

**KENYA STANDARD**

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**Milk Powders and Cream Powders-  
specification**

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PUBLIC REVIEW DRAFT

### **TECHNICAL COMMITTEE REPRESENTATION (update)**

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 Department  
National Public Health Laboratory Services  
Kenya Industrial Research and Development Institute (KIRDI)  
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 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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## **KENYA STANDARD**

# **Milk Powders and Cream Powders- specification**

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## Foreword

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.

This standard stipulates the raw material, sensory, microbiological and physico-chemical and labelling requirements. It also specifies the levels of contaminants and permitted food additives

In the preparation of this standard useful information was derived from members of the technical committee, Codex standard for milk powders and Cream Powders (CODEX STAN 207-1999) and local manufacturers

PUBLIC REVIEW DRAFT

## KENYA STANDARD

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## Milk Powders and Cream Powders- specification

### 1. SCOPE

The Kenya Standard prescribes the requirements and methods of sampling and test for milk powders and cream powder intended for direct consumption or for further processing in conformity with the description in Section 3 of this Standard.

### 2 Normative references

The following referenced documents are indispensable for the application of this Kenya 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*

KS 1552, *code of practice for milk and milk products*

KS CAC/GL 23, *Guidelines for use of nutrition claims*

KS CODEX STAN 193, *Codex general standard for contaminants and toxins in foods*

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; Milk and milk products -- Determination of lead content -- Graphite furnace atomic absorption spectrometric method

KS ISO 11866-2:2007; Milk and milk products-Enumeration of presumptive escherichia coli - Part 2: Colony-co

KS ISO 6579:2002 Microbiology of food and animal feeding stuffs - Horizontal method for the detection of Salmonella spp

KS ISO 11866-2, *Milk and milk products-Enumeration of presumptive escherichia coli - Part 2: Colony-count technique at 44 °C using membrane*

KS ISO/TS 11869:2012; Fermented milks -- Determination of titratable acidity -- Potentiometric method

KS ISO 1736; Dried milk and dried milk products -- Determination of fat content -- Gravimetric method (Reference method)

KS ISO 16649-1:2001; Microbiology of food and animal feeding stuffs -- Horizontal method for the enumeration of beta-glucuronidase-positive *Escherichia coli* -- Part 1: Colony-count technique at 44 degrees C using membranes and 5-bromo-4-chloro-3-indolyl beta-D-glucuronide

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 5546:2010 (IDF 115:2010); Caseins and caseinates -- Determination of pH (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 6888-1:1999; 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

KS ISO 8968-1; Milk and milk products -- Determination of nitrogen content -- Part 1: Kjeldahl principle and crude protein calculation

KS ISO 6092; Dried milk -- Determination of titratable acidity (Routine method)

KS ISO 6091; Dried milk -- Determination of titratable acidity (Reference method)

KS ISO 15323 ; Dried milk protein products -- Determination of nitrogen solubility index

KS ISO 5739; Caseins and caseinates -- Determination of contents of scorched particles and of extraneous matter

KS ISO 14674; Milk and milk powder -- Determination of aflatoxin M1 content -- Clean-up by immunoaffinity chromatography and determination by thin-layer chromatograph

KS ISO 5537 ; Dried milk -- Determination of moisture content (Reference method)

*AOAC 942.17, Arsenic in foods Molybdenum blue method*

*AOAC 999.10, Lead, Cadmium, Copper, Iron, and Zinc in foods, Atomic Absorption Spectrophotometry after dry ashing*

*AOAC 962.16 Beta-lactam Antibiotics in milk*

*AOAC 980.21, Aflatoxin M1 in milk and cheese-thin layer chromatographic method*

*AOAC 980.21, organochlorine and organophosphorous pesticide residues in milk and milk products*

### 3 Product description

Milk powders and cream powder are milk products which can be obtained by the partial removal of water from milk or cream. The fat and/or protein content of the milk or cream may have been adjusted, only to comply with the compositional requirements in Section 4 of this Standard, by the addition and/or withdrawal of milk constituents in such a way as not to alter the whey protein to casein ratio of the milk being adjusted.

## 4 ESSENTIAL COMPOSITION AND QUALITY FACTORS

### 4.1 RAW MATERIALS

Milk and cream

The following milk products are allowed for protein adjustment purposes:

- Milk retentate: Milk retentate is the product obtained by concentrating milk protein by ultrafiltration of milk, partly skimmed milk, or skimmed milk;
- Milk permeate: Milk permeate is the product obtained by removing milk proteins and milkfat from milk, partly skimmed milk, or skimmed milk by ultrafiltration; and
- Lactose<sup>1</sup>.

### 4.2 Permitted ingredients

- a) Starter cultures of harmless lactic acid and/ or flavour producing bacteria and cultures of other harmless microorganisms;
- b) Rennet or other safe and suitable coagulating enzymes;
- c) Gelatin and starches: These substances can be used in the same function as stabilizers, provided they are added only in amounts functionally necessary as governed by Good Manufacturing Practice taking into account any use of the stabilizers/thickeners listed in Clause 5;
- d) Sodium chloride and potassium chloride as a salt substitute complying with KS CODEX STAN 150.
- e) Calcium chloride in an amount not more than 0.02 percent (calculated as anhydrous calcium chloride) of the weight of the dairy ingredients, used as a coagulation aid.
- f) Potable water; complying with KS EAS 12
- g) Safe and suitable processing aids.
- h) Vinegar.

### 4.3 Composition

The Milk fat products shall comply with the compositional requirements stipulated in Table 1:

**Table 1— Compositional Requirements for Milkfat products**

S/N	Characteristic	Cream powder	Whole milk powder	Partly skimmed milk powder	Skimmed milk powder	TEST METHOD
i.	Minimum milkfat m/m	42%	26% and less than 42%	More than 1.5% and less than 26%	1.5% m/m	KS ISO 1736:2008
ii.	Maximum water (a) m/m	5%	5%	5%	5% m/m	KS ISO 660/ KS ISO 5537
iii.	Minimum milk protein in milk solids-not-fat (a) m/m	34%	34%	34%	34% m/m	KS ISO 8968-1
iv.	Titrateable acidity,max		18.0%	18.0%	18.0%	KS ISO 6092 or KS ISO 6091
v.	Solubility index %, max	1.0	1.0	1.0	1.0	KS ISO 15323
vi.	Scorched Particles, max		Disc B	Disc B	Disc B	KS ISO 5739
(a) The water content does not include water of crystallization of the lactose; the milk solids-not-fat content includes water of crystallization of the lactose.						

## 5 Food additives

Only those food additives listed below may be used and only within the limits specified.

INS no.	Name of additive	Maximum level
<b>Stabilizers</b>		
331	Sodium citrates	5 000 mg/kg singly or in combination, expressed as anhydrous substances
332	Potassium citrates	
<b>Firming agents</b>		
508	Potassium chloride	Limited by GMP
509	Calcium chloride	Limited by GMP



<b>Acidity regulators</b>		
339	Sodium phosphates	5 000 mg/kg singly or in combination, expressed as anhydrous substances
340	Potassium phosphates	
450	Diphosphates	
451	Triphosphates	
452	Polyphosphates	
500	Sodium carbonates	
501	Potassium carbonates	
<b>Emulsifiers</b>		
322	Lecithins	Limited by GMP
471	Mono- and diglycerides of fatty acids	2 500 mg/kg
<b>Anticaking agents</b>		
170(i)	Calcium carbonate	10 000 mg/kg singly or in combination
341(iii)	Tricalcium phosphate	
343(iii)	Trimagnesium phosphate	
504(i)	Magnesium carbonate	
530	Magnesium oxide	
551	Silicon dioxide, amorphous	
552	Calcium silicate	
553	Magnesium silicates	
554	Sodium aluminosilicate	265 mg/kg, expressed as aluminium
<b>Antioxidants</b>		
300	Ascorbic acid, L-	500 g/kg expressed as ascorbic acid
301	Sodium ascorbate	
304	Ascorbyl palmitate	
320	Butylated hydroxyanisole	100 mg/kg

## 6. Hygiene

**6.1** It is recommended that the products covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections KS 1552 and other relevant Kenya standards and regulations. The products should comply with any microbiological criteria established in accordance with KS CAC/GL 21

6.2 The products shall comply with any microbiological criteria established in accordance with Table 4 below.

**Table 4 — Microbiological requirements for milk powder and cream powder**

S/N	Quality	Requirements Cfu/g	Test method
	Total plate count /g max	$2 \times 10^4$ cfu/g	KS ISO 4833
	Listeria monocytogenes <i>max,</i>	<i>Nil per gram</i>	KS ISO 4833
	Salmonella spp	<i>Nil per gram</i>	KS ISO 4833
	Shigella	<i>Nil per gram</i>	KS ISO 4833 KS ISO 21567
	Clostridium botulinum	<i>Nil per gram</i>	KS ISO 4833
	Staphylococcus aureus	<i>Nil per 25g</i>	KS ISO 4833
	E.coli	<i>Nil per gram</i>	KS ISO 4833
	Faecal coliforms:, <i>max</i>	<i>Nil per gram</i>	KS ISO 4832
	Non-faecal coliforms, <i>max</i>	100cfu/g	KS ISO 4832
	Yeast and mould, <i>max</i>	100 cfu/g	KS ISO 6611

## 7.1 Contaminants

The products covered by this Standard shall comply with the Maximum Levels for contaminants that are specified for the product in the *General Standard for Contaminants and Toxins in Food and Feed* (KS CODEX STAN 193-1995).

The milk used in the manufacture of the products covered by this Standard shall comply with the Maximum Levels for contaminants and toxins specified for milk by the *General Standard for Contaminants and Toxins in Food and Feed* (KS CODEX STAN 193-1995) and with the maximum residue limits for veterinary drug residues and pesticides established for milk by the CAC.

## 7.1 Heavy metals

The products covered by this standard shall comply with the maximum limits in Table 5

**Table 5 — Limits for heavy metal contaminants for milk powder and cream powder**

SL No	Heavy metal	MRL (Max.)	Test method
i).	Arsenic (AS)	0.1 mg/kg	AOAC 942.17

ii).	Lead (Pb)	0.02 mg/kg	AOAC 972.25 / KS ISO 6733
iii).	Mercury (Hg)	1.0 mg/kg	AOAC 999.10
iv).	Copper (Cu)	5.0 mg/kg	AOAC 972.25 / KS ISO 5738
v).	Zinc (Zn)	50 mg/kg	AOAC 999.10
vi).	Tin (Sn)	250 mg/kg	AOAC 999.10
vii).	Cadmium as Cd,	1.5 mg/kg	AOAC 999.10
viii).	Iron (Fe),	0.5 mg/kg	AOAC 999.11/ KS ISO 6732

## 7.2 Pesticide residues

In addition to the maximum limits established by the Codex Alimentarius Commission for these products in Codex Stan 193; the products covered by the provisions of this standard shall comply with the Maximum Levels for contaminants specified in table 6 below;

**Table 6- maximum residue limits for milk powder and cream powder**

S/N	Parameter	Requirements	Test method
<i>i</i>	ORGANOCHLORINE Group	0.01 ppm	KS ISO 3890-1:2009 OR AOAC 970.52
<i>ii</i>	ORGANOPHOSPHOROUS Group	0.01 ppm	AOAC 970.52

## 7.3 Mycotoxin residues

Milk powder and cream powder shall not have more than have 0.5 µg/kg aflatoxin M1 content when tested according to KS ISO 14674; Milk and milk powder -- Determination of aflatoxin M1 content -- Clean-up by immunoaffinity chromatography and determination by thin-layer chromatographic method

#### **7.4 Antibiotics**

Milk powder and cream powder shall not have more than 10.0 ppb total antibiotic as (beta lactam) content when tested according to AOAC 962.16, Beta-lactam Antibiotics in milk

## **8 PACKAGING AND LABELLING**

### **8.1 Packaging**

The product shall be packed in food grade material that ensures product safety and integrity.

### **8.2 Labelling**

In addition to the provisions of KS EAS 38 and the General Standard for the Use of Dairy Terms (KS CODEX STAN 206-1999), the following specific provisions shall apply:

#### **8.2.1 Name of the food**

The name of the food shall be:

- Cream powder
  
- Whole milk powder;
- Partly skimmed milk powder;
  
- Skimmed milk powder;

According to the composition in Section 4.2

Partly skimmed milk powder may be designated "Semi-skimmed milk powder" provided that the content of milkfat does not exceed 16% m/m and is not less than 14% m/m.

If allowed by national legislation or otherwise identified to the consumer in the country where the product is sold, "whole milk powder" may be designated "full cream milk powder" and "skimmed milk powder" may be designated "low fat milk powder".

#### **8.2.2 Country of origin**

The country of origin (which means the country of manufacture, not the country in which the name originated) shall be declared. When the product undergoes substantial transformation in a second country, the country in which the transformation is performed shall be considered to be the country of origin for the purpose of labelling.

#### **8.2.3 Declaration of milk fat content**

If the consumer would be misled by the omission, the milkfat content shall be declared in a manner found acceptable in the country of sale to the final consumer, either (i) as a percentage by mass, or (ii) in grams per serving as quantified in the label provided that the number of servings is stated..

#### **8.2.4 Declaration of milk protein**

If the consumer would be misled by the omission, the milk protein content shall be declared in a manner acceptable in the country of sale to the final consumer, either as (i) a percentage by mass, or (ii) grams per serving as quantified in the label provided the number of servings is stated.

#### **8.2.5 List of ingredients**

Notwithstanding the provision of Section 4.2.1 of the *General Standard for the Labelling of Prepackaged Foods* (CODEX STAN 1-1985), milk products used only for protein adjustment need not be declared.

#### **8.2.6 Labelling of non-retail containers**

Information specified in Clause 8.2 of this Standard and provisions of KS EAS 38 and, if necessary, storage instructions, shall be given either on the container or in accompanying documents, except that the name of the product, lot identification, and the name of the manufacturer or packer shall appear on the container, and in the absence of such a container, on the product itself. However, lot identification and the name and address may be replaced by an identification mark, provided that such mark is clearly identifiable with the accompanying documents.

#### **8.2.7 Date marking:**

- i) Date of manufacture
- ii) Expiry date;
- ii) Storage instructions and / or conditions

#### **8.2.86 Name and address of manufacturer**

#### **8.2.9 Net contents**

#### **8.2.8 Lot identification**

### **9 Methods of Sampling and Analysis**

The products covered by the provisions of this standard shall be tested using recommended standard methods declared in this standard and as per the methods given in the latest AOAC/ Codex/ ISO and other internationally recognized methods relevant to the provisions in this standard,

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