**SRI LANKA STANDARD 279: 2020**
**UDC 637.234**

# SPECIFICATION FOR BUTTER (*Second Revision*)

**SRI LANKA STANDARDS INSTITUTION**

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# (*Second Revision*)

**SLS 279: 2020**

**Gr. 6**


**SRI LANKA STANDARDS INSTITUTION**
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# Sri Lanka Standard
# SPECIFICATION FOR BUTTER
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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 Director General as vice chairperson of council on 2020-12-23 in the absence of chairman. This was ratified by the Council of Sri Lanka Standards Institution on 2021-01-13.

This Standard was first published in 1974 and revised in 1988. This Standard has revised to be in line with the (Milk & milk products) regulation. In this revision butter types have been included and microbiological requirements updated.

This Standard is subjected to the restriction imposed under the Sri Lanka Food Act No. 26 of 1980 and the regulations framed thereunder.

For 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 should be the same as that of the specified value in this Standard.

In formulation of this Standard, the valuable assistance derived from the following publications is gratefully acknowledged.

Codex Standard **279**-**1971-** Codex Standard for butter
**IS 13690**-1992 (Reaffirmed 2003) Indian Standard for pasteurized butter specification

## 1 SCOPE

This Standard prescribes the requirements and methods of sampling and tests for butter.

## 2 REFERENCES

SLS 80 Edible iodized salt (powdered form)
SLS 102 Rules for rounding off numerical values
SLS 143 Code of practice for general principles of food hygiene
SLS 181 Raw and processed milk
SLS 313 Methods for analysis of animal and vegetable fats and oils
SLS 428 Random sampling methods.
SLS 516 Methods of tests for microbiology of food and animal feeding stuffs
Part 2 Horizontal method for the enumeration of yeasts and moulds. Section 1: Colony count technique in products with water activity greater than 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 11 General guidance for enumeration of lipolytic organisms
Part 12 Horizontal method for the detection and enumeration of presumptive *Escherichia coli* (most probable number technique)
Part 15 Horizontal method for the detection and enumeration of *Listeria monocytogenes* and of *Listeria spp*. Section 1: Detection method

SLS 614 Potable water

SLS 735 Methods of test for milk and milk products
Part 1 Determination of fat content- Section 8: Butter, edible oil emulsions and spreadable fats (Reference method)
Part 3 Determination of moisture
Part 4 Determination of salt
Part 11 Determination of salt content in butter

SLS 872 Code of hygienic practice for dairy industry

SLS ISO 3727 Butter- Determination of moisture, non-fat solids and fat contents
Part 1: Butter- Determination of moisture contents (Reference method)
Part 2: Butter -Determination of non-fat solids contents (Reference method)

## 3 DEFINITIONS

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

**3.1 butter:** A fatty product exclusively derived from milk of cow and/ or buffalo or any mixture thereof without any foreign fat or oil and not containing any foreign substance other than permitted additives and permitted ingredients.

**3.2 salted butter:** Butter with added salt conforming to **SLS 80**.

**3.3 unsalted butter:** Butter with no added salt.

**3.4 cultured butter:** Butter with harmless lactic acid producing starter cultures.

**3.5 spiced/herbed butter:** Butter with added spices/herbs.

## 4 TYPES

**4.1** Salted butter
**4.2** Unsalted butter
**4.3** Cultured butter
**4.4** Spiced/ herbed butter

## 5 INGREDIENTS

### 5.1 Basic ingredients

**5.1.1** *Milk fat*, derived from milk conforming to **SLS 181**

**5.1.1** *Milk solids*, derived from milk conforming to **SLS 181**

### 5.2 Optional ingredients

**5.2.1** *Edible iodized salt* (*powdered form*) conforming to **SLS 80**

**5.2.2** *Lactic acid producing starter cultures**

**NOTE**: * Only for cultured butter

**5.2.3** *Food additives*

**5.2.3.1** Permitted colouring substances

| | | | |
|---|---|---|---|
| a)Annatto extracts, bixin -based | (INS 160b(i)) | 20 mg/kg | Maximum |
| b)Beta carotene (synthetic) | (INS160a(i)) | 25 mg/kg | Maximum |
| c)Beta carotenes(vegetable) | (INS160a(ii)) | 600 mg/kg | Maximum |

**5.2.3.2** Acidity regulators

| | | |
|---|---|---|
| a)Sodium carbonate | (INS 500(i)) | limited by GMP |
| b)Sodium hydrogen carbonate | (INS 500(ii)) | limited by GMP |

**5.2.3.3** Natural flavouring ingredients
a)Herbs and spices

## 6 REQUIREMENTS

### 6.1 Hygienic requirements

Butter shall be processed, packaged, stored and transported under hygienic conditions as prescribed in **SLS 143** and **SLS 872**.

### 6.2 General requirements

**6.2.1** Butter shall have pleasant characteristic odour and flavour. It shall be free from rancidity, bitterness and/ or objectionable odour.

**6.2.2** Butter shall have a firm and uniform texture at 10 $^{o}$C to 12 $^{o}$C. It shall not be spongy, crumbly or gritty.

**6.2.3** Butter shall have a uniform colour which may vary from cream to golden yellow. It shall be free from discolouration, dark specks and/ or streaks.

**6.2.4** Butter shall be free from any foreign matter other than permitted spices and herbs.

### 6.3 Other requirements

Butter shall comply to the requirements specified in Table **1** when tested in accordance with Column **4** of the table.

**TABLE 1 – Requirements for butter**

| **SI No** (1) | **Characteristic** (2) | **Requirement** (3) | **Method of test** (4) |
|---|---|---|---|
| i) | Moisture content, per cent by mass, max. | 16.0 | **SLS 735: Part 3/ SLS ISO 3727 Part 1** |
| ii) | Milk fat content, per cent by mass, min. | 80.0 | Appendix **B/ SLS 735 Part 1 Section 8** |
| iii) | Salt content, per cent by mass<br>a) Salted butter<br>b) Unsalted butter, max. | <br>0.5 to 3.0<br>0.1 | **SLS 735 Part 4/ SLS 735: Part 11** |
| iv) | Milk solids non-fat, per cent by mass, max. | 2.0 | **SLS ISO 3727 Part 2** |
| v) | Reichert- Meisel number ** | 23 to 32 | |
| vi) | Polenske number ** | 1.5 to 3.5* | |
| vii) | Refractive index, at 40$^{o}$ C | 1.4524 to 1.4561 | Appendix **C** |
| viii) | Acidity, as oleic acid, per cent by mass, max. | 0.3 | |

* If buffalo milk added the value will be 8.0 (max.)

** Not for routine analysis, if there is dispute only it is tested.

### 6.4 Microbiological limits

Butter shall conform to the limits specified in Table **2** when tested in accordance with Column **4** of the table.

**TABLE 2- Microbiological Limits**

| **SI NO** (1) | **Organism** (2) | **Limit** (3) | **Method of test** (4) |
|---|---|---|---|
| i) | Yeasts ,cfu per g, max. | 50 | **SLS 516 Part 2 Section 1** |
| ii) | Moulds, cfu per g, max. | 10 | **SLS 516 Part 2 Section 1** |
| iii) | Coliforms, MPN per g, max. | 10 | **SLS 516 Part 3 Section 1** |
| iv) | Lipolytic organisms, per g, max. | 100 | **SLS 516 Part 11** |
| v) | *E. coli,* MPN per g | absent | **SLS 516 Part 12** |
| vi) | *Listeria monocytogenes* per g | absent | **SLS 516 Part 15 Section 1** |
| vii) | *Staphylococcus aureus* (coagulase positive), cfu per g, max. | 10 | **SLS 516 Part 6 Section 1** |
| viii) | *Salmonella,* cfu per 25 g | absent | **SLS 516 Part 5** |

Instructions for microbiological examination of butter are given in Appendix **D**.

## 7 PACKAGING

**7.1** The product shall be packaged in food grade containers/ packages which has barrier properties for moisture and sufficiently inert to preclude substances from being transferred to food in quantities large enough to endanger human health or to bring about an unacceptable change in the composition of the product or deterioration in its organoleptic properties.

**7.2** Number of such packages or containers shall be suitably packed in cartons**.**

## 8 MARKING AND/ OR LABELLING

Each package or container shall be marked and/ or labelled legibly and indelibly with the following:

a) Common name and the type of the product as "Salted butter" or "Unsalted butter" "Spiced/Herbed butter" or "Cultured butter";
b) Name and address of the manufacturer and/ or distributor (including country of origin);
c) Brand name and/or trade mark, if any;
d) Batch or code number or decipherable code marking;
e) Net mass, in grams;
f) Date of Manufacture;
g) Date of Expiry;
h) List of ingredients in descending order including name and INS No of food additives if any; and
j) Instructions for storage.

## 9 SAMPLING

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

## 10 METHODS OF TESTS

Tests shall be carried out as specified in Appendices **B** to **D** of this Standard, Section **1** of **Part 2**, Section **1** of **Part 3**, **Part 5**, Section **1** of **Part 6**, **Part 11, Part 12** and Section **1** of **Part 15** of **SLS 516**, Section **8** of **Part 1**, **Part 3**, **Part 4** and **Part 11** of **SLS 735 Part 1** and **Part 2** of **SLS ISO 3727**.

## 11 CRITERIA FOR CONFORMITY

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

**11.1** Each package or container inspected as in **A.4.1** satisfies the relevant requirements.

**11.2** Each package or container tested as in **A.4.2** satisfies the relevant microbiological limits.

**11.3** Each package or container examined as in **A.4.3** satisfies the relevant requirements.

**11.4** Test results of the composite sample tested as in **A.4.4** satisfy the relevant requirements.

## APPENDIX A
## SAMPLING

### A.1 LOT

All packages or containers of the same size and type belonging to one batch of manufacture or supply shall constitute a lot.

### A.2 GENERAL REQUIREMENTS OF SAMPLING

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

**A.2.1** Samples shall be kept in clean and dry opaque containers. If other containers are used, keep the filled containers in the dark.

**A.2.2** The containers shall be marked with necessary details of sampling.

**A.2.3** The samples shall be transported and stored at a temperature between 2 °C to 5 °C. Testing shall be done within 48 hours 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 cartons to be selected from a lot shall be in accordance with Column **2** of Table **3**.

**TABLE 3- Scale of sampling**

| **Number of cartons in the lot** | **Number of cartons to be selected** | **Number of packages or containers to be selected** |
|---|---|---|
| (1) | (2) | (3) |
| Up to 8 | 2 | 7 |
| 9 to 15 | 3 | 8 |
| 16 to 25 | 4 | 9 |
| 26 to 50 | 5 | 10 |
| 51 to 90 | 6 | 11 |
| 91 to 150 | 8 | 13 |
| 151 and above | 13 | 18 |

**A.3.3** From each carton selected as in **A.3.2**, a sufficient number of packages or containers shall be drawn to form a sample size as given in Column **3** of Table **3**.

**A.3.4** Cartons and packages or containers shall be, drawn at random. In order to ensure randomness of selection, tables of random numbers as given in **SLS 428** shall be used.

### A.4 NUMBER OF TESTS

**A.4.1** Each package or container selected as in **A.3.3** shall be inspected for packaging and marking and/ or labelling requirements.

**A.4.2** Five packages or containers shall be selected from the packages or containers selected as in **A.3.3** and tested individually for microbiological limits.

**A.4.3** The remaining packages or containers of the sample shall be individually examined for requirements given in **6.2.1**, **6.2.2**, **6.2.3** and **6.2.4**.

**A.4.4** After examining as in **A.4.3** the contents of each package or container shall be mixed to from a composite sample and the composite sample thus obtained shall be tested for the requirements given in Table **1**.

## APPENDIX B
## DETERMINATION OF FAT

The percentage of fat is calculated by subtracting from 100, the sum of the percentages of moisture, curd and salt.

### B.1 PREPARATION OF THE TEST SAMPLE

Soften the entire sample container by warming in a water bath kept at a temperature not exceeding 39°C. Shake frequently during the softening process to reincorporate any separated fat. Remove the container from the water bath and frequently shake vigorously until the sample cools to a thick, creamy consistency. Weigh immediately the test portion.

### B.2 DETERMINATION OF MOISTURE

Carry out the moisture determination as prescribed in **SLS 735: Part 3**. Reserve the residue obtained for the determination of curd and salt **(***see* **B.3)**.

### B.3 DETERMINATION OF CURD AND SALT

#### B.3.1 Reagent

**B.3.1.1** *Light petroleum,* boiling range 40 °C to 60 °C.

#### B.3.2 Apparatus

**B.3.2.1** *Desiccator*

**B.3.2.2** *Oven*, maintained at 103 ± 2 °C

**B.3.2.3** *Sintered glass crucible*, of porosity 2 or 3
**B.3.2.4** *Wash bottle*

### B.3.3 Procedure

Dry the crucible **(B.3.2.2)** in an oven at 103 ± 2 °C, cool in a desiccator and weigh. Melt the residue from the moisture determination, add 25 ml of light petroleum **(B.3.1.1)** and mix well using a glass rod. Fit the crucible to the filter flask so that the lower part of the crucible is not in contact with the rubber fitting. Wet the crucible with light petroleum and decant the fatty solution through the crucible under slight suction, leaving the sediment in the dish.
Macerate the sediment twice with 15 ml to 20 ml of light petroleum and filter. With the aid of a wash-bottle containing the solvent, wash all fat and sediment from the dish into the crucible. Finally, wash the inside and the outside of the crucible until free from fat. Dry the crucible in the oven at 103 ± 2 °C for at least 30 minutes, cool in the desiccator and weigh. Repeat drying, cooling and weighing until the difference in mass between two successive weighing does not exceed 0.000 5 g.
The increase in mass of the crucible represents the curd and salt and shall be reported as per cent by mass of the sample.

## B.4 CALCULATION

*Fat, per cent by mass* = 100 - ($P_{1+}$ $P_2$)

where,

$P_1$ = per cent by mass, of moisture as determined in **B.2**; and
$P_2$ = per cent by mass, of curd and salt as determined in **B.3**.

## APPENDIX C
## DETERMINATION OF REICHERT-MEISEL NUMBER, POLENSKE NUMBER, REFRACTIVE INDEX AND ACIDITY

**C.l** Melt the sample of butter and let it stand for 2 hours to 3 hours at 50 °C to 60 °C until the fat separates from the water and curd. Decant and filter immediately through a warm dry filter paper. Filter again if the filtrate obtained is not clear. Use the well mixed melted and clarified fat, free from water.

**C.2** Butter fat separated as in C.**l** shall then be tested for Reichert- Meisel number, Polenske number, refractive index, and acidity in accordance with the relevant methods given in **SLS 313**.

## APPENDIX D
## MICROBIOLOGICAL EXAMINATION OF BUTTER

Samples shall be examined within 48 hours of receipt of the laboratory and shall be held at 0°C to 5 °C before examination.

### D.l PREPARATION OF THE TEST SAMPLE

Stand the sample at room temperature for not more than 60 minutes to soften the butter.

Transfer aseptically about 50 g of the product to a wide necked sterile sample container. Melt the sample by standing the sample container in a water bath at 45°C ± 1 °C. Mix thoroughly by shaking through an arc of 300 mm for about 1 minute and use immediately for preparing the dilutions.

Transfer 10 g of the melted product using a pipette to 90 ml of 1/4 strength Ringers solution or 0.1 per cent peptone diluent containing 0.1 per cent m/V of agar. The diluent shall be at 45°C± 1 °C and the pipette shall be pre-warmed. Prepare further decimal dilutions as required ensuring that every diluent is held at 45°C± 1 °C.

### D.2 TESTS

*Holding temperature for dilutions*
All dilutions of butter shall be held at 45°C± 1 °C during the performance of the necessary tests.
The period of holding shall not exceed 15 minutes.

**D.2.1** *Moulds and yeasts*

Proceed as prescribed in **SLS 516: Part 2 Section 1**.

**D.2.2** *Coliforms*

Proceed as prescribed in **SLS 516: Part 3 Section 1** incubating at 30°C±1 °C for a period of 48 ± 2 hours.

**D.2.3** *Lipolytic organisms*

Proceed as prescribed in **SLS 516: Part 11 Section 1**.

**D.2.4** *Listeria monocytogenes*

Proceed as prescribed in **SLS 516: Part 15 Section 1**.

**D.2.4** *Staphylococcus aureus* (coagulase positive)

Proceed as prescribed in **SLS 516: Part 6 Section 1**.

**D.2.5** *Salmonella*

Proceed as prescribed in **SLS 516: Part 5**

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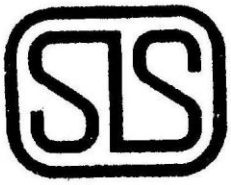


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