**SRI LANKA STANDARD 280 : 2009**

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# SPECIFICATION FOR PAPADAM
# (First Revision)

**SRI LANKA STANDARDS INSTITUTION**

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# (First Revision)

**SLS 280 : 2009**

**Gr. 7**


**SRI LANKA STANDARDS INSTITUTION**
**Victoria Place, No. 17,**
**Elvitigala Mawatha,**
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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 PAPADAM
# (First Revision)

## FOREWORD

This Sri Lanka Standard was approved by the Sectoral Committee on Agricultural and Food Products and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 2009-10-28.

This specification was first published in 1974. It has been revised to update the requirements on the basis of the present manufacturing practices in the industry. In this revision, some of the requirements have been changed and also the text has been updated.

Papadam is a popular food commodity in the Sri Lankan diet. Considerable quantities of papadam are being made on cottage industry scale for domestic consumption. The product is usually made from a blend of pulse flour, cereal flour and edible starch with common salt, spices, edible vegetable oil, etc. The dough is rolled into uniform shapes of varying diameters, dried and suitably packaged. Papadam is consumed either fried in fat or toasted.

This specification is subject to the restrictions imposed under the Food Act No. 26 of 1980 and the regulations framed thereunder, wherever applicable.

For the purpose of deciding whether a particular requirement of this specification 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 specification.

In revising this standard, the assistance derived from the publications of the Bureau of Indian Standards is gratefully acknowledged.

## 1 SCOPE

This standard prescribes the requirements and the methods of sampling and testing for papadam.

## 2 REFERENCES

SLS 79 Edible common salt
SLS 102 Rules for rounding off numerical values
SLS 143 Code of practice for general principles of food hygiene
SLS 144 Wheat flour
SLS 386 Sesame seeds
SLS 428 Random sampling methods

SLS 467 Code of practice for labelling of prepackaged foods
SLS 614 Potable water
SLS 794 Black gram
SLS 913 Rice flour
SLS 929 Sodium bicarbonate (Baking soda) food grade

## 3 INGREDIENTS

All ingredients used shall comply with the Food Act No. 26 of 1980 and the regulations framed thereunder.

### 3.1 Basic ingredients

**3.1.1** Black gram ( *Vigna mungo* L.) flour, made from decuticled black gram also known as ulundu (oorid) , conforming to **SLS 794**

**3.1.2** Potable water, conforming to **SLS 614**

**3.1.3** Sodium bicarbonate (Baking soda) food grade, conforming to **SLS 929**

**3.1.4** Edible common salt, conforming to **SLS 79**

### 3.2 Optional ingredients

In addition to the ingredients given in **3.1**, one or more of the following may be used.

**3.2.1** Wheat flour ,conforming to **SLS 144**
Rice flour, conforming to **SLS 913**
Maize flour, made from decuticled maize (*Zea mays*)
Sorghum flour, made from decuticled sorghum ( *Sorghum bicolor*)
Potato flour ,made from potato (*Solanum tuberosum*)
Edible tapioca flour,made from tapioca (*Manihot esculenta*)
Green gram flour, made from decuticled green gram (*Vigna radiata)*
Any other edible flour

**3.2.2** Edible vegetable oils

**3.2.3** Spices

**3.2.4** Sesame seeds, conforming to **SLS 386**

## 4 REQUIREMENTS

**4.1** The product shall be manufactured, dried, packaged, stored and distributed under hygienic conditions as prescribed in **SLS 143**.

**4.2** Ingredients listed in Clause **3** only shall be used in the manufacture of papadam. These shall be free from insect infestation, extraneous matter and fungal growth.

**4.3** The product shall be of pleasant taste and smell and shall be free from rancid, bitter and alkaline or soapy taste. Spiced papadam in the raw form shall have an aroma and taste characteristic of the spices used.

**4.4** In the raw form, papadam shall be pliable and shall not crumble. On frying, papadam shall be crispy. It shall not give leathery, gritty, sticky or soggy mouth feel.

**4.5** The product shall be free from broken or frayed edges, excessive number of holes, adhering dirt or foreign matter, insect infestation or fungal growth visible to naked eye and any other harmful ingredients.

**4.6** Papadam shall have a uniform shape, size and thickness. The thickness may range between 0.3 mm to 1.2 mm.

**4.7** The product shall also conform to the requirements given in Table **1** when tested in accordance with the methods prescribed in Column **4** of the Table.

**TABLE 1 – Requirements for papadam**

| **Sl. No.** **(1)** | **Characteristic** **(2)** | **Requirement** **(3)** | **Method of test** **(4)** |
|---|---|---|---|
| i) | Moisture, per cent by mass | 12.5 – 15.0 | Appendix C |
| ii) | Total ash, per cent by mass, on dry basis (Max.) | 12 | Appendix D |
| iii) | Acid insoluble ash, per cent by mass, on dry basis (Max.) | 0.5 | Appendix E |
| iv) | Alkalinity of ash, as $Na_2CO_3$, per cent by mass, on dry basis ( Max.) | 2.5 | Appendix F |
| v) | pH of water extract at 27± 2 $^oC$ (Max.) | 9.0 | Appendix G |
| vi) | Fat content, per cent by mass, on dry basis ( Max.) | 3.0 | Appendix H |
| vii) | Crude fibre content, per cent by mass, on dry basis (Max.) | 1.5 | Appendix J |

## 5 PACKAGING

The papadam shall be packaged using any suitable food grade packaging material having moisture barrier characteristics. Packages shall be completely heat sealed.

## 6 MARKING AND/OR LABELLING

**6.1** The following shall be marked or labelled legibly and indelibly on each package destined for the final consumer.

a) Name of the product, as “Papadam” ;
b) Brand name or trade name , if any ;
c) Net mass in ‘g’ or ‘kg’ ;
d) Name and address of the manufacturer and packer or distributor in Sri Lanka ;
e) Batch number or Code number or a decipherable code marking ;
f) Date of manufacture ;
g) Date of expiry ;
h) Complete list of ingredients, in descending order of proportion ;
j) Instruction for storage and use, if any ; and
k) Country of origin, in case of imported products.

**6.2** The marking and labelling shall also be in accordance with **SLS 467**.

## 7 SAMPLING

Representative samples of the product for ascertaining conformity to the requirements of this standard shall be drawn as prescribed in Appendix **A**.

## 8 METHODS OF TEST

Tests shall be carried out as prescribed in Appendices **B** to **J** of this specification.

Note : During the analysis, unless otherwise stated, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

## 9 CRITERIA FOR CONFORMITY

### 9.1 For tests on individual samples

The lot shall be declared to have satisfied the requirements of appearance and dimensions if each of the papadams inspected under **A.4.1** satisfies the relevant specification requirements.

**9.1.1** The lot shall be declared to have satisfied the requirements of moisture if each of the test results (see **A.4.3**) satisfies the relevant specification requirements.

### 9.2 For composite sample

The lot shall be declared to have satisfied the requirements of the remaining characteristics (see **A.4.4**) if the test results on the composite sample for the characteristics satisfy the corresponding relevant specification requirements.

# APPENDIX A
# SAMPLING

## A.1 GENERAL REQUIREMENTS OF SAMPLING

**A.1.1** In drawing, preparing, storing and handling samples, the following precautions and directions shall be observed.

**A.1.2** Samples shall not be taken at an exposed place.

**A.1.3** Precautions shall be taken to protect the samples, the material being sampled, the sampling equipments and the containers for samples from adventitious contamination.

**A.1.4** The samples shall be placed in clean and dry glass containers.

**A.1.5** Each sample container shall be sealed airtight after filling and marked with full identification particulars, such as the sample number, the date of the sampling, the month and year of manufacture of the material, etc.

**A.1.6** Samples shall be stored in a cool place and protected from excessive variations of temperature.

**A.1.7** Sampling shall be done by a person agreed to between the purchaser and the supplier and in the presence of the purchaser (or his representative) and the supplier (or his representative).

## A.2 SCALE OF SAMPLING

### A.2.1 Lot

All the packages in a single consignment of the material drawn from a single batch of manufacture shall constitute a lot. If the consignment consists of different batches of manufacture, the packages belonging to the same batch of manufacture shall be separated and shall constitute separate lots.

**A.2.2** For ascertaining the conformity of the lot to the requirements of the specification, tests shall be carried out for each lot separately. The number of packages to be selected (n) for the purpose shall depend on the size of the lot (N) and shall be in accordance with Table **2**.

**TABLE 2 - Number of packages to be selected for sampling**

| Lot Size N (1) | | | Number of packages to be selected n (2) |
|---|---|---|---|
| Up | to | 50 | 2 |
| 51 | to | 100 | 3 |
| 101 | to | 200 | 4 |
| 201 | to | 300 | 5 |
| 301 | to | 500 | 6 |
| 501 | to | 800 | 7 |
| 801 | to | 1 300 | 8 |
| 1 301 | to | 3 200 | 9 |
| 3 201 | and | above | 10 |

**A.2.3** The packages to be selected for sampling shall be chosen at random from the lot. In order to ensure randomness of selection, tables of random numbers as given **SLS 428** shall be used.

*Note : In case such tables are not available, the following procedure may be adopted. Starting from any package, count them as 1,2,3 … r in one order. Every rth package thus counted shall be withdrawn; r being the intergral part of N/n, where N and n are the lot size and sample size respectively.*

## A.3 TEST SAMPLE AND REFERENCE SAMPLE

**A.3.1** From each of the packages selected under **A.2.3**, equal number of papadams shall be taken, broken into small pieces and mixed together so as to form a composite sample, and shall be immediately transferred to thoroughly dried moisture-proof sample containers which are then sealed airtight and labelled with all the particulars of sampling given under **A.1.5.** The composite sample shall be sufficient to carry out all the tests mentioned under **A.4.4**.

**A.3.2** From the remaining papadams in each package, sufficient number to carry out tests mentioned under **A.4.3** shall be taken, and shall be immediately transferred to thoroughly dried moisture-proof containers which are then sealed airtight and labelled with all the particulars of sampling given under **A.1.5**. The papadams in each such sealed container shall constitute an individual test sample.

### A.3.3 Reference sample

Reference sample shall consist of the composite sample and a set of individual test samples marked for the purpose and shall bear the seals of the purchaser and the supplier and shall be kept at a place agreed to between the two.

## A.4 NUMBER OF TESTS

**A.4.1** The number of tests mentioned in **A.4.2** and **A.4.3** shall be first conducted on the test samples.

**A.4.2** Each papadam in the individual test sample (see **A.3.2**) shall be examined for appearance and dimensions, given in **4.3**, **4.4**, **4.5**, and **4.6**.

**A.4.3** Tests for the determination of moisture shall be conducted individually on each of the samples constituting a set of individual test samples. (see **A.3.2)**

**A.4.4** Tests for the determination of the remaining characteristics, namely, total ash, acid insoluble ash, fat, crude fibre, alkalinity of ash and pH shall be conducted on the composite sample. (see **A.3.1**).

# APPENDIX B
# PREPARATION OF SAMPLES

## B.1 PROCEDURE

Using a clean pair of scissors or a knife, cut each papadam into small fragments. Mix fragments thoroughly with a glass rod and preserve in a clean stoppered bottle. This is known as the prepared sample and shall be used for all the determinations.

**NOTE** ***:*** *Weighing of samples for Appendices **B** to **J** has to be done at the same time.*

# APPENDIX C
# DETERMINATION OF MOISTURE

## C.1 PROCEDURE

Weigh, to the nearest milligram, about 5 g of the prepared sample in a previously weighed porcelain, silica or platinum dish provided with a lid. Place the dish and contents in an oven maintained at 105 ± 2 $^{o}$C and dry for 5 hours. Cool the dish in a desiccator and weigh with the lid on. Heat again at 105 ± 2 $^{o}$C in the oven for 30 minutes. Cool the dish in the desiccator and weigh. Repeat this process of heating for 30 minutes, cooling and weighing, till the difference in mass between two successive weighings is less than one milligramme. Note the lowest mass.

## C.2 CALCULATION

$$\textit{Moisture, per cent by mass} = \frac{100 \ (m_1 - m_2)}{m_1 - m}$$

where,

m is the mass, in grams, of the empty dish;
$m_1$ is the mass, in grams, of the dish with the material before drying; and
$m_2$ is the mass, in grams, of the dish with the material after drying.

# APPENDIX D
# DETERMINATION OF TOTAL ASH

## D.1 PROCEDURE

Weigh, to the nearest milligram, about 20 g to 25 g of the prepared sample in a previously weighed porcelain, silica or platinum dish. Dry for 2 hours in an oven maintained at 105 ± 2°C. Ignite the dried material in the dish with the flame of a suitable burner. Complete the ignition by keeping in a muffle furnace at 600 ± 20 °C until grey ash results. Cool in a desiccator and weigh. Heat again at 600 ± 20 °C in the muffle furnace for 30 minutes. Cool in the desiccator and weigh. Repeat the process of heating for 30 minutes, cooling and weighing till the difference in mass between two successive weighings is less than one milligramme. Note the lowest mass.

**NOTE :** *Preserve the dish containing this ash for the determination of acid insoluble ash. (see **E.2**)*

## D.2 CALCULATION

$$\textit{Total ash (on dry basis), per cent by mass} = \frac{10\ 000\ (m_2 - m)}{(m_3 - m)\ (100 - M)}$$

where,

m is the mass, in grams, of the empty dish;
M is the percentage by mass, of the moisture content, in the material.
$m_2$ is the mass, in grams, of the dish with the ash ; and
$m_3$ is the mass, in grams, of the dish with the dried material taken for the test.

## APPENDIX E
## DETERMINATION OF ACID INSOLUBLE ASH

### E.1 REAGENTS

**E.1.1** *Dilute hydrochloric acid*

Prepared by diluting one part by volume of concentrated hydrochloric acid (analytical grade) with 2.5 parts by volume of water.

### E.2 PROCEDURE

To the ash contained in the dish (see **D.1**) and 25 ml of dilute hydrochloric acid, cover with a watch glass and heat on a water bath for 10 minutes. Allow to cool and filter the contents of the dish through a Whatman No. 42 filter paper or its equivalent. Wash the filter paper with water until the washings are free from the acid and return it to the dish. Keep it an air oven maintained at 105 ± 2 $^{o}$C for about 3 hours. Ignite in a muffle furnace at 600 ± 20 $^{o}$C for one hour. Cool the dish in a desiccator and weigh. Heat again at 600 ± 20 $^{o}$C in the muffle furnace for 30 minutes. Cool the dish in the desiccator and weigh. Repeat the process of heating for 30 minutes, cooling and weighing till the difference in mass between two successive weighings is less than one milligramme. Note the lowest mass.

### E.3 CALCULATION

$$Acid\ \ inso\,\text{lub}\,le\ \ ash\ \ (on\ \ dry\ \ basis),\ \ per\ \ cent\ \ by\ \ mass = \frac{10\ \ 000\ \ (m_2\ \ -\ \ m)}{(m_3 - m)\ \ (100\ \ -\ \ M)}$$

where,

m is the mass, in grams, of the empty dish;
M is the percentage by mass, of the moisture content, in the material;
$m_2$ is the mass, in grams, of the dish with the acid insoluble ash; and
$m_3$ is the mass, in grams, of the dish with the dried material.

## APPENDIX F
## DETERMINATION OF ALKALINITY OF ASH

### F.1 REAGENTS

**F.1.1** *Hydrochloric Acid* , Approx. 0.1 N

**F.1.2** *Standard Sodium Hydroxide* , Standardized, Approx. 0.1 N

## F.2 PROCEDURE

Weigh, to the nearest milligram, about 5 g, of the prepared sample, and ash as prescribed in **D.1** Add to the ash a known excess of dilute hydrochloric acid (**F.1.1**) and boil for 2 minutes. Cool and titrate the excess of acid against standard sodium hydroxide solution using methyl orange as indicator.

**F.2.2** Titrate 10 ml of the dilute hydrochloric acid against standard sodium hydroxide solution.

## F.3 CALCULATION

*Alkalinity of ash as sodium carbonate(on dry basis), per cent by mass*

$$= \frac{530 \ x \ N \left( \frac{VV_1}{10} - V_2 \right)}{m \ (100 - M)}$$

where,

N is the normality of standard sodium hydroxide;
V is the volume, in ml, of dilute HCl added;
$V_1$ is the volume, in ml, of standard NaOH corresponding to 10 ml of dilute HCl;
$V_2$ is the volume, in ml, of standard NaOH required for the excess of acid;
m is the mass, in grams, of the material taken for the test; and
M is the percentage by mass, of the moisture content, in the material.

# APPENDIX G
# DETERMINATION OF pH

## G.1 PROCEDURE

Weigh, to the nearest milligram, about 5 g of the prepared sample, crush it in to powdered form and add 50 ml of water. Allow the contents to soak for one hour. Stir the contents for 10 to 15 minutes, preferably with the help of a mechanical stirrer, to obtain a uniform aqueous suspension. Record the pH of the suspension at 27± 2 $^{o}$C , using a calibrated pH meter.

# APPENDIX H
# DETERMINATION OF FAT

## H.1 APPARATUS

**H.1.1** *Soxhlet Extraction apparatus*

## H.2 SOLVENT

**H.2.1** *Diethyl Ether or Petroleum Ether* (40 $^{o}$C – 60 $^{o}$C) .

## H.3 PROCEDURE

Weigh, to the nearest milligram, about 4 g to 5 g of the moisture free sample and transfer to a suitable thimble. Extract with the solvent in a Soxhlet extraction apparatus for about 06 hours. Transfer the extract contained in the evaporating dish, whose empty mass had been previously determined after drying at 100 $^{o}$C for 30 minutes. Cool in a desiccator and weigh. Continue the alternate drying and weighing at 30-minute intervals until the loss in mass between two successive weighings is not more than one milligram. Record the lowest mass.

**NOTE *:*** *Preserve the fat-free material for the determination of crude fibre (see **J.2**).*

## H.4 CALCULATION

$$Fat\,(on\ \ dry\ \ basis),\ \ per\ \ cent\ \ by\ \ mass = \frac{10\ \ 000\ \ (m_3\ \ -\ \ m_2)}{m\ \ (100\ \ -\ \ M)}$$

where,

m is the mass, in grams, of the dried material taken for the test;
M is the percentage by mass, of the moisture content, in the material;
$m_2$ is the mass, in grams, of the empty evaporating dish, clean and dry; and
$m_3$ is the mass, in grams, of the evaporating dish with the extracted fat.

# APPENDIX J
# DETERMINATION OF CRUDE FIBRE

## J.1 REAGENTS

**J.1.1** *Dilute sulphuric acid,* 1.25 per cent (m/v)

**J.1.2** *Sodium hydroxide solution,* 1.25 per cent (m/v)

**J.1.3** *Ethyl alcohol,* 95 per cent (v/v).

## J.2 PROCEDURE

Weigh, to the nearest milligram, about 2.5 g of the preserved defatted material (see **H.3**) and transfer to a one-litre flask. Take 200 ml of dilute sulphuric acid in a beaker and bring to the boil. Transfer the whole of the boiling acid to the flask and immediately connect the flask with a water cooled reflux condenser and heat so that the contents of the flask begin to boil within one minute. Rotate the flask frequently, taking care to keep the material from remaining on the sides of the flask and out of contact with the acid. Continue boiling for exactly 30 minutes. Remove the flask and filter through fine linen (about 18 threads to a centimetre) held in a funnel, and wash with boiling water until the washings are no longer acid to litmus. Bring to the boil 200 ml of sodium hydroxide solution under a reflux condenser. Wash the residue on the linen into the flask containing the boiling sodium hydroxide solution. Immediately connect the flask with the reflux condenser and boil again for exactly 30 minutes. Remove the flask and immediately filter through the filtering cloth. Thoroughly wash the residue with boiling water, and transfer to a Gooch crucible prepared with a thin but compact layer of ignited asbestos. Wash the residue thoroughly first with hot water and then with about 15 ml of ethyl alcohol. Dry the Gooch crucible and contents at 105 ± 2°C in an air oven to constant mass. Cool and weigh. Incinerate the contents of the Gooch crucible in an electric muffle furnace at 600 ± 20°C until all the carbonaceous matter is burnt. Cool the Gooch crucible containing the ash in a desiccator and weigh.

## J.3 CALCULATION

$$\textit{Crude fibre (on dry basis), per cent by mass} = \frac{(m_3 - m_2)\ (100 - F)\ x\ 100}{m\ (100 - M)}$$

where,

m is the mass, in grams, of the defatted material taken for the test;
M is the percentage by mass, of the moisture content, in the material;
$m_2$ is the mass, in grams, of Gooch crucible and contents after ashing;
$m_3$ is the mass, in grams, of Gooch crucible and contents before ashing; and
F is the mass, of the fat content, in the material.

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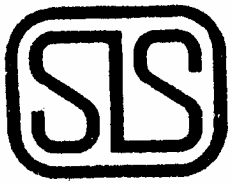


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## SRI LANKA STANDARDS INSTITUTION

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