AFDC 14 (5262) P3

DRAFT TANZANIA STANDARD

Milk powder and cream powder – Specification

TANZANIA BUREAU OF STANDARDS

Milk powder and cream powder – Specification

0 FOREWORDS

Milk powder is a product which can be obtained from whole milk, partially skimmed milk, creamed milk and cream by a partial removal of water. The fat and/or protein content of the product may have been adjusted; to comply with the compositional requirements in Table 1. It has been necessary to prepare this standard to make sure that the milk powder products produced or traded in the country are of the required safety and quality.

In the preparation of this Tanzania standard considerable assistance was drawn from CODEX STAN 207-1999 *For Milk powders and cream powder published* by the Codex Alimentarius Commission.

In reporting, the results of a test or analysis made in accordance with this standard, if the final value observed or calculated, is to be rounded off, it shall be done in accordance with TZS 4 (see clause 2).

1.0 SCOPE

This draft Tanzania standard prescribes the requirements, methods of sampling and test for whole milk powder, partially skimmed milk powder, skimmed milk powder and cream powder intended for human consumption.

2.0 REFERENCES

For the purpose of this Tanzania standard, the following references shall apply. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced standard (including any amendments) applies:

TZS 4 – Rounding off numerical values
TZS 109 – Food processing units – code of hygiene
TZS 112 – Milk – Production, processing, transportation and distribution – code of hygiene.
TZS 118 – Microbiology of food and animal feeding stuffs – Horizontal method for enumeration of microorganisms – Colony count technique at 30 ^{0}C.
TZS 119 – Microbiology – General guidance for the enumeration *of coliforms* – Most Probable Number technique (MPN).
TZS 122 – Microbiology of food and animal feeding stuffs – Horizontal method for the detection of *Salmonella spp.*
TZS 124 - Milk and milk products – sampling for microbiological examination.
TZS 131 – Microbiology - General guidance for enumeration of yeast and moulds – Colony count technique at 25 ºC.
TZS 538 – Packaging and labelling of foods.
TZS 626 – Raw milk – Specification.
TZS 635 – Milk and milk products – Guidance on sampling and methods of test.
TZS 731 – Microbiology of food and feeding stuffs – Horizontal method for detection and enumeration of presumptive *Escherichia coli* – Most Probable Number Technique
ISO 5537-2 – Dried milk – Determination of moisture content (Reference method).
ISO 1736 –– Dried milk and dried milk products – Determination of fat content Gravimetric method (Reference method).
ISO 8968-1 – Milk and milk products -- Determination of nitrogen content -- Part 1: Kjeldahl principle and crude protein calculation
Codex Stan 192– General Standard for Food Additives
ISO 7932 – Microbiology of food and animal feeding stuffs -- Horizontal method for the enumeration of presumptive Bacillus cereus -- Colony-count technique at 30 degrees Centigrade.
CAC/MRL 2 - Maximum Residue Limits (MRLs) and Risk Management Recommendations (RMRs) for Residues of Veterinary Drugs in Foods.

3.0 TERMS AND DEFINITIONS

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

3.1 milk powder
milk product which is obtained by the partial removal of water from milk.

3.2 cream powder
cream product which is obtained by the partial removal of water from cream.

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

3.4 milk retentate
the product obtained by concentrating milk protein by ultrafiltration of milk, partly skimmed milk, or skimmed milk.

3.5 milk permeate
the product obtained by removing milk proteins and milkfat from milk, partly skimmed milk, or skimmed milk by ultrafiltration.

3.6 food grade container
materials that are free from substances that are hazardous to human health and may come in contact with food.

4.0 REQUIREMENTS

4.1 General requirements

4.1.1 Raw materials

a) Milk used shall comply with TZS 626.
b) Cream used shall comply with specific Tanzania Standard
c) Optional ingredients including lactose, milk retentate and milk permeate may be used.

4.1.2 Milk powder and cream powder shall;

a) be uniform in composition and shall be free flowing and free from hard lumps.
b) have white to creamy white colour.
c) be free from abnormal taste or odour and when reconstituted milk shall be wholesome.
d) be free from dirt and other extraneous matter.

4.1.3 Food additives

Food additives if used shall comply with Codex Stan 192.

4.2 Specific requirements

Milk powders and cream powder shall conform with the requirements prescribed in Table 1.

Table 1: Specific requirements for Milk powders and cream powder;

S/no.	Characteristic	Requirements				Methods of Test
		Cream powder	Whole milk powder	Partially skimmed milk powder	Skimmed milk powder	
1)	Milk fat, %m/m	42min	26min	1.5min	1.5max	ISO 1736
2)	Moisture, % m/m, max	5	5	5	5	ISO 5537-2
3)	Milk protein in MSNF%	34	34	34	34	ISO 8968-1
3)	Titratable acidity as lactic acid, per 100 g maximum	1.0	1.0	1.25	1.25	Annex A
4)	Solubility value, minimum (if roller dried)	85.0	85.0	85.0	85.0	
5	Solubility value, minimum (if spray dried)	98.0	98.0	98.0	98.0	

5.0 CONTAMINANTS

5.1 Pesticides and veterinary drug residues

Pesticides and Veterinary drug residues in milk powders and cream powder shall conform with maximum residual limits (MRLs) for pesticides and veterinary drug residues as prescribed in the CAC/MRL 2.

6.0 HYGIENE

6.1 Milk powders and cream powder shall be produced, processed and handled in accordance with the appropriate sections of the TZS 109 and TZS 112 (see clause 2).

6.2 Sample of milk powders and cream powder shall not contain microbiological count more than the requirements specified in Table 2.

Table 2: Microbiological limits for milk powders and cream powder

S/N0.	Microorganisms	limit	Methods of test
1)	*Total plate count, cfu/g, max*	5x 10^4	TZS 118
2)	*Coliforms, cfu/g*	10	TZS 119
3)	*E. coli, cfu/ 25g*	Absent	TZS 731
4)	*Bacillus cereus, cfu/g*	Absent	ISO 7932
5)	*Salmonella spp, per 25g*	Absent	TZS 122
6)	*Yeasts and moulds, cfu/g*	10	TZS 131

7.0 SAMPLING AND TESTS

7.1 Sampling
Sampling of milk powders and cream powder shall be done according to TZS 635 and TZS 124 (see clause 2).

7.2 Tests
Testing of milk powders and cream powder shall be done according to test methods prescribed in Table 1 and 2.

8.0 PACKAGING, MARKING AND LABELLING

8.1 Packaging
Milk powders and cream powder shall be packed in clean and safe food grade containers.

8.2 Marking and labelling
In addition to marking and labelling requirements prescribed in TZS 538, the containers shall be also legibly and indelibly marked with the following:

a) Name of the product “cream powder/ Whole milk powder/ Skimmed milk powder/ partially skimmed milk powder”;
a) Directions for use;
b) Process of manufacture (spray dried or roller dried);
c) Date of manufacture;
d) Expiry date;
e) Warning to indicate that the product is not suitable for infants;
f) Nutritional composition;
g) List of ingredients —products used for protein adjustment shall be declared;
h) Name and physical address of the manufacturer or packer;
i) Lot identification, batch or code number;
j) Storage conditions;
k) Country of origin;
l) Net weight in metric unit;
m) Indicate the additive used;
n) The language on the label shall be “Kiswahili” or Kiswahili and English. Additional language may be used depending on the designated market.

8.3 The container may also be marked with TBS Certification Mark.

NOTE – The TBS Standards Mark of Quality may be used by the manufacturers only under licence from TBS. Particulars of conditions under which the licenses are granted may be obtained from TBS.

Annex A
(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

a) **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) **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