Pasteurized camel milk — Specification
TECHNICAL COMMITTEE REPRESENTATION

The following organizations were represented on the Technical Committee:

- Kenya Dairy Board
- Ministry of Health — Food Safety Unit
- Directorate of Livestock Production
- Directorate of Veterinary Services
- Egerton University — Department of Dairy and Food Science Technology
- Government Chemist's Division
- National Public Health Labs service
- Kenya Industrial Research and Development Institute (KIRDI)
- Consumer Information Network
- New Kenya Creameries Cooperative (NKCC)
- Brookside Dairy Ltd.
- Eldoville Dairies Limited
- Githunguri Dairy
- Happy Cow Ltd
- Sameer Agriculture and Livestock (K) Limited
- KIBIDAV Ltd (TOGGS)
- Kenya Camel Association (KCA)
- Regional Pastoral livelihood resilience Project
- Agricultural sector Development Support programme (ASDSP)
- University of Nairobi
- 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.

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Pasteurized camel milk — Specification
Foreword
This standard was prepared by the Milk and Milk Products Technical Committee under the guidance of the Standards Project Committee and in accordance with the procedures of Kenya Bureau of Standards.

The dairy cattle sub-sector contributes to 4% of National Gross Domestic Product (GDP). However the contribution of dairy camel sub-sector is not reflected in the National economic report. This is due to lack of market competitiveness in the dairy camel sector. In Kenya, the estimated camel population is about 3 million, with annual camel milk production of 940 thousand tonnes (940 million litres) in 2013; indicating that dairy camel sub-sector offers a huge potential for improving the livelihoods of communities living in Arid and Semi-Arid Lands (ASAL). Various agencies have made efforts to improve the market competitiveness of dairy camel sub-sector through development of camel milk standards.

The standard for pasteurized camel milk were first developed in 2006 and adapted in 2007. Currently there is new scientific data and evidence on quality and safety of camel milk; hence the need to review the existing raw whole camel milk standard (KS 2016:2007) and pasteurized camel milk standard (KS 2062: 2007) to reflect the true situation in the camel milk sub-sector.

The standard addresses quality and safety requirements of raw whole camel milk; including Annexes on carrying out the rapid tests.

During the preparation of this standard reference was made to various documents and extensive consultation with stakeholders.

Acknowledgement is hereby made for the assistance derived from these sources.
Pasteurized camel milk — Specification

1 Scope

This Kenya Standard specifies requirements and methods of test and sampling for pasteurized liquid camel milk offered for sale and intended for human consumption.

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 EAS 38, Labelling of pre-packaged foods
AOAC 922.08, Determination of Hypochlorite and chloramins in milk- Colorimetric method
AOAC 942.17, Determination of Arsenic in foods- Molybdenum blue method
AOAC 947.05; Determination of Acidity of milk- trimetric method
AOAC 960.27, Determination of preservatives in milk
AOAC 962.16, Determination of Beta-lactam Antibiotics in milk
AOAC 980.21, Determination of Aflatoxin M1 in milk and cheese-thin layer chromatographic method
AOAC 999.10, Lead, Cadmium, Copper, Iron, and Zinc in foods, Atomic Absorption Spectrophotometry after dry ashing
KS CODEX STAN 193, Codex general standard for contaminants and toxins in foods
KS 1552; Code of hygienic practice for milk and milk products
KS ISO 2446, Milk — Determination of fat content (Routine method)
KS ISO 4831:2006; Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of coliforms - Most probable number technique
KS ISO 4832; 2006; Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of coliforms - Colony-count technique
KS ISO 4833-1: Microbiology of the food chain -- Horizontal method for the enumeration of microorganisms - Part 1: Colony count at 30 degrees C by the pour plate technique
KS ISO 5738:2004 (IDF 76:2004); Milk and milk products -- Determination of copper content -- Photometric method (Reference method)
KS ISO 5764, Milk - Determination of freezing point - Thermistor cryoscope method (Reference 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 6731, Milk, cream and evaporated milk - Determination of total solids content (reference method)
KS ISO 6732; Milk and milk products -- Determination of iron content -- Spectrometric method (Reference method)
KS ISO/TS 6733:2006 (IDF/RM 133:2006); Milk and milk products -- Determination of lead content -- Graphite furnace atomic absorption spectrometric method

3 Definitions

For the purposes of this standard, the following definitions shall apply:

3.1 raw camel liquid milk
shall be the whole clean and fresh secretion obtained by practically emptying the udder of a healthy camel but excluding that obtained during the first 7 days after calving and free from colostrum

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pasteurization
This is heat treatment process applied to raw milk with the objective of eliminating possible pathogenic micro-organisms and reducing spoilage microorganisms, with minimal chemical, physical and organoleptic changes in the milk.

3.3 Pasteurized camel milk
This is camel milk, which has been subjected to pasteurization

4 Pasteurization process
The recommended method of pasteurization shall be as follows:

4.1 Low Temperature Long Time (Batch) method
The temperature of raw milk shall be raised 63 °C and held at this temperature for 30 min and immediately cooled to 4°C or less.

4.2 High temperature short time method (HTST)
The temperature of milk shall be raised to 72 °C and held at this temperature for 15 s and immediately cooled to 4 °C or less.

5 Compositional requirements for pasteurized camel milk

5.1 When tested according to the test method given in KS 05-15, the freezing point depression of milk shall be not less than 0.518°C on the average, and not higher than 0.530 °C.

5.2 Milk shall not contain any preservatives or other added substances.

5.3 Pasteurised milk shall also comply with compositional requirements in Table 1.

Table 1—Compositional requirements for pasteurized camel milk

<table>
<thead>
<tr>
<th>Type</th>
<th>Characteristic</th>
<th>Limits</th>
<th>Test methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole milk</td>
<td>Milk fat, % min.</td>
<td>2.0%</td>
<td>KS ISO 2446</td>
</tr>
<tr>
<td></td>
<td>Solids not fat, % min.</td>
<td>6.0%</td>
<td>KS ISO 6731</td>
</tr>
<tr>
<td>Fat reduced milk</td>
<td>Milk fat, % min</td>
<td>1.0%</td>
<td>KS ISO 2446</td>
</tr>
<tr>
<td></td>
<td>Solids not fat, % min.</td>
<td>6.0%</td>
<td>KS ISO 6731</td>
</tr>
<tr>
<td>Fat free milk</td>
<td>Milk fat, % max.</td>
<td>0.5%</td>
<td>KS ISO 2446</td>
</tr>
<tr>
<td></td>
<td>Solids not fat, % min.</td>
<td>6.0%</td>
<td>KS ISO 6731</td>
</tr>
</tbody>
</table>

5.4 Density of milk
The density of milk measured at 20 °C shall be a range of 1.026 g/ml — 1.035 g/ml.

5.6 Pasteurized milk shall give a negative phosphatase test immediately after heat treatment when tested according to KS ISO 3356

6 Contaminants
Pasteurized camel milk 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).
6.1 Heavy metals

Heavy metal limits for pasteurized camel milk milk shall be as given in Table 4.

Table 2 — Limits for heavy metal contaminants Pasteurized camel milk

<table>
<thead>
<tr>
<th>SL No</th>
<th>Heavy metal</th>
<th>MRL (max.)</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>i)</td>
<td>Arsenic (AS)</td>
<td>0.1 mg/kg</td>
<td>AOAC 942.17</td>
</tr>
<tr>
<td>ii)</td>
<td>Lead (Pb)</td>
<td>0.02 mg/kg</td>
<td>KS ISO 6733</td>
</tr>
<tr>
<td>iii)</td>
<td>Mercury (Hg)</td>
<td>1.0 mg/kg</td>
<td>AOAC 999.10</td>
</tr>
<tr>
<td>iv)</td>
<td>Copper (Cu)</td>
<td>5.0 mg/kg</td>
<td>AOAC 960.40/KS ISO 5738</td>
</tr>
<tr>
<td>v)</td>
<td>Zinc (Zn)</td>
<td>50 mg/kg</td>
<td>AOAC 999.10</td>
</tr>
<tr>
<td>vi)</td>
<td>Tin (Sn)</td>
<td>250 mg/kg</td>
<td>AOAC 999.10</td>
</tr>
<tr>
<td>vii)</td>
<td>Cadmium as Cd,</td>
<td>1.5 mg/kg</td>
<td>AOAC 999.10</td>
</tr>
<tr>
<td>viii)</td>
<td>Iron (Fe),</td>
<td>0.5 mg/kg</td>
<td>KS ISO 6732</td>
</tr>
</tbody>
</table>

5.2 Mycotoxin residues

Pasteurized whole camel milk shall not have more than 0.015 ppb aflatoxin M1 content when tested according to KS ISO 14501 or AOAC 980.21.

5.3 Veterinary drug residues

Pasteurized camel milk shall comply with those maximum limits for veterinary drug residue limits established by the Codex Alimentarius Commission in; Codex general standard for contaminants and toxins in foods and feed (Codex Stan 193)

5.3.1 Antibiotic residues

Pasteurized camel milk shall not have more than 10.0 ppb beta lactam content of antibiotic residues as beta lactam content when tested according to AOAC 962.16 and when analyzed by the appropriate approved methods as given in the Food, Drugs and Chemical Substances Act, Cap. 254 of the Laws of Kenya and the CODEX guidance

5.4 Pesticide residues

Pasteurized camel milk shall conform to the maximum limits for pesticide residues, established by the Codex Alimentarius Commission for these products in Codex general standard for contaminants and toxins in foods and feed (Codex Stan 193)
DKS 2062: 2016

7 Hygiene

Pasteurized camel milk shall be handled in accordance with KS 1552:2016 and other relevant Kenya standards and regulations.

8 Microbiological Limits

Table 3—Microbiological limits

<table>
<thead>
<tr>
<th>Microorganism</th>
<th>Max. limit (CFU/ml)</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>TVC</td>
<td>30,000</td>
<td>KS ISO 4833</td>
</tr>
<tr>
<td>Total Coliform Count</td>
<td>10</td>
<td>KS ISO 4833 or 4832</td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>Nil</td>
<td>KS ISO 11866-2</td>
</tr>
<tr>
<td>Listeria monocytogenes</td>
<td>Nil</td>
<td>KS ISO 4833</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>Nil</td>
<td>KS ISO 6888-1</td>
</tr>
<tr>
<td>Salmonellae sp</td>
<td>Nil</td>
<td>KS ISO 6785</td>
</tr>
<tr>
<td>Mycobacterium tuberculosis complex</td>
<td>Nil</td>
<td>KS ISO 4833</td>
</tr>
<tr>
<td>Brucella spp.</td>
<td>Nil</td>
<td>KS ISO 4833</td>
</tr>
<tr>
<td>Yeast and Mould</td>
<td>Nil</td>
<td>KS ISO 6611</td>
</tr>
</tbody>
</table>

9 Weights and measures

The weight and measures of the pasteurized camel milk shall be in accordance with the Weight and Measures Act Cap 513

9.1 Fill of container

The milk shall occupy not less than 90% v/v of the container capacity. The water capacity of the container is the volume of distilled water at 20°C, which the sealed container will hold when completely filled.

10 Milk packaging

10.1 Packaging

The pasteurized liquid milk shall be packaged in food grade, sanitized and sealed containers.

10.2 Labelling

The containers shall be labelled in compliance with the requirements of EAS 38. In addition, the following particulars shall be legibly and indelibly labelled on the container:

i) the name of product “Pasteurized camel milk”;

ii) the category product based on of butterfat content in the milks specified in Table 1;

iii) net content, declared by volume in metric units;

iv) name and physical address of the manufacturer, packer, distributor, importer, exporter or vendor of the product shall be declared;
v) expiry date;
vi) Date of manufacture
vii) instructions of storage;
viii) Nutritional information

iii) Declaration on allergen advice
x) the category product based on butterfat content as specified in Table 1;

xi) lot number or batch number;

xii) country of origin.

11. **Sampling**

Any package/container drawn at random from a lot or batch shall constitute a representative sample of that lot or batch.