

**Pasteurized, Reconstituted, Recombined
and Toned Milk — Specification**

Public Review Draft

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Pasteurized Reconstituted, Recombined and Toned Milk— Specification

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FOREWORD

This Kenya Standard was developed by the Technical Committee on Milk and Milk Products under the guidance of the Standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards.

Milk is among's nature's most important food which have enabled populations to survive periods of famine. Nutritionally milk provides the elements of good health, whcih are desirable staples in a man's daily diet.

Milk can be easily adulterated and because of the importance to health particularly that of children, milk offered for sale needs to have a closer legal control. It is the usual practice for the milk processors to reconstitute or recombine or tone the market milk when there is short supply of the product. This standard specifies the requirements of the raw materials used for reconstituting/recombining the milk as well as the specifications of the final products.

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

KS EAS 69, Pasteurized milk - Specification

Acknowledgement is hereby made for assistance derived from these sources.

Pasteurized reconstituted, recombined and toned milk – Specification

1 SCOPE

This Kenya Standard specifies requirements, sampling and test methods for pasteurized reconstituted, recombined milk and toned milk

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 Method 984.15, *enzymatic hydrolysis of lactose to glucose and galactose at pH 6.6 by β -galactosidase*

AOAC 999.10, *Official method for lead, cadmium, zinc, copper, and iron in foods Atomic Absorption Spectrophotometry after microwave Digestion*

KS 2784, *Milk fat products – Specification*

KS EAS 12, *potable water – Specification*

KS EAS 49, *milk powder and cream powder - Specification*

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

KS EAS 39, *General principles for food hygiene*

KS EAS 67, *raw milk – Specification*

KS 69, *Pasteurized milk - specification*

KS EAS 803, *Nutrition labelling — Requirements*

KS 1552, *Code of hygienic practice for milk and milk products*

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

KS ISO 2446, *Milk — Determination of fat content*

KS ISO 4832, *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 5764, *Milk — determination of freezing point — Thermistor cryoscope method (Reference method)*

KS ISO 6579-1, *Microbiology of the food chain — Horizontal method for the detection, enumeration and serotyping of Salmonella — Part 1: Detection of Salmonella spp*

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

KS ISO/TS 6733; *Milk and milk products -- Determination of lead content -- Graphite furnace atomic absorption spectrometric method*

KS ISO 6888-3, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) — Part 3: Detection and MPN technique for low numbers*

KS ISO 8968-4, *Milk and milk products — Determination of nitrogen content — Part 4: Determination of protein and non-protein nitrogen content and true protein content calculation (Reference method)*

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

ISO 21528-2, *Microbiology of the food chain — Horizontal method for the detection and enumeration of Enterobacteriaceae — Part 2: Colony-count technique*

3 Terms and definitions

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

3.4

Reconstituted milk

Product resulting from the addition of water to the dried or concentrated form of the cow milk product in the amount necessary to re-establish the appropriate water to solids ratio

3.5

Recombined milk

Product resulting from the combining of milk fat and milk solids non-fat in their preserved forms with or without the addition of water to achieve the appropriate milk product composition

3.6

Toned milk

Toned milk- this is reconstituted or recombined milk to which more than 30 per cent fresh milk has been added before final heat treatment

3.8

Pasteurized reconstituted/recombined/toned milk

This is milk which has been subjected to pasteurization as in (a) and (b) below. The product shall give a negative phosphates test immediately after heat treatment when tested according to KS 05-31, Determination of phosphates activity in milk products.

- (a) *Batch or Holder method* — the temperature of milk shall be raised to not less than 65 °C and retained at this temperature for at least 30 minutes and immediately and rapidly cooled to 10 °C or less.
- (b) *High temperature short time method (HTST)* — The temperature of milk shall be raised to at least 72 °C and shall be retained at this temperature for 15 seconds and immediately cooled to 10 °C or below

3.5

Commercial sterility

Condition achieved by application of heat sufficient, alone or in combination with other appropriate treatment to render food free from microorganisms capable of growing in the food as normal non-refrigerated conditions at which the food is likely to be held during distribution and storage

4 Requirements

4.1 Raw materials

Raw materials for the reconstituted/recombined/toned pasteurized milk may include:

4.1.1 Raw milk complying with KS EAS 67, raw milk - Specification

4.1.1 Milk powder used for reconstituting/recombining/toning the milk shall comply with KS EAS 49, Specification for skimmed milk and dried milk powder

4.1.2 Anhydrous milkfat/ anhydrous butter oil, Milkfat and butteroil used for reconstituting/recombining/toning the milk shall comply with KS 2784:2018 Milk fat products – Specification

4.1.3 Water — the water for reconstituting or recombining or toning shall comply with the requirements of KS EAS 12; Potable water – Specification

4.3 General requirements

Reconstituted/recombined/toned pasteurized milk shall:

- a) be processed without affecting the composition of the product
- b) have characteristic texture and colour;
- c) have shelf life complying to KS EAS 69 for Pasteurised milk
- d) be free from preservatives or any other additives, off-flavours and odour.
- e) be free from objectionable tastes and foreign matter.

4.4 Specific requirements

The product shall comply with the specific requirements given in Table 1 when tested in accordance with tests methods specified therein.

Table 1 — Specific requirements for Reconstituted, recombined and Toned Pasteurised milk

S/N	Characteristic	Requirement			Test method
		Reconstituted	Recombined	Toned	
i.	Density at 20 °C, g/ml	1.028 – 1.0291	1.028 – 1.0387	1.028 – 1.034	Annex A
ii.	Milk fat (%), m/m				KS ISO 2446

iii.	a) Whole milk/full cream milk, min.	2.9	3.3	3.25	
	b) Fat reduced milk/semi skimmed	1.51 – 2.8	0.51 – 3.2	0.51 – 2.7	
	d) Fat free milk, max.	0.50	0.50	0.50	
iv.	Milk solids non-fat, %, min.	8.5	8.5	8.5	KS ISO 6731
v.	Acidity, expressed as % Lactic acid	0.08 – 0.12	0.13 – 0.14	0.13 – 0.14	
vi.	Protein content, %, min.	3.0	3.0	3.0	KS ISO 8968-4
vii	Freezing point depression, °C	- 0.478 to - 0.506	- 0.475 to -0.507	0.5550 to - 0.525	KS ISO 5764
viii	Phosphatase Test	Negative	Negative	Negative	-

5 Hygiene

5.1 The product shall be produced and handled in accordance with KS 1552 and KS EAS 39.

5.2 The product shall comply with the microbiological limits given in Table 2 when tested in accordance with the test methods specified therein.

Table 2 — Microbiological requirements for reconstituted/recombined/toned Pasteurized milk

S/N	Micro-organism	limit	Test method
i.	Total viable count, CFU/ ml	3 x 10 ⁴	KS ISO 4833-1
ii.	Coliform, CFU/ ml	10	KS ISO 4832
iii.	<i>Staphylococcus aureus</i> (coagulase positive), CFU/ ml	Absent	KS ISO 6888-3
iv.	<i>Listeria monocytogenes</i> , per 25 ml	Absent	ISO 11290-1
v.	<i>Salmonella spp.</i> CFU/25 ml	Absent	KS ISO 6579-1
vi.	Enterobacteriaceae, per ml	Absent	KS ISO 21528

6 Contaminants

6.1 Pesticide residues

The product shall comply with maximum limits residues set by Codex Alimentarius Commission.

6.2 veterinary drug residues

The milk shall comply with the maximum residue limits set by the Codex Alimentarius Commission.

6.3 Heavy Metal

When tested in accordance with KS ISO/TS 6733, the level of Lead (Pb) shall not exceed 0.02 mg/kg

6.4 Mycotoxins

When tested in accordance with KS ISO 14501, the level of aflatoxin M1 shall not exceed 0.50 µg/kg.

8 Packaging

8.1 The reconstituted/recombined/toned pasteurized milk shall be packed in food grade packaging material

9 Labelling

The containers shall be labelled in compliance with the requirements of KS EAS 38 and KS EAS 803. In addition, the following particulars shall be legibly and indelibly labelled on the container:

- a) Name of the product as:
 - I. recombined pasteurized milk;
 - II. toned pasteurized milk; or
 - III. Reconstituted pasteurized milk.

- b) fat content; categories as either:
 - i. whole milk/full cream milk;
 - ii. fat reduced milk/semi skimmed milk/low fat milk; or
 - iii. fat free milk/skimmed milk;

- c) net content in SI units;
- d) name and physical address of manufacturer;
- e) batch or code number;
- f) nutritional information;
- g) the date of manufacture and expiry date;
- h) instruction for storage and use; and
- i) Country of origin.

9 Sampling

Sampling for reconstituted or recombined or toned Pasteurized milk shall be done in accordance with KS ISO 707.

Annex A (normative)

Determination of density in milk

C.1 General

The density is a relationship between the body mass and the volume this body occupies in the space. The density test is performed in order to be used in the detection of adulteration in the milk since, the addition of water only would cause the decrease in density, whereas the skimming (fat removal) would cause an increased density in the milk, beside supplying important information for the determination of the total dry extract.

C.2 Equipment

The following equipment shall be used:

- a) Thermolactodensimeter (TLD); and
- b) Test tube (250 mL).

C.3 Methods

The density determination is accomplished by the Thermolactodensimeter because the practicability of this method.

C.4 Procedure

C.4.1 Place the sample to be analyzed in the clean and dry test tube by taking the care of inclining the test tube and allowing the liquid to flow down the walls of the glass for avoiding the incorporation of the air which would reduce the density of the milk.

C.4.2 Immerse TLD into the test tube and make it rotate slowly on its own axis.

C.4.3 Perform the reading of both density and temperature of the milk as soon as TLD stabilizes.

C.4.4 Proceed to the correction of the influence from the temperature, by using an adequate scale. The result will correspond to the corrected milk density.

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