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DRAFT EAST AFRICAN STANDARD

Fermented (cultured) milk — Specification

EAST AFRICAN COMMUNITY

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Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 017, *Milk and milk products.*

Attention is drawn to the possibility that some of the elements of this document may be subject of patent rights. EAC shall not be held responsible for identifying any or all such patent rights.

Fermented (cultured) milk — Specification

1 Scope

This Draft East African Standard specifies the requirements, sampling and test methods for fermented (cultured) milk for human consumption.

This Standard does not apply to yoghurt covered in EAS 33.

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 999.11*, Official Method, Lead, Cadmium, Copper, Iron, and Zinc in Foods — Atomic Absorption Spectrophotometry after Dry Ashing*

CAC/RCP 1, *General principles of food hygiene — Code of practice*

CAC/RCP 57, *Code of hygienic practice for milk and milk products*

CODEX STAN 192, *General standard for food additives*

EAS 38, *Labelling of pre-packaged foods — General requirements*

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*

ISO 14501, *Milk and milk powder — Determination of aflatoxin M1 content — Clean-up by immunoaffinity chromatography and determination by high-performance liquid chromatography*

ISO 4832, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coliforms — Colony-count technique*

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

ISO 6731, *Milk, cream and evaporated milk — Determination of total solids content (Reference method)*

ISO 6888-1, *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*

ISO 707, *Milk and milk products — Methods of sampling*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
fermented milk
milk prepared from one or combination of the following; whole milk, partially or skimmed milk, concentrated milk, reconstituted milk, buttermilk which are pasteurised or sterilized and fermented by means of specific micro- organisms resulting in reduction of pH. Those microorganisms which be viable, active and abundant in the finished products at the time of sale for consumption. If the product is heat treated after fermentation the requirement for viable microorganisms does not apply

3.2
plain fermented milk
plain milk which has been fermented by addition of lactic acid cultures

3.3
flavoured fermented milk
fermented milk into which permitted flavours, sweeteners, food colours have been added

3.4
stirred fermented milk
plain or flavoured fermented milk whose coagulum has been broken through stirring or agitation process to obtain a free flowing product

3.5
set fermented milk
plain or flavoured fermented milk whose coagulum has not undergone any stirring or agitation process

4 Categories of fermented milk

The categories based on fat contet shall be as follows:

a) fermented whole milk;

b) fermented fat free milk;

c) fermented fat free milk; and

d) fermented high fat milk.

5 Requirements

5.1 Raw materials

Whole milk, partially skimmed milk or skimmed milk, concentrated milk, buttermilk, reconstituted milk, cream or their mixtures shall be used.

4.2 Essential ingredients

4.2.1 Starter cultures

Specific starter cultures of harmless micro-organisms shall be used. Other harmless microorganisms than those constituting the specific culture(s) may be added. Table 1 below shows the starter culture used in the making of fermented milk products with their corresponding fermentation products levels.

Table1 — Designation, starter cultures and elements of fermentation

Designation	Culture	Titratable acidity, expressed as % lactic acid (% m/m), min.	Ethanol (% vol/w), min.
(i) Fermented milk	The following can be used to manufacture fermented milk separately or in composition: *Streptococcus lactis,* *Streptococcus diacetylactis,* *Streptococcus cremoris,* *Leuconostoc citravocum,* *Leuconostoc dextranicum,* *Streptococcus thermophilus.*	0.3	-
(ii)Cultured buttermilk	*Streptococcus lactis,* *Streptococcus diacetolactis,* *Streptococcus cremoris,* *Leuconostoc citrovacum* *Leuconostoc dextranicum*	0.6	-
(iii) Acidophilus milk	*Lactobacillus acidophilus*	0.6	-
(iv) Kefir	Starter culture prepared from kefir grains, Lactobacillus kefiri, species of the genera Leuconostoc, Lactococcus and Acetobacter growing in a strong specific relationship. Kefir grains constitute both lactose fermenting yeasts (Kluyveromyces marxianus) and non-lactose-fermenting yeasts (Saccharomyces unisporus, Saccharomyces cerevisiae and Saccharomyces exiguus).	0.6	-
(v) Kumys	Lactobacillus delbrueckii subsp. Bulgaricus and kluvyeromyces marxianus	0.7	0.5

4.3 Optional ingredients

The amount of optional ingredients shall not exceed 30 % per weight of the final product. They shall comply with relevant standards.

4.3.1 Food additives

Permitted additives complying with CODEX STAN 192 may be used.

4.3.2 Sugars

The following carbohydrate sweetening agents like sucrose, dextrose, fructose, hydrolized lactose shall be used.

4.3.3 Flavouring foods

The following flavouring foods may be added: edible fruits and Vegetables puree or pulp, chocolate and honey

4.3.4 Preservatives

Specific preservatives may be applied in accordance with Codex Stan 243.

4.4 General requirements

Cultured milk shall:

a) be free from off flavours and off odours such as metallic and yeast flavour; and

b) have the characteristic texture and taste of the type of cultured milk.

4.5 Specific requirements

Fermented milk shall comply with the specifc requirements in Table 2 when tested in accordance with test methods specified therein.

Table 2 — Specific requirements of fermented milk

S/N	Characteristic	Requirement				Test method
		Fermented whole milk	Fermented low fat milk	Fermented fat free milk	Fermented high fat milk	
i.	Milk fat content, %, m/m	3.25 - 4.5	0.5 - 2.70	< 0.5	4.6 - 15	ISO 2446
ii.	Milk solids non-fat, %, m/m, min.	8.5	8.5	8.5	8.5	ISO 6731
iii.	pH	4.2 - 4.6	4.2 - 4.6	4.2 - 4.6	4.2 - 4.6	Annex A
iv.	Sum of microorganisms constituting the starter culture, CFU/g in total[a]	10^7	10^7	10^7	10^7	ISO 7889
v.	Labelled microorganisms CFU/g in total[b]	10^6	10^6	10^6	10^6	

[a] The requirement on sum of microorganisms and labelled microorganisms do not apply for heat treated fermented milk

[b] applies where a content claim is made in the labelling that refers to the presence of a specific microorganism (other than those specified in table 1 for the product concerned) that has been added as a supplement to the specific starter culture. This parameter does not apply to Kumys and Kefir

7 Body and texture of fermented milk

The set or stirred (plain or flavoured) fermented milk products specified under this standard should have the characteristic state and flavour when tested with the relevant standards or methods of sensory analysis of foods. Both products should not whey off.

8 Microbiological limits

Fermented milk shall not exceed microbiological limits in Table 3, when tested in accordance with test methods specified therein.

Table3 — Microbiological limits

Microorganisms	Maximum limits	Test method
Coliforms cfu/g	< 10	ISO 4832

Escherichia coli /g	Absent	ISO 7251
Salmonella spp / 25g	Absent	ISO 6579-1
Listeria monocytogenes / 25g	Absent	ISO 11290-2
Staphylococcus aureus cfu /g	10^2	ISO 6888-1
Yeasts and moulds (cfu/g)	10^2	ISO 6611

9 Hygiene

The products covered by the provision of this standard shall be prepared in accordance with CAC/RCP 57 and CAC/RCP 1.

10 Contaminants

10.1 Pesticides residues

Fermented milk shall comply with the maximum limits of pesticide residues as specified in Codex Alimentarius Commission.

10.2 Veterinary drugs residues

When analyzed in accordance with appropriate methods of test milk shall conform to the maximum tolerable residue limits for antibiotics and other veterinary drugs set by the Codex Alimentarius Commission.

10.3 Heavy metals

The level of Lead (Pb) shall not exceed 0.02 mg/kg when tested in accordance AOAC 999.11.

10.4 Aflatoxins

When tested in accordance with ISO 14501, the level of Aflatoxin M1 shall not exceed 0.5 µg/kg.

11 Packaging

The products shall be packaged in food grade containers made of suitable material and shall be well sealed in order to prevent contamination of the contents during storage and transportation.

12 Labelling

In addition to the labelling requirements stipulated in EAS 38, the following should also be legibly and indelibly declared:

a) name of the product as “fermented milk**”;**

b) category as “whole fermented milk or low fat fermented milk or fat free fermented milk or high fat fermented milk;

c) body an texture (set or stirred)

d) ingredients, essential or optional in descending order of proportion;

e) the expiration date or sell by date of the product;

f) storage recommendation (between 4 °C and 7 °C);

g) fat content;

h) batch number;

i) manufacture date;

j) instructions for use;

k) a product shall be indicated whether plain or flavoured fermented (cultured) milk; and

l) net content in metric unit.

13 Sampling

Sampling of fermented milk shall be done in accordance with ISO 707.

Annex A
(normative)

Determination of pH

A.1 General

The pH value or hydrogen ion concentration gives a measure of the true acidity of fermented milk. The relationship between pH and acidity of yoghurt is only approximate. In fermented milk the pH ranges from 4.2 to 4.6. The value is reduced by the development of acidity. The pH of fermented milk may be determined rapidly by using the indicator strips.

A.2 Indicator strips

Indicator paper strips or discs are made by soaking strips of absorbent paper in a suitable indicator and drying them.

A rough estimate of pH is obtained by dipping a strip of the prepared paper in yoghurt and observing the colour. Bromocresol purple (pH range 4 to 7, colour changes from yellow to purple) and bromothymol blue (pH range 4 to 7, colour changes from straw yellow to bluish-green) are commonly used as indicators. Both narrow and wide range ready-made indicator papers are available over the pH range 2.0 to 10.5.

Indicator paper strips shall always be kept in closed containers and under dry conditions.

A.3 pH meter

The pH meter may be used to determine pH in yoghurt

A.4 Interpretation

On an average, yoghurt gives a pH of 4.6. Fermented milk of pH over 4.6 should be regarded with suspicion as indication of poor fermentation as a result of starter culture inhibition. pH below 4.2 is as a result of over fermentation.

