		Equal to or above 48 % but less than 60%	55%	
		Equal to or above 60 %	62%	
iii)	Salt % max.	3 %		KS ISO 5943

Gouda cheese with between 40 % and 48 % FDM and with a weight of less than 2.5 kg can be sold with a DM content of minimum 50 % and moisture content of max. 45% provided that the name is qualified by the term “Baby Gouda”.

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 Table 3 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 Table 4 may be used and only within the functions and limits specified.

Table 3 — Food additives for gouda cheese

Additive functional class	Justified use	
	Cheese	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.

INS no.	Name of additive	Maximum level
Colours		
160a(i)	Carotene, <i>beta</i> -, Synthetic	35 mg/kg singly or in combination
160a(iii)	Carotene, <i>beta</i> -, <i>Blakeslea trispora</i>	
160e	Carotenal, <i>beta</i> -apo-8'-	
160f	Carotenoic acid, ethyl ester, <i>beta</i> -apo-8'-	
160a(ii)	Carotenes, <i>beta</i> -,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	

* For the definition of cheese surface and rind see Appendix to the general Standard for Cheese (KS 28-1)

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.

Table 4 — Microbiological requirements for Gouda cheese

S/N	Quality	Requirement	Test method
i)	Total coliforms ,CFU/g, max	100	KS ISO 4832
ii)	<i>Listeria monocytogenes</i> , CFU/25g	Absent	KS ISO 11290-2
iii)	<i>Salmonella spp.</i> CFU/25g	Absent	KS ISO 6785
iv)	<i>Staphylococcus aureus</i> , CFU/g	Absent	KS ISO 6888-1
v)	<i>Escherichia coli</i> , cfu/g	Absent	KS ISO 7251
	<i>Yeast and moulds</i> , 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 or KS ISO/TS 6733, 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

gouda 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 Gouda may be applied in accordance with KS EAS 38, provided that the product is in conformity with this standard. Where customary in the country of retail sale, alternative spelling may be used.

The name Gouda may be applied in accordance with the General Standard for the Labelling of Prepackaged Foods (KS EAS 38), 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 the general Standard for Cheese (KS 28-1) apply.

The designation of products in which the fat content is below or above the reference range but above the absolute minimum specified in section 3.3 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 the general Standard for Cheese (KS 28-1) or a nutritional claim in accordance with the Guidelines for Use of Nutrition 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.

9.2 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 transformation³ 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.

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

9.5 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.

9.6 List of Ingredients

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

9.7 storage instructions or conditions for use

9.8 date of manufacture

9.9 Expiry date;

9.10 batch code/number

9.11 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 55381: Milk and milk products - Sampling - Inspection by attributes.

10.2 Analysis for cheese shall be carried out in accordance to appropriate standard methods declared in this standard. Other test may be performed as per the methods given in the latest AOAC/ Codex/ ISO and other internationally recognized methods

³⁾ For instance, repackaging, cutting, slicing, shredding and grating is not regarded as substantial transformation.

Annex A (informative)

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.

1. Appearance characteristics

Gouda cheese is normally manufactured with weights ranging from 2.5 kg to 30 kg. Lower weights are normally qualified by the term “Baby”.

2. Method of Manufacture

Salting method: Salted in brine

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