
Draft COMESA/East African Standard

Milk powders and cream powders — Specification

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Foreword

Dried whole milk and skimmed milk powder — Specification

1 Scope

This COMESA/East African Standard prescribes the requirements, methods of sampling and test for dried whole milk partially skimmed and dried skimmed milk made from cow milk.

This standard covers requirements for dried milk powder made from whole milk, partially skimmed and skimmed milk.

2 Normative references

The following referenced standards are indispensable for the application of this COMESA/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.

Codex Alimentarius Commission pesticides residue limits

CAC/MRL 02-2006, Maximum residue limits for veterinary drugs in foods

CODEX STAN 1: General standard for the labeling of prepackaged foods

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

CODEX STAN 192-1995, Codex general standard for food additives

CODEX STAN 193-1995, Codex general standard for contaminants and toxins in foods

EAS 67: Raw milk - specification

EAS 69: Pasteurised milk – specification

ISO 1736: Dried milk and dried milk products — Determination of fat content — Gravimetric method (Reference method)

ISO 4832, Microbiology of food and animal feeding stuffs -- Horizontal method for the enumeration of coliforms -- Colony-count technique

ISO 4833, Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of microorganisms — Colony-count technique at 30 °C

ISO 5537, Dried milk — Determination of moisture content (Reference method)

ISO 5538, Milk and milk products — Sampling — Inspection by attributes — Specification

ISO 8156: Dried milk and dried milk products —Determination of insolubility index

ISO 6091: Dried milk - Determination of titratable acidity (Routine method)

ISO 6611: Milk and milk products — Enumeration of colony-forming units of yeasts and/or moulds — Colony-count technique at 25 °C

ISO 6785, Milk and milk products — Detection of *Salmonella spp.*

ISO 6888, Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coagulase-positive staphylococci (*Staphylococcus aureus* and other species)

ISO 8197, Milk and milk products — Inspecting sampling — Inspection by variables

ISO 11866, Milk and milk products — Enumeration of presumptive *Escherichia coli*

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

3 Definitions

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

3.1 cream powder

A product obtained by the removal of water only from cream derived from cow milk

3.2 whole milk powder

a product obtained by the removal of water only from whole milk obtained from the cow

3.3 partially skimmed milk Powder

A product obtained by the removal of water only from partly skimmed cow milk

3.4 skimmed milk powder

a product obtained by the removal of water only from skimmed cow milk

4 Requirements

4.1 Raw materials

Milk powder shall be made from cow milk complying with EAS 67 and EAS 69.

4.2 Ingredients

The following Milk products may be used for protein adjustment purposes

- **milk retentate**: the product obtained by concentrating milk protein by ultrafiltration of milk, partly skimmed milk, or skimmed milk;
- **milk permeate**: the product obtained by removing milk proteins and milkfat from milk, partly skimmed milk, or skimmed milk by ultrafiltration; and
- **lactose**

Physical and sensory characteristics

4.2.1 The powder shall be uniform in composition and shall be free flowing and free from hard lumps.

4.2.2 The colour shall be white to creamy white.

4.2.3 The powder shall be free from abnormal taste or odour and the reconstituted milk shall be wholesome.

4.2.4 The powder shall be free from dirt and other extraneous matter.

4.3 Physico-chemical requirements

4.3.1 The milk powder shall comply with the requirements given in Table 1.

Table 1 — Requirements for milk powder (whole and skim)

	Cream Powder	Whole milk powder	Partially skimmed powder	Skimmed milk powder	Method of test
Moisture, per cent by weight, maximum	5	5.0	5.0	5.0	ISO 5537
Total milk solids, per cent by weight, minimum	95.0	95.0	95.0	95.0	ISO 6731
Fat, percentage by weight	42% min	Not less than 26.0 and not more than 42%	Not less than 1.5% and not more than 26%	Not more than 1.5% (max)	ISO 1736
Titrateable acidity as lactic acid, per 100 g powder, maximum	1.0	1.0	1.25	1.25	ISO 6091
Solubility value, minimum	85.0	85.0 (if roller dried)	85.0	85.0 (if roller dried)	ISO 8156
Solubility value, minimum	98.0	98.0 (if spray dried)	98.0	98.0 (if spray dried)	ISO 8156
Presence of burnt particles	Disc B or better	Disc B or better	Disc B or better	Disc B or better	Annex A

5 Hygiene

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

Note: Reference to *CAC/RCP 57* does not mean an endorsement of the use of lactoperoxidase system as a means of preservation of raw milk as contained therein

5.2 Microbiological limits

Milk powders and cream powders shall comply with the limits stated in Table 2.

Table 2 — Microbiological limits

Microorganisms	Maximum limit (cfu)	Test method
Total plate count	25,000/g	ISO 4833
Coliforms	10/g	ISO 4832
<i>E. coli</i>	absent	ISO 11866
<i>Staphylococcus aureus</i>	Absent/25 g	ISO 6888
<i>Salmonella</i>	Absent/25 g	ISO 6785
Yeasts and moulds	10/g	ISO 6611

6 Food additives

6.1 Food additives may only be added in accordance with *CODEX STAN 192-1995*

6.3 Vitamins and minerals

Vitamins and minerals may be added for fortification purposes.

7 Contaminants

7.1 Pesticide residues

The products covered by this standard shall comply with the maximum residue limits specified in the relevant Codex Standards.

7.2 Veterinary drug residues

The products covered by this standard shall comply with the maximum residue limits specified in *CAC/MRL 2-2006*

7.3 Heavy metals

The products covered by this standard shall comply with the maximum limits for heavy metal contaminants as specified in *CODEX STAN 193-1995*

7.4 Aflatoxins

When determined in accordance with ISO 14501, milk powder and cream powder shall not contain more than 0.5ppb of aflatoxin M1.

7.5 Radiation

The product shall have no ionisation radiation

8 Sampling

For the purpose of determining the compliance to this standard, sampling shall be done in accordance with ISO 5538 and ISO 8197

9 Packaging

The product shall be packaged in clean, safe food grade packaging material in such a way as to protect it from contamination and deterioration.

10 Labelling

10.1 The containers shall be labelled in accordance with the requirements of the provisions of the *CODEX STAN 1-1985*. In addition, the following particulars shall be legibly and indelibly labelled on the container:

- i) directions for reconstitution of dried milks shall be given;
- ii) process of manufacture (spray dried or roller dried);
- iii) date of manufacture;
- iii) not suitable for infants;

10.2 Name of the product — the name of the product shall be:

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- a) Cream milk powder
- b) Whole cow milk powder
- c) Partially skimmed milk powder
- d) Skimmed cow milk powder

'Whole milk powder', may be designated 'Full cream milk powder'.

'Skimmed milk powder' may be designated 'Low fat milk powder'.

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.

10.3 Milk fat content — the milk fat content shall be declared as:

- (i) percentage by mass or volume, or
- (ii) in grams per serving, provided that the number of servings is stated.

10.4 Milk protein — Milk protein content shall be declared as:

- (i) a percentage by mass or volume, or
- (ii) grams per serving provided that the number of servings is stated.

10.5 List of ingredients — Milk products used for protein adjustment shall be declared.

10.6 name and physical address of the manufacturer or packer;

10.7 lot identification, batch, or code number;

10.8 storage conditions;

10.9 expiry date; and

10.10 country of origin.

11 Methods of sampling

For the purpose of determining the compliance to this standard, sampling shall be done in accordance with ISO 5538 and ISO 8197

Annex A (normative)

Determination of the burnt particles of milk powder

A.1 Apparatus

- ADMI-standard picture series for the measurement of the burnt particles.
- Top loading balance, readability 10 ml.
- Filter unit, vacuum connection preferred (e.g. Presto Silesia, Presto-Elektra Sediment tester).
- Filter paper (e.g. Funke Gerber Neorevamat).
- Erlenmeyer flasks, volume 500 ml.

A.2 Reagents

Sodium hexametaphosphate liquid, 2 %.

A.3 Procedure

A.3.1 Mix the sample carefully by repeatedly shaking and inverting the containers. Close the containers immediately after taking the sample for analysis.

A.3.2 Determination of burnt particles

A.3.2.1 Spray dried milk powder

Weigh 25 g skimmed powder or 32.5 g whole milk powder into an Erlenmeyer flask. Dilute the powder into 250 ml distilled water (temperature 45 °C). The water shall not have visible particles.

A.3.2.2 Filter the dilution through the filter paper. Rinse the Erlenmeyer flask with 50 ml distilled water and filter it also through the filter paper. Dry the filter paper at the temperature of 30 °C to 40 °C in a dustless place.

A.3.2.2.1 Measurement

Measure the amount of the burnt particles using the ADMI-standard picture series. Grade to A, B, C and D disks.

A.3.2.3 Roller dried milk powder

Weigh 17 g skimmed milk powder and 22 g whole milk powder into an Erlenmeyer flask. Dilute the powder into 250 ml 2 % sodium-hexametaphosphate liquid (temperature 80 °C) shaking by hands. The rest to be done as explained in A.3.2.2.