

**Cheese — Specification**

Part 4:

**Tilsiter/ Tilster**

## **KS 28-4: 2009**

### **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

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# **Cheese — Specification**

Part 4:

**Tilsiter**

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## **KS 28-4: 2009**

### **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 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 Part 4 of this Kenya Standard specifies the requirements for the type of semi-hard cheese being marketed in Kenya as tilsiter cheese.

PUBLIC REVIEW DRAFT

## Cheese — Specification

Part 4:

### Tilsiter cheese

#### 1 Scope

The Kenya Standard prescribes the requirements for tilsiter cheese for direct human consumption or for further processing.

#### 2 Normative references

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

KS 28-1:2009, Cheese — Specification — Part 1: General requirements

KS EAS 69, Pasteurized milk- Specification

CODEX STAN 193, General standards for contaminant and toxins in foods

KS ISO 2920, Whey cheese — Determination of dry matter (Reference method)

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

KS CODEX STAN 193, Codex general standard for contaminants and toxins in foods

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

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

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

KS 28-1:2009, Cheese — Specification — Part 1: General requirements

KS EAS 38, Labelling of prepackaged foods

KS ISO 14501:2007 Milk and milk powder - Determination of aflatoxin M1 content - Clean-up by immunoaffinity chromatography and determination by high-performance liquid chromatography

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

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

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

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

Tilsiter is a ripened firm/semi-hard cheese. The body has a near white or ivory through to light yellow or yellow colour and when sampled a firm-textured (when pressed by thumb) texture suitable for cutting, with irregularly shaped, shiny and evenly distributed gas holes. The cheese is manufactured and sold with or without<sup>1)</sup> a well-dried smear-developed rind, which may be coated.

For Tilsiter ready for consumption, the ripening procedure to develop flavour and body characteristics is normally from 3 weeks at 10 °C -16 °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. Tilsiter intended for further processing 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 their mixtures, and products obtained from these milks.

#### 4.2 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
- 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 5.

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<sup>1)</sup> 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 KS 28-1:2009.

### 4.3 Composition

Table 1

Milk constituent:	Minimum content (m/m):	Maximum content (m/m):	Reference level (m/m):	Test Method
Milk fat in dry matter:	30 %	Not restricted		KS ISO 1735
Dry matter:	Depending on the fat in dry matter content, according to the table below.			KS ISO 5534 or KS ISO 3433
	Fat in dry matter content (m/m):		Corresponding minimum dry matter content (m/m):	
	Equal to or above 30 % but less than 40 %:		49 %	
	Equal to or above 40 % but less than 45 %:		53 %	
	Equal to or above 45 % but less than 50 %:		55 %	
	Equal to or above 50 % but less than 60 %:		57 %	
	Equal to or above 60 % but less than 85 %:		61 %	

Compositional modifications beyond the minima and maxima specified above for milk fat and dry matter are not considered to be in compliance with KS CODEX STAN 206.

## 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 Tilsiter cheese**

S/N	Quality	Requirements	Test method
	Total plate count /g	$2 \times 10^4$ cfu per gram	KS ISO 4833
	Listeria monocytogenes max,	Nil per gram	KS ISO 4833
	Salmonella spp	Nil per gram	KS ISO 4833
	Shigella	Nil per gram	KS ISO 4833 KS ISO 21567
	Clostridium botulinum	Nil per gram	KS ISO 4833
	Staphylococcus aureus	Nil per gram	KS ISO 4833
	E.coli	Nil per gram	KS ISO 4833
	Faecal coliforms:, max	Nil per gram	KS ISO 4832
	Non-faecal coliforms, max	10 cfu per gram	KS ISO 4832

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	<i>Mould, max</i>	<i>100 cfu 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:	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.		

## 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 below;

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

SL No	Characteristic	MRL (Max.)	Test method
i).	Arsenic (AS) mg/kg	0.1 ppm	AOAC 942.17

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ii).	Lead (Pb) 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

Tilsiter cheese shall have the maximum residue limits in table 6

Table 6 - maximum pesticide residue Limits for Tilsiter 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

Tilsiter 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 Total Antibiotic residue

Tilsiter cheeses 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

Table7 — Limits for veterinary drug residues for Tilsiter cheese

S/N	Parameter	Requirements/ MRL	Test method
<i>i</i>	ChloramPhenical	ND	AOAC 972.17
<i>ii</i>	Nitrofunas(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

## 8 PACKAGING AND LABELLING

### 8.1 Packaging

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

### 8.2 Labelling

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

#### 8.2.1 Name of the food

The name tilsiter 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 28-1:2009 apply.

The designation of products in which the fat content is below or above the reference range but above the absolute minimum specified in 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 KS 28-1:2014

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

#### 8.2.2 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>2)</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.

#### 8.2.3 Declaration of milk fat 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.

#### 8.2.4 Date marking:

- i) Date of manufacture

<sup>2)</sup> For instance, repackaging, cutting, slicing, shredding and grating is not regarded as substantial transformation.

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- ii) Expiry date;
- ii) Storage instructions and / or conditions

8.2.5 Name and address of manufacturer

8.2.6 Net weight content

8.2.7 Brand name of the product

8.2.8 Batch or code number

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

Information specified in Clause 8.2 of this standard and provisions of 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**

Sampling shall be carried out in accordance with KS ISO 707.

### **10 Methods of chemical analysis**

Chemical analysis for cheese shall be carried out in accordance with the normative standards listed in Clause 2 of this standard.

### **11 Methods for microbiological examination**

These shall be according to relevant method of microbiological examination of milk and milk products.