

**Cheese — Specification**

Part 3:

**Gouda**

**TECHNICAL COMMITTEE REPRESENTATION**

The following organizations were represented on the Technical Committee:

Kenya Dairy Board  
Ministry Of Health — Public Health Department  
Ministry of Agriculture, Livestock and Fisheries — State Department of Livestock  
Government Chemist's Department  
Egerton University — Department of Dairy and Food Science Technology  
Kenya Industrial Research and Development Institute (KIRDI)  
Consumer Information Network  
Sameer Agriculture and Livestock (K) Limited  
New Kenya Cooperative Creameries (NKCC)  
Brookside Dairy Limited  
Eldoville Dairies Limited  
Githunguri Dairy Bio Food Products Limited  
Happy Cow Limited  
Kenya Bureau of Standards — Secretariat

**REVISION OF KENYA STANDARDS**

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.

©Kenya Bureau of Standards, 2014

*Copyright. Users are reminded that by virtue of Section 25 of the Copyright Act, Cap. 12 of 2001 of the Laws of Kenya, copyright subsists in all Kenya Standards and except as provided under Section 26 of this Act, no Kenya Standard produced by Kenya Bureau of Standards may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from the Managing Director.*

# **Cheese — Specification**

Part 3:

**Gouda**

## **KENYA BUREAU OF STANDARDS (KEBS)**

**Head Office:** P.O. Box 54974, Nairobi-00200, Tel.: (+254 020) 605490, 602350, Fax: (+254 020) 604031  
E-Mail: [info@kebs.org](mailto:info@kebs.org), Web:<http://www.kebs.org>

### **Coast Region**

P.O. Box 99376, Mombasa-80100  
Tel.: (+254 041) 229563, 230939/40  
Fax: (+254 041) 229448

### **Lake Region**

P.O. Box 2949, Kisumu-40100  
Tel.: (+254 057) 23549, 22396  
Fax: (+254 057) 21814

### **Rift Valley Region**

P.O. Box 2138, Nakuru-20100  
Tel.: (+254 051) 210553, 210555

### **Foreword**

## **DKS 28-3: 2014**

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 a very nutritious food, 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.

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.

PUBLIC REVIEW DRAFT

## Cheese — Specification

### Part 3:

## Gouda

### 1 Scope

This Kenya standard prescribes the requirements for Gouda cheese for direct human consumption or for further processing.

### 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 CODEX STAN 206, General standard for the use of dairy terms*

*KS CAC/GL 21, Principles for the establishment and application of microbiological criteria for foods*

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

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

*KS ISO 1854, Whey cheese — Determination of fat content — Gravimetric method (Reference method)*

*KS ISO 3433, Cheese — Determination of fat content — Van Gulik method*

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

*KS 28-1: Cheese — Specification — Part 1: General requirements*

*KS EAS 38, Labelling of prepackaged foods*

*KS 660, Guide to the safe use food additives*

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

*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*

*CAC/MRL 2 Maximum Residue Limits for Veterinary Drugs in Food*

*AOAC 942.17, Arsenic in foods Molybdenum blue method*

*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*

## 3 Product description

Gouda is a ripened semi-hard cheese. The body has a near white or ivory through to yellow colour and a firm texture (when pressed by thumb), sliceable, with few to plentiful, more or less round pin's head to pea sized (mostly up to 10 mm in diameter) gas holes, distributed in a 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 or without a rind, which may be coated.

For Gouda ready for consumption, the ripening procedure to develop flavour and body characteristics is normally from 3 weeks at 10 °C -20 °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

Cow milk and products obtained from cow 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 complying with KS CODEX STAN 150;
- d) Sodium and potassium nitrate, maximum 50 mg/kg of cheese.
- e) calcium chloride, maximum 200 mg/kg of the milk used;
- f) Annatto and beta carotene, singly or in combination, maximum 600 mg/kg of cheese; and
- g) Potable water complying with KS EAS 12
- h) Safe and suitable enzymes to enhance the ripening process;
- i) Safe and suitable processing aids;
- j) 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 5.

### 4.3 Composition

Table 1 — Compositional requirements for Gouda cheese

S/N	Milk constituent:	Requirements:		Test Method
		Minimum content (m/m):	Maximum content (m/m):	
i	Milk fat in dry matter:	30 %	Not restricted	KS ISO 1735 or KS ISO 3433
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	Moisture content, per cent (maximum)		48 %	KS ISO 5534

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

## 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 4 below.

Table 2 — Microbiological requirements for Gouda cheese

S/N	Quality	Requirements	Test method
	<i>Listeria monocytogenes</i> <i>max,</i>	<i>Nil per gram</i>	<i>KS ISO 4833</i>
	<i>Salmonella</i> spp	<i>Nil per gram</i>	<i>KS ISO 4833</i>
	<i>Shigella</i>	<i>Nil per gram</i>	<i>KS ISO 4833</i> <i>KS ISO 21567</i>
	<i>Clostridium botulinum</i>	<i>Nil per gram</i>	<i>KS ISO 4833</i>
	<i>Staphylococcus aureus</i>	<i>Nil per gram</i>	<i>KS ISO 4833</i>
	<i>E.coli</i>	<i>Nil per gram</i>	<i>KS ISO 4833</i>

## DKS 28-3: 2014

	<i>Faecal coliforms:, max</i>	<i>Nil per gram</i>	<i>KS ISO 4832</i>
	<i>Non-faecal coliforms, max</i>	<i>10 per gram</i>	<i>KS ISO 4832</i>
	<i>Mould, max</i>	<i>100 per gram</i>	<i>KS ISO 6611</i>
	<i>Yeast, max</i>	<i>100 per gram</i>	<i>KS ISO 6611</i>

## 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:	X <sup>1</sup>	-
Bleaching agents:	-	-
Acids:	-	-
Acidity regulators:	X	-
Stabilizers:	-	-
Thickeners:	-	-
Emulsifiers:	-	-
Antioxidants:	-	-
Preservatives:	X	X
Foaming agents:	-	-
Anti-caking agents:	-	X <sup>2</sup>

<sup>1</sup> Only to obtain the colour characteristics, as described in Clause 3.

<sup>2</sup> 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	
160 a)ii)	Carotenes, vegetable	
<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	3 000 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	10 000 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	

## 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 Table5

## DKS 28-3: 2014

Table 5 — Limits for heavy metal contaminants for Gouda cheese

SL No	Characteristic	MRL (Max.)	Test method
i).	Arsenic (AS) mg/kg	0.1 ppm	AOAC 942.17
ii).	Lead (PH) mg/kg	0.02 ppm	AOAC 999.10
iii).	Mercury (Hg) mg/kg	1.0 ppm	AOAC 999.10
iv).	Copper (Cu) mg/kg	5.0 ppm	AOAC 999.10
v).	Zinc (Zn) mg/kg	50 ppm	AOAC 999.10
vi).	Tin (Sn)mg/kg	250 ppm	AOAC 999.10
vii).	Cadmium as Cd, mg/kg	1.5 ppm	AOAC 999.10
viii).	Iron	0.5 ppm	AOAC 999.10

### 7.2 Pesticide residues

Gouda cheese shall have the maximum residue limits in table 6

Table 6 - maximum pesticide residue Limits for Gouda cheese

S/N	Parameter	Requirements	Test method
<i>i</i>	ORGANOCHLORINE Group	0.01 ppm	KS ISO 3890-2:2009
<i>ii</i>	ORGANIOPHOSPHOROUS Group	0.01 ppm	KS ISO 3890-2:2009

The products covered by the provisions of this standard shall comply with those maximum residue limits established by the Codex Alimentarius Commission.

### 7.3 Mycotoxin residues

Gouda cheeses shall not have more than have 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 Antibiotics

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

## 7.5 Veterinary Drugs

Table 7- maximum veterinary drug residue Limits for Gouda 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

## 8 Labelling

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

### 8.1 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.

### 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<sup>3)</sup> 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 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.

### 8.4 Date marking:

Date of manufacture and expiry

---

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

## **DKS 28-3: 2014**

### **8.5 Name and address of manufacturer**

### **8.6 Storage conditions**

### **8.7 Labelling of non-retail containers**

Information specified in Clause 8 of this standard and KS EAS 38 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**

The methods of sampling and analysis shall be those provided in the normative references listed in Clause 2 of this standard.

## **Annex A** (Informative)

### **Information on usual patterns of manufacturing Gouda**

The following information is intended for voluntary application by commercial partners and not for application by governments:

#### **A.1 Appearance characteristics**

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

#### **A.2 Method of salting**

Salted in brine

#### **A.3 Method of coagulation**

Rennet or other suitable coagulating enzyme

#### **A.4 Heat treatment**

The curd is heated with or without the aid of warm water

#### **A.5 Fermentation procedure**

Majorly lactic acid

#### **A.6 Maturation procedure**

Maturation during storage at a temperature preferably 10 °C to 20 °C

PUBLIC REVIEW DRAFT