SRI LANKA STANDARD 1309: 2021

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SPECIFICATION FOR COCONUT MILK POWDER (*First Revision*)

SRI LANKA STANDARDS INSTITUTION

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SLS 1309: 2021

Gr. 7

SRI LANKA STANDARDS INSTITUTION
No. 17, Victoria Place,
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SRI LANKA

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This Standard does not purport to include all the necessary provisions of a contract

SRI LANKA STANDARD
SPECIFICATION FOR COCONUT MILK POWDER
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FOREWORD

This Standard was approved by the Sectoral Committee on Food Products and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 2021-12-22.

This Standard was first published in 2009. This first revision includes limits for contaminants and limits for food additives to safeguard the interests of the consumers.

The coconut milk powder is the spray-dried powder of fresh coconut milk. The traditional method of preparing coconut milk is a time consuming process and hence in the recent past, use of coconut milk powder has gained popularity.

This Standard is subject to the regulations framed under the Food Act No. 26 of 1980 and the Coconut Development Act No. 46 of 1971 and regulations framed thereunder.

For the purpose of deciding whether a particular requirement of this Standard is complied with, the final value, observed or calculated, expressing the result of a test or an analysis, shall be rounded off in accordance with **SLS 102**. The number of significant places retained in the rounded off value shall be the same as that of the specified value in this Standard.

1 SCOPE

This Standard prescribes the requirements, methods of sampling and tests for coconut milk powder.

2 REFERENCES

SLS 102	Rules for rounding off numerical values
SLS 143	Code of practice for general principles of food hygiene
SLS 428	Random sampling methods
SLS 516	Methods of test for Microbiology of food and animal feeding stuffs Part 1 Horizontal method for the enumeration of microorganisms – Colony count technique at 30 ^{o}C Section 1 Colony count at 30 ^{o}C by the pour plate technique Part 2 Horizontal method for the enumeration of yeasts and moulds Section 2 Colony count technique in products with water activity less than or equal to 0.95 Part 3 Horizontal method for the detection and enumeration of coliforms Section 1 Most probable number technique. Part 5 Horizontal method for the detection of *Salmonella* spp Part 12 Horizontal method for the detection and enumeration of presumptive *Escherichia coli* (Most probable number technique)
SLS 614	Potable water

SLS 735 Methods of test for milk and milk products
Part 1 : Determination of fat content
Part 7 : Determination of protein
SLS1590 Code of hygienic practice for coconut kernel processing products
Official Methods of Analysis of the Association of official Analytical Chemists (AOAC), 20th edition 2016

3 DEFINITIONS

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

3.1 seasoned coconut: The fruit of the coconut palm (*Cocos nucifera* L), after keeping or a minimum of 3 weeks

3.2 coconut milk powder: The powder having characteristic white colour of the coconut resulting from the removal of water by drying of the coconut milk obtained from the fruit of the coconut palm (*Cocos nucifera* L) and may contain optional ingredients and permitted food additives given in **4.2**

3.3 low fat coconut milk: Coconut milk obtained by partial removal of fat from the whole coconut milk

3.4 low fat coconut milk powder: The powder having characteristic white colour of the coconut resulting from the removal of water by drying of the low fat coconut milk (**3.3**)

4 INGREDIENTS

4.1 Basic ingredients

4.1.1 *Coconut milk or extraction,* obtained from fresh, wholesome seasoned coconut kernel of the fruit of coconut palm (*Cocos nucifera* L.) harvested at the correct stage of maturity

4.1.2 *Whole coconut kernel* (with/ without enzymatically treated)

4.1.3 *low fat coconut milk*

4.2 Optional ingredients

In addition to the ingredients given in **4.1** one or more of the following may be used.

4.2.1 *Coconut flour* conforming to **SLS 1628**
4.2.2 *Acidity regulator*
Tri sodium phosphate INS 339 (iii) maximum 800 mg/kg
4.2.3 *Food conditioners*
Maltodextrin maximum
High fat 25 per cent
Low fat 15 per cent

4.2.4 *Emulsifiers*

a) Sodium casinate
b) Cereal/ legume proteins
c) Guar gum
d) Gum Arabic
e) Soya lecithin

5 REQUIREMENTS

5.1 The product shall be processed, packaged, stored and distributed under hygienic conditions as prescribed in **SLS 143** and **SLS 1590**.

5.2 The product shall be clean and uniform in composition. It shall be free from brown specks.

5.3 The colour shall be of characteristic white colour of the coconut milk powder and free from brown or yellow colour.

5.4 The product shall have a characteristic odour and falvour. It shall be free from rancid, cheesy, soapy or any other objectionable odours and flavours.

5.5 The product shall comply with the requirements given in Table **1**, when tested in accordance with the methods prescribed in Column **5** of the Table.

TABLE 1 - Requirements for coconut milk powder

Sl No	**Characteristic**	**Requirement**		**Method of test**
		High fat	**Low fat**	
(1)	(2)	(3)	(4)	(5)
i)	Moisture, per cent by mass, max.	3.0	2.5	**Appendix B**
ii)	Fat, per cent by mass, on dry basis	Min. 60.0	Max. 45.0	**SLS 735: Part 1\ Section 3**
iii)	Protein, per cent by mass, * on dry basis, min.	6.0	6.0	**SLS 735 Part 7\ Section 1 or AOAC 991.20**
iv)	Total ash, per cent by mass, on dry basis max.	2.5	2.5	**Appendix D**
v)	pH at 25^0C, of reconstituted milk	6 to 7	6 to 7	**Appendix E**
vi)	Free fatty acids as lauric acid of the extracted oil, per cent by mass, max.	0.1	0.1	**Appendix F**

***** *Conversion factor* N×6.25

5.6 Microbiological limits

The product shall not exceed the limits given in Table **2** when tested in accordance with the methods prescribed in Column **7** of the Table.

TABLE 2 - Microbiological limits

Sl. No (1)	**Test organism** (2)	**n** (3)	**c** (4)	**Limit**		**Method of test** (7)
				m (5)	**M** (6)	
i)	Aerobic plate count, cfu per g	5	2	1×10^3	5×10^4	**SLS 516 Part 1 Section 1**
ii)	Coliform count, MPN per g	5	1	0	50	**SLS 516 Part 3 Section 1**
iii)	*E. coli*, MPN per *g*	5	0	absent	-	**SLS 516 Part 12**
iv)	*Salmonella* spp., per 25 g	5	0	absent	-	**SLS 516 Part 5**
v)	Yeast and mould, cfu/ g	5	2	10	50	**SLS 516 Part 2 Section 2**

where,

n = number of sample units to be tested;
c = maximum allowable number of sample units yielding values between m and M;
m = limit below which a count is acceptable for any sample unit; and
M = limit above which a count is unacceptable for any sample unit.

6 CONTAMINANTS

6.1 Potentially toxic elements

The product shall not exceed the limits for potentially toxic element given in Table **3**, when tested according to the methods given in Column **4** of the table.

TABLE 3 - Limits for potentially toxic element

SI No. (1)	**potentially toxic element** (2)	**Limit** (3)	**Method of test** (4)
i)	Arsenic as As, mg/ kg, max.	0.1	**AOAC 986.15** or **AOAC 2013.06**
ii)	Lead as Pb, mg/ kg, max	0.1	**AOAC 994.02** or **AOAC 2013.06**
iii)	Cadmium as Cd, mg/ kg, max.	0.1	**AOAC 999.11** or **AOAC 2013.06**

6.2 Aflatoxin

The product shall not exceed the level 2 µg/ kg for Aflatoxin B_1 and 4 µg/ kg for total Aflatoxin when determined according to the **SLS 962** or **AOAC 968.22.**

7 PACKAGING

The product shall be packaged under hygienic conditions in acceptable food grade clean packages and sealed in such a manner so as to protect the product quality and to prevent contamination.

8 LABELLING AND/ OR MARKING

8.1 Following shall be marked and/ or labelled legibly and indelibly on each package:

a) Name of the product as “coconut milk powder” or "low fat coconut milk powder";
b) Brand name or Registered trade mark, if any;
c) Name and address of the manufacturer and packer or distributor in Sri Lanka;
d) CDA manufacture registration number;
d) Net mass, in g or kg;
e) Batch or code number;
f) Date of manufacture;
g) Date of expiry;
h) food additives with name and INS number; if any
j) Complete list of ingredients in descending order of proportion;
k) Instructions for preparation;
m) Conditions for storage; and
n) Country of origin, in case of imported products.

9 SAMPLING

Representative samples of the product shall be drawn as prescribed in Appendix **A**.

10 METHODS OF TEST

Tests shall be carried out as prescribed in Appendices **B** to **E** of this Standard, **SLS 303, SLS 311, SLS 312,** S**ection 1/ Part 1, Section2/ Part2, Section 3/ Part 3, Part 5** and **Part 12** of **SLS 516,** Parts **1** and **7** of **SLS 735**, **Part 1** of **SLS 962,** and Official Methods of Analysis of the Association of Official Analytical Chemists (**AOAC**).

11 CRITERIA FOR CONFORMITY

A lot shall be declared as conforming to the requirements of this Standard if the following conditions are satisfied:

9.1 Each package examined as in **A.5.1** satisfies the packaging and marking and/ or labelling requirements.

9.2 Each package examined as in **A.5.2** satisfies the requirements specified in **5.2** to **5.4.**

9.3 The test results on the composite sample tested as in **A.5.3** satisfies the requirements given in **5.5** and **6.**

9.4 The test results on each sample tested as in **A.5.4** satisfies the requirements given in **5.6**.

APPENDIX A
SAMPLING

A.1 LOT

In any consignment, all the packages containing coconut milk powder of same weight belonging to one batch of manufacture or supply shall constitute a lot.

A.2 GENERAL REQUIREMENTS OF SAMPLING

In drawing, preparing, storing and handling samples, the following precautions and directions shall be observed.

A.2.1 Samples shall be taken into a protected place not exposed to damp air, dust or soot.

A.2.2 The sampling instruments shall be clean and dry when used.

A.2.3 The samples shall be placed in clean and dry glass containers. The sample containers shall be of such a size that they are almost completely filled by the sample.

A.2.4 Precautions shall be taken to protect the samples, the material being sampled, the sampling instruments and the sample container from adventitious contamination.

A.2.5 Each container shall be sealed air-tight after filling and marked with necessary details of sampling.

A.2.6 Samples shall be stored in such a manner that the temperature of material does not vary unduly from the normal temperature.

A.2.7 When taking samples for microbiological tests, in addition to the requirements given in **A.2.1** to **A.2.6** the following precautions shall be observed.

A.2.7.1 The sampling instrument and the sample containers shall be sterilized.

A.2.7.2 Tests shall be carried out immediately after sampling.

A.3 SCALE OF SAMPLING

A.3.1 Samples shall be tested from each lot for ascertaining its conformity to the requirements of this Standard.

A.3.2 The number of packages/ containers to be selected from a lot shall be in accordance with Table **4**.

TABLE 4 - Scale of sampling

Number of packages / containers in the lot (1)	**Number of packages /containers to be selected** (2)
Up to 300	13
301 to 500	15
501 to 1 000	17
1 001 to 3 000	20
3 001 to 10 000	25
10 001 and above	32

A.3.3 The packages/containers shall be selected at random. In order to ensure randomness of selection, random number tables as given in **SLS 428** shall be used.

A.4 PREPARATION OF SAMPLES

A.4.1 Microbiological examination

A sub sample of five packages shall be selected from the packages / containers selected as in **A.3.2** to prepare samples for microbiological tests. Sufficient quantity of material shall be drawn from the top, middle and bottom portions of each package / containers of the sub sample using an appropriate sampling instrument which is sterile. The material obtained from each package / containers shall be mixed separately under aseptic conditions to form individual samples for microbiological tests. These individual samples shall be put into sterile sample containers and marked with necessary details of sampling.

A.4.2 Examination of general requirements

A sufficient quantity of material shall be drawn from the top, middle and bottom portions of each remaining package / containers (after selecting for microbiological examination) selected as in **A.3.2** using an appropriate sampling instrument. The material obtained from each package/ container shall be mixed separately to form individual samples and transferred to separate sample containers.

A.4.3 Tests for compositional requirements

An equal quantity of material shall be drawn from top, middle and bottom portions of each remaining packages / containers (after selecting for microbiological examination) selected as in **A.3.2** using an appropriate sampling instrument. The material so obtained shall be mixed together to form a composite sample and transferred to a sample container.

A.5 NUMBER OF TESTS

A.5.1 Each package/ containers selected as in **A.3.2** shall be examined for packaging and marking and/ or requirements.

A.5.2 Individual samples prepared as in **A.4.2** shall be examined for requirements given in **5.2** to **5.4**

A.5.3 The composite sample prepared as in **A.4.3** shall be tested for the requirements given in **5.5** and **6.**

A.5.4 Each of the five samples prepared as in **A.4.1** shall be tested for microbiological requirements given in **5.6**.

NOTE
In case of quantity of material selected for testing of requirements is insufficient, required number of samples shall be drawn from the lot.

APPENDIX B
DETERMINATION OF MOISTURE

B.1 APPARATUS

B.1.1 *Aluminum or suitable flat-bottomed dish*, of about 65 mm diameter, provided with close fitting but easily removable lid

B.1.2 *Drying oven*, well ventilated and maintained at 103 ± 2 ^{o}C

B.1.3 *Desiccator*

B.1.4 *Analytical balance*, with a readability of 0.1 mg

B.2 PROCEDURE

B.2.1 Weigh, to the nearest mg, about 3 g of the sample in the dish **(B.1.1)** previously dried and weighed.

B.2.2 Heat the uncovered dish with its lid, in the oven **(B.1.2)** for two hours.

B.2.3 Cover the dish while still in the oven, transfer to the desiccator **(B.1.3)** and weigh soon after reaching room temperature.

B.2.4 Repeat the process of drying, cooling and weighing until the difference between two successive weighings does not exceed 1 mg.

B.3 CALCULATION

$$Moisture\ content,\ per\ cent\ by\ mass\ =\ \frac{(m_2 - m_3)}{(m_2 - m_1)}\ \times\ 100$$

where,

m_1 is the mass, in grams of the dish;
m_2 is the mass, in grams of the dish and the sample before drying; and
m_3 is the mass in grams of the dish and the sample after drying.

APPENDIX C

Spread about 25 g of the sample in a petri dish or any suitable dish and dry by the method given in **B.2**. The dried material shall be referred to as the **dried sample** and shall be used in the tests were so indicated.

APPENDIX D
DETERMINATION OF TOTAL ASH

D.1 APPARATUS

D.1.1 *Suitable silica dish/ platinum dish*
D.1.2 *Analytical balance* with a readability of 0.1 mg
D.1.3 *Muffle furnace,* maintained at 550 ± 5 ºC
D.1.4 *Desiccator*
D.1.5 *Hot plate*
D.1.6 *Other laboratory equipment*

D.2 PROCEDURE

D.2.1 Place a silica dish (**D.1.1)** in the muffle furnace (**D.1.3)** for at least 15 min. Remove the dish from the furnace, cool in a desiccator (**D.1.4)** and weigh to the nearest mg.

D.2.2 Place 1 g of the **dried sample** into the dish and spread it evenly over the bottom, reweigh the dish to the nearest mg.

D.2.3 Place the dish on a hot plate (**D.1.5)** in a fume cupboard and slowly increase the temperature until fuming ceases and the sample becomes thoroughly charred.

D.2.4 Place the dish in the muffle furnace at 550 ± 5 ºC for 16 h (overnight).

D.2.5 Cool the dish in a desiccator (**D.1.4)** and weigh to the nearest mg.

D.3 CALCULATION

$$Total\ ash,\ per\ cent\ by\ mass = \frac{(m_3 - m_1)}{(m_2 - m_1)} \times 100$$

where,

m_1 is the mass in grams, of the empty dish;
m_2 is the mass in grams, of the dish with the sample; and
m_3 is the mass in grams, of the dish and ash.

APPENDIX E
DETERMINATION OF pH OF RECONSTITUTED MILK

E.1 APPARATUS

E.1.1 *Beaker, 150ml capacity*
E.1.2 pH *meter with electrode*
E.1.3 *Other laboratory equipment*

E.2 PROCEDURE

E.2.1 Weigh 10.0 g sample into clean, dry beaker (**E.1.1**) and add 100 ml recently boiled and cooled water at 25 **º**C.

E.2.2 Dissolve the sample and determine the pH using pH meter (**E.1.2**) standardized by buffer solutions of pH 4.0 and pH 9.0 both at 25 **º**C.

APPENDIX F
DETERMINATION OF FREE FATTY ACIDS OF THE EXTRACTED OIL

F.1 APPARATUS

G.1.1 *Drying oven,* well ventilated and maintained at 103 ± 2 ºC

F.1.2 *Other laboratory equipment*

F.2 REAGENTS

F.2.1 *Petroleum spirit, (*B.P. 40 ºC to 60 ºC).

F.2.2 *Sodium hydroxide,* (or potassium hydroxide), approximately 0.1 mol/l (0.1 mol/dm^3) solution, standardized.

F.2.3 *Phenolphthalein indicator,* 1 per cent alcoholic solution

F.2.4 *Ethyl alcohol,* 95 to 100 per cent (V/V), boiled and accurately neutralized immediately before use.

F.2.5 *Diethyl ether*

F.2.6 1:1 *solution of* **F.2.4 : F.2.5**

F.3 PROCEDURE

F.3.1 Weigh, to the nearest mg, about 10 g of the sample in an extraction thimble. Dry in the oven for two hours. Place the thimble in an extractor and extract with petroleum spirit **(F.2.1)** for 3 hours to 4 hours.

The extract should be free from suspended matter. Evaporate off the solvent and while still hot, blow dry air for a minute to remove last traces of the solvent. Dry the oil at 100 ^{o}C in the oven for two hours. Cool in a desiccator and weigh. Repeat the process of drying, cooling and weighing until the difference between two successive weighings does not exceed 1 mg.

F.3.2 Weigh, to the nearest mg, about 5 g of the oil extracted (**F.3.1**) in a 250-ml Erlenmeyer flask. Add 50 ml of neutralized 1:1 solution (**F.2.6**) and bring to boil on a water bath. Add 2 to 3 drops of phenolphthalein indicator and while as hot as possible titrate with the sodium hydroxide solution **(F.2.2)** shaking vigorously during the titration. The end point of the titration is reached when the addition of a single drop produces a slight but definite colour change persisting for at least 15 seconds.

F.4 CALCULATION

$$\textit{Free fatty acids of extracted oil as lauric acid, per cent by mass} = \frac{c \times V \times 200}{m \times 1\ 000} \times 100$$

where

c is the concentration, in moles per litre, of sodium hydroxide solution;
V is the volume, in milliliters, of sodium hydroxide solution required for titration; and
m is the mass, in grams of the oil taken.

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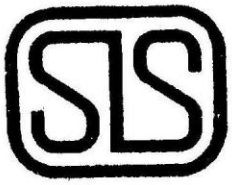

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SRI LANKA STANDARDS INSTITUTION

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