KENYA STANDARD

DKS 1756: 2016
ICS 67.100.10

Specification for flavoured milk

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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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PREFACE

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

Conversion of milk into flavoured milk is a recognized form of its marketing. The product is similar to the ultra-high temperature (long life) treated milk except that it is flavoured and sweetened to taste. It has consumer acceptability and appeal. Its manufacture fits in with the routine milk handling and processing procedures in the dairy.

This standard has been issued to help in guiding dairies in the production of flavoured milk as well as controlling the quality.

In the preparation of this standard reference was made to the following documents:

KS EAS 27 Specification for UHT milk.

KS EAS 69; Pasteurized milk

IS 4709 Specification for flavoured milk.

IS 4738 Specification for sterilized milk.

Acknowledgement is hereby made for the assistance derived from these source

KENYA STANDARD

FLAVOURED MILK- SPECIFICATION

1. SCOPE

This Kenya Standard specifies the requirements and methods of sampling and test for flavoured milk.

2. Normative

The following referenced standards are indispensable for the application of this East African Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced standard (including any amendments) applies.

CAC/RCP 57, Code of hygiene practice for milk and milk products
KS EAS 38, Labelling of prepackaged foods
KS CODEX STAN 193, Codex general standard for contaminants and toxins in foods
KS CODEX STAN 192, Codex general standard for Food additives
KS ISO 6731:2010; Milk, cream and evaporated milk — Determination of total solids content (reference method)
KS ISO 2446:2008, Milk — Determination of fat content (Routine method)
KS ISO 1211:2010 (IDF1:2010); Milk -- Determination of fat content -- Gravimetric method (Reference method)
KS ISO 707, Milk and milk products — Guidance on sampling
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
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 6785, Milk and milk products -- Detection of Salmonella spp
KS ISO 6611, Milk and milk products — Enumeration of colony-forming units of yeasts and/or moulds — Colony-count technique at 25 degrees C

3. DEFINITIONS

For the purposes of this Kenya Standard, the following definitions shall apply:

3.1 Raw milk

Normal, clean and fresh secretion extracted from the udder of a healthy cow, properly fed and kept, but excluding that got during the first seven days after calving

3.2 UHT or long life milk

The milk, ultra-high temperature treated, homogenized, filled and sealed aseptically into sterile retail containers in order to achieve commercial sterility

3.3 Homogenized milk

The milk in which, the milk fat globules have been finely divided and interspersed to form a homogeneous product so as to prevent the fat from floating on the surface and adhering to the inside of the container

3.4. Sterilized Milk

Means milk which has been heated in sealed container continuously to a temperature of either 1150 C for 15 minutes or at least 1300 C for a period of one second or more in a continuous flow and then packed under aseptic condition in hermatically sealed containers to ensure preservation at room temperature for a period not less than 15 days from the date of manufacture;

3.5 Standardized Milk

Means cow milk that has been standardised to fat and solids-not-fat percentage by the adjustment of milk solids. Standardised milk shall be pasteurised and shall show a negative Phosphatase

3.6 pasteurized milk

milk which has been efficiently heat treated at a sufficiently high temperature for appropriate period of time to ensure complete destruction of all pathogenic organisms, so as to enable the product to be transported, distributed and consumed as liquid milk

3.7 flavoured milk

Flavoured milk shall be pasteurised, sterilized milk or boiled with added permitted flavours as approved by the Food, Drugs and Chemical Substance Act, Cap. 254 of the Laws of Kenya and any relevant Kenya Standard

May contain nuts (whole, fragmented or ground) chocolate, coffee or any other edible flavour, edible food colours and cane sugar

3.8 commercial sterility

Is the attained practical sterility after the product has been treated aiming at absolute sterility

4. COMPOSITIONAL AND QUALITY REQUIREMENTS

4.1 Essential Ingredients — All ingredients used for the manufacture of flavoured milk shall be of good quality complying with the relevant standards.

4.1.1 *Milk* complying with the relevant standards.

It shall be whole milk, skimmed milk, reconstituted/recombined powered milk or a mixture of two or more products.

4.1.2 *Flavour* — Only permitted flavours shall be used. These shall comply with the guidelines given and approved by the Foods, Drugs and Chemical Substances Act, Cap. 254 of the Laws of Kenya or those given in the most current issue of Codex Alimentarius Commission.

4.1.3 *Sugars* — The sugar used shall comply with the requirements of the relevant Kenya Standard.

43.1.4 Permitted fruit juices which are concentrated or canned may also be used. These shall conform with the requirements of the relevant Kenya Standard.

4.1.5 Permitted food colours may be added. These shall comply with the levels stipulated in the Food, Drugs and Chemical Substances Act, Cap. 254 of the Laws of Kenya, and also with the requirements of the Codex Alimentarius Commission.

4.1.6 Stabilizers and emulsifiers/antioxidants permitted under the Food, Drugs and Chemical Substances Act, Cap. 254 of the Laws of Kenya and guidelines of the Codex Alimentarius Commission may be used.

4.1.7 Flavoured milk shall not contain non-nutritive sweeteners unless for special dietary use.
If used, the package shall be labelled as such. Any non-nutritive sweeteners used, shall comply with the levels given by the Codex Alimentarius Commission.

4.1.8 *Preservatives* — shall not be added to flavoured milk.

43.2 Flavoured milk shall not exhibit the following characteristics:

4.2.1 Off-flavours

4.2.2 Bitterness

4.2.3 Metallic flavour

4.2.4 Visible sediments other than from the flavour used.

4.4 Chemical Properties — Chemical properties of flavoured milk shall be as given in Table 1.

Table 1 — Chemical requirements for Flavoured milk

S/n	Characteristic	Requirement	Method of test
i.	*pH* variation on 7 days incubation (max.)	0.3	Annex A
ii.	*Titratable acidity* variation on 5 days *incubation*, % lactic acid (max)	0.02	Annex B
iii.	Milk fat percentage (m/m) (a) Whole milk (min.) (b) Fat reduced milk (c) Low fat milk (d) Fat free milk (max.)	 3.25 2.25 – 3.24 1.5 – 2.25 0.5	KS ISO 2448 OR 1121

5 Food additives

Only those additives justified may be used for the product

6 Contaminants

6.1 Heavy metals

The products covered by this Standard shall comply with the maximum limits established by the Codex Alimentarius Commission

6.2 Pesticide and veterinary drug residues

The products covered by this Standard shall comply with the maximum residue limits established by the Codex Alimentarius Commission.

7 Microbiological limits

7.1 The microbiological limits for flavoured milk shall be as indicated in Table 2 below.

Table 2 — Microbiological limits for flavoured milk

Micro organism	Maximum level	Method of test
Total plate count, per mL	Absent	KS ISO 4833
Coliforms, per mL	Absent	KS ISO 4833
Escherichia coli per mL	Absent	KS ISO 11866
Shigella per 25 ml	Absent	
Mycobacterium tuberculosis per mL	Absent	KS ISO 4833
Salmonella per 25 mL	Absent	KS ISO 6785
Listeria monocytogenes per mL	Absent	KS ISO 10560
Staphylococus aureaus	Absent	KS ISO4833

7 Hygiene

Milk shall be produced, processed and handled in accordance with CAC/RCP 57.

8 Packaging

Pasteurized liquid milk shall be packaged in safe, food grade, and commercially sanitized dry containers. The containers may be made of glass, approved metals, suitable plastics or suitable treated paper. The product when marketed shall be packaged in well-sealed containers in order to prevent spoilage or contamination of the product.

9 Labelling

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

(i) Name of the product.

(ii) The type of flavour used.

(iii) Name, physical location and address of the manufacturer.

(iv) List of ingredients.

(v) country of Origin

(vi) Milk has been used, the origin shall be clearly indicated.

(vi) Declaration of milk fat content as a percentage by mass.

(vii) Expiry date.

(viii) Country of manufacture.

(ix) Batch Number.

x) Storage instructions

xi) The product category and

xii) butterfat content in the milk.

9.6 Standardization of milk

Flavoured milk, which is standardized during processing to butterfat content below 3.25, shall distinctly and legibly be declared on the package 'Standardized Milk' in same print. The percentage of fat shall also be shown.

10 Fill of the container

The fill of the container shall be in accordance with the respective regulations of Weights and Measures. The milk shall occupy not less than 90 % v/v of the water capacity of the container. The water capacity of the container is the volume of distilled water at 20 °C, which the sealed container will hold when completely filled,

7. SAMPLING

Shall be done in accordance to KS ISO 707*.

Annex A
(normative)
Determination of pH variation

A.1 Apparatus

A.1.1 Incubator adjusted at 55 °C ± 1 °C

A.1.2 pH meter

A.2 Procedure

A.2.1 Determine the pH of 50 ml of the sample in the flask, with a glass electrode at 20 °C and note reading. Then incubate another 50 ml of the sample at 55 ± 1 °C for five days. Examine the flask each day, then shake and replace it in the incubator. If any physical alteration of the contents is observed (coagulation with, or without exudation, grittiness, flocculation, formation of bubbles or scum peptonization or proteolysis) the result of the test shall be considered positive and the sample as nonsterile.

A.2.2 If no alteration takes place during the five days incubation at 55 ± 1 °C remove the sample from the incubator and cool to room temperature. Take a small portion of it and measure the pH in the pH meter with glass electrode at 20 °C. From this pH value subtract the initial pH value (A.2.1).

A.3 Interpretation of results

A sample which does not show any physical alteration during incubation at 55 ± 1 °C for five days and where the pH does not show a difference of more than 0.3 unit from the initial pH is considered sterile.

Annex B
(normative)

Determination of titratable acidity

B.1 Apparatus

B.1.1 Incubator

B.1.2 Burette; with soda-lime guard tube

B.1.3 Porcelain dishes; white hemispherical of approximately 60 ml.

B.1.4 Stirring rods; of glass, flattened at one end.

B.2 Reagents

B.2.1 Standard sodium hydroxide solution

0.1 M. Prepare concentrated stock solution of sodium hydroxide by dissolving equal parts of sodium hydroxide (stocks or pellets) in equal parts of water in a flask. Tightly stopper the flask with a rubber bung and allow any insoluble sodium carbonate to settle down for three to four days.
Use the clear supernatant liquid for preparing the standard 0.1 M solution. About 8 ml of stock solution is required per litre of distilled water. The solution should be accurately standardized against acidic potassium phthalate or oxalic acid.

B.2.2 Phenolphthalein indicator solution

Dissolve 1 g of phenolphthalein in 110 ml rectified spirit. Add 0.1 M sodium hydroxide solution until one drop gives a faint pink coloration.

B.2.3 Rosaniline Acetate Stock Solution

Dissolve 0.121 g of rosaniline acetate in approximately 50 ml of rectified spirit, containing 0.5 ml of facial acetic acid. Make up to 100 ml with rectified spirit.

B.2.3.1 Bench solution

Dilute 1 ml of stock solution to 500 ml with a mixture of rectified spirit and distilled water in equal proportions by volume.
The stock and the bench solutions shall be stored in dark brown bottles securely stoppered with rubber bungs.

B.3 Procedure

B.3.1 Acidity of fresh sample

Weigh 10.0 g of the sample into each of the two white porcelain dishes of approximately 60 ml capacity; add to both 10 ml of water and stir to disperse the sample. Prepare from one dilution a colour control by adding and stirring 2 ml dilute rosaniline acetate solution. Stir 2 ml phenolphthalein solution into the other dilution and while stirring vigorously, add as rapidly as possible sodium hydroxide solution from a 10 ml burette fitted with a soda-lime guard tube, until the colour matches the pink colour of the control. The titration shall be done in bright light.

B.3.2 Acidity after incubation

Incubate another 20 g of sample at 55 °C ± 1 °C for five days. Examine the flask each day, then shake and replace it in the incubator. If any physical alteration (as indicated in A.2.1) of the content is observed the results of the test shall be considered positive and the sample as non-sterile.
If no alteration takes place during the five days incubation remove the sample from the incubator and cool to room temperature. Weigh 10 g of the incubated sample and determine acidity as described in B.3.1.

B.4 Calculation

B.4.1 Acidity of fresh sample

Titratable acidity (as lactic acid) per cent by weight = $\frac{9V.M}{m}$

Where,

V is the volume in ml of the standard sodium hydroxide required for titration (see B.3.1)

M is the molarity of the standard sodium hydroxide solution (see B.3), and

m is the mass in g of the sample taken for test (see B.3.1).

B.4.2 Acidity after incubation

B.4.2.1 Titratable acidity (as lactic acid) percent by weight = $\frac{9V.M}{w}$

Where,

V is the volume in ml of the standard sodium hydroxide required for titration (see B.3.2.1),

M is the molarity of the standard sodium hydroxide solution (see B.3.2.1),

w is the weight in g of the sample taken for the test (see B.3.2.1)

B.4.2.2 Subtract the value obtained in B.4.1 from the value obtained in B.4.2 which would give increase in acidity.

B.5 Interpretation of results

A sample which does not show any physical alteration during incubation at 55 °C ± 1 °C for five days and where the acidity does not show a difference of more than 0.02 g from the initial acidity is considered sterile.

Kenya Bureau of Standards (Kebs)

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