



EAST AFRICAN COMMUNITY



EDICT



OF

GOVERNMENT

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EAS 27 (2006) (English): UHT milk -  
Specification



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**EAS 27:2006**  
ICS 67.100

## **EAST AFRICAN STANDARD**

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**UHT 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.

In order to achieve this objective, the Community established an East African Standards Committee mandated to develop and issue East African Standards.

The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. 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 procedures of the Community.

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.

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## UHT milk — Specification

### 1 Scope

This East African Standard prescribes the requirements and methods of sampling and test for UHT milk.

### 2 Normative references

The following standards contain provisions, which, through reference in this text constitute provisions of this standard. All standards are subject to revision and parties to agreements based on this standard are encouraged to take steps to ensure the use of the most recent editions of the standard indicated below. Information on currently valid national and international standards may be obtained from the Partner States Bureaux of Standards Information and Documentation Centre.

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

EAS 38, *Labelling of pre-packaged foods*

EAS 68, *Milk and milk products — Methods of microbiological examination*

EAS 163:2000, *Milk — Determination of freezing point — Thermistor cryoscope method*

EAS 162:2000, *Milk, cream and evaporated milk — Determination of total solids content (Reference method)*

EAS 164:2000, *Milk — Determination of fat content (Routine method)*

EAS 165:2000, *Milk and milk products — Inspecting sampling — Inspection by variables*

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

### 3 Definitions

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

#### 3.1 milk

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

## EAS 27:2006

### 3.2

#### **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

### 3.3

#### **homogenization**

process by which milk fat globules are 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

#### **UHT milk**

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

### 3.5

#### **commercial sterility**

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

## 4 Requirements for UHT milk

4.1 The milk shall contain not less than 8.5 % milk solids not fat. It shall not contain added water, preservatives, or other added substances.

UHT milk shall comply with the requirements given in Table 1.

**Table 1 — Chemical requirements for UHT milk**

Characteristic	Requirement	Method of test
pH variation on five days incubation (max.)	0.3	Annex A
Titrateable acidity variation on five days incubation, % lactic acid (max)	0.02	Annex B
Milk fat percentage (m/m)		
(a) Whole milk (min.)	3.25	
(b) Fat reduced milk	2.25 — 3.24	
(c) Low fat milk	1.5 — 2.24	
(d) Fat free milk	0.5 (max.)	Annex C

4.2 The density of the milk at 20 °C shall be not less than 1.028 g/mL and not more than 1.036 g/mL.

4.3 The freezing point depression of the milk shall be approximately 0.550 °C on the average, but not less than 0.525 °C.

4.4 UHT milk shall be normal in texture and colour. It shall be processed without affecting the composition of the product and shall be free from off-flavours and taints.

## 5 UHT milk process requirements

### 5.1 Sterility

The milk shall be subjected to temperatures between 135 °C and 150 °C for 2 s to 6 s, sufficient to attain commercial sterility, followed by immediate cooling to ambient temperature and aseptically packaged in sterile containers.

### 5.2 Direct heat

Where steam injection is used for heating, only culinary steam shall be used, and the compositional quality of the milk shall be the same before and after treatment.

### 5.3 Holding time before sale

UHT milk shall be held by the processor at ambient temperatures for at least five days before release to the market. When samples are tested organoleptically after this storage, the flavour shall be normal, and all signs of spoilage shall be absent.

### 5.4 Shelf life

UHT milk shall have a minimum shelf life of 90 days.

## 6 Sampling

For the purpose of determining the compliance to this standard, sampling shall be done in accordance with ISO 707.

## 7 Hygiene

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

UHT milk shall comply with the microbiological limits given in Table 2.

**Table 2 — Microbiological limits for UHT milk**

Characteristic	Limit	Method of test
Total plate count per ml, max.	10	EAS 68
Coliform, max.	0	EAS 68
Staphylococcus (coagulase positive)	0	EAS 68

## **EAS 27:2006**

### **8 Contaminants**

#### **8.1 Heavy metals**

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

#### **8.2 Pesticide and veterinary drug residues**

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

### **9 Packaging**

**9.1** The packaging material used for UHT milk shall:

- (i) be lightproof,
- (ii) be gas proof,
- (iii) be mechanically strong,
- (iv) be non-toxic
- (v) not impart any off-flavour to the milk,
- (vi) be able to withstand aseptic packaging pre-treatment procedure, and
- (vii) allow hermetic sealing.

**9.2** The milk shall be packaged aseptically into sterile packaging material and sealed hermetically.

**9.3** UHT milk packages shall be not deformed, creased, dented or have crushed corners

### **10 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) name of the product;
- ii) net content in volume (SI units);
- iii) name and address of manufacturer;
- iv) batch or code number;
- v) registered trade mark, if any;
- vi) butterfat content;



- vii) the date of manufacture and expiry of the product; and
- viii) instruction for storage and hygienic handling of the product.

## **Annex A** (normative)

### **Determination of pH variation**

#### **A.1 Apparatus**

**A.1.1** Incubator adjusted at  $55\text{ °C} \pm 1\text{ °C}$

**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  $20\text{ °C}$  and note reading. Then incubate another 50 mL of the sample at  $55\text{ °C} \pm 1\text{ °C}$  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 non-sterile.

**A.2.2** If no alteration takes place during the five days incubation at  $55\text{ °C} \pm 1\text{ °C}$  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  $20\text{ °C}$ . 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  $55\text{ °C} \pm 1\text{ °C}$  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 glacial acetic acid. Make up to 100 mL with rectified spirit.

For the 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.

NOTE The stock and the bench solutions should 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  $55\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$  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

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

where,

$V$  is the volume, in mL, of the standard sodium hydroxide required for titration (B.3.1),

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

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

### B.4.2 Acidity after incubation

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

where,

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

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

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

**B.4.3 Increase in acidity**

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  $55\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$  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.