SRI LANKA STANDARD 1162 : 1997

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SPECIFICATION FOR READY TO EAT EXTRUDED SNACKS

SRI LANKA STANDARDS INSTITUTION

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SLS 1162 : 1997

Gr. 6

SRI LANKA STANDARDS INSTITUTION
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Sri Lanka.

Sri Lanka Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

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

Sri Lanka Standard
SPECIFICATION FOR READY TO EAT EXTRUDED SNACKS

FOREWORD

This standard was approved by the Sectoral Committee on Agriculture and Food Technology-1 and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 1997-08-14.

Ready to eat extruded snacks are made by the extrusion cooking process. This is a process by which pre-conditioned raw food material is subjected to high-temperature for short time cooking which results in the material becoming of plastic consistency. This material is then extruded through specially tapered die. When the material emerges from the die, it passes from a high pressure to a low presssure zone and this results in puffing of the product. The cooked dough is cut to the desired size, after which it is dried to the desired moisture level. Finally, the product is coated with oil, flavours, salt and spices and is then packed.

Several types of such snacks have been recently introduced under different names. This specification was formulated to safeguard the health of the consumers who are mainly children and at the same time to provide guidance for the manufacturers of such foods.

During the formulation of this specification due consideration has been given to the relevant provisions made under the Sri Lanka Food Act No. 26 of 1980. Specific requirements given in this specification, wherever applicable, are in accordance with relevant regulations. However, general provisions made under the Sri Lanka Food Act have not been included in this specification and therefore, the attention of the user of this specification is drawn to these general provisions..

Guidelines for the determination of a compliance of a lot with the requirements of this standard based on statistical sampling and inspection are given in Appendix **A**.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the results of a test or an analysis, shall be rounded off in accordance with **CS 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 the preparation of this standard, the assistance derived from the following publication is gratefully acknowledged:

i) IS 12566:1989 Specification for 'ready to eat' extruded snacks.

1 SCOPE

1.1 This standard prescribes requirements and methods of test for ready to eat extruded snacks.

1.2 This specification does not cover ready to eat protein-rich extruded foods which are intended to be used as nutritive snacks.

2 REFERENCES

SLS 79 Edible common salt
CS 102 Presentation of numerical values
SLS 143 General principles of food hygiene
CS 144 Wheat flour
SLS 340 Ghee
SLS 428 Random sampling methods
SLS 467 Labelling of prepackaged foods
SLS 516 Microbiological test methods
Part 1 General guidance for enumeration of micro-organisms, colony count technique at 30 °C
Part 3 Determination and enumeration of coliforms, faecal coliforms and *Escherichia coli*
Part 5 General guidance for detection of *Salmonella*

3 DEFINITION

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

3.1 extruded snacks : Snacks made of a starch base as a principle ingredient by the process of extrusion cooking.

4 INGREDIENTS AND ADDITIVES

The following ingredients may be used for the preparation of extruded snacks.

4. 1 Dehusked and/or degermed cereals and millets;

4.2 Wheat flour, conforming to **CS 144;**

4. 3 Corn meal;

4. 4 Rice meal;

4. 5 Edible tubers and starches;

4. 6 Dehusked pulses;

4. 7 Refined edible vegetable oils, edible hydrogenated fat or ghee, conforming to **SLS 340**, singly or in combination;

4.8 Common edible salt, conforming to **SLS 79;**

4.9 Spices, spice extracts and condiments;

4.10 Cheese powder;

4.11 Dextrins;

4.12 Sugar conforming to **SLS 191/SLS 883** and sugar products;

4.13 Permitted colours and flavours;

4.14 Citric acid or tartaric acid;

4.15 Monosodium glutamate;

4.16 Permitted emulsifying and/or stabilizing agents; and

4.17 Permitted antioxidants.

5 REQUIREMENTS

5.1 Hygienic requirements

The product shall be processed, packed, stored and distributed in accordance with **SLS 143.**

5.2 Appearance

The shape and the size of the product shall be reasonably uniform.

5.3 Texture

The product shall be properly cooked to crispy texture. Product shall be free from uncooked particles.

5.4 Flavour

The product shall be of pleasant taste and smell, and free from rancid, soapy, bitter or burnt taste and smell. They shall have aroma and taste characteristic of the flavours and spices used.

5.5 Freedom from extraneous matter

The product shall be free from insects, insect residues, rodent hair and excreta, fungal infestation and any other extraneous and harmful material.

5.6 Other requirements

The product shall also comply with the requirements specified in Table **1**, when tested according to the methods given in Column **4** of the table.

TABLE 1 - Requirements for ready to eat extruded snacks

Sl. No. (1)	Characteristic (2)	Requirement (3)	Method of test (4)
i)	Moisture, per cent by mass, max.	6.0	Appendix **B**
ii)	Fat (on dry basis), per cent by mass, max.	25	Appendix **C**
iii)	Peroxide value, milliequivalents oxygen/kg fat, max.	10	Appendix **D**
iv)	Acid insoluble ash (on dry basis), per cent by mass, max.	0.1	Appendix **E**

5.7 Microbiological limits

The product shall also comply with the microbiological limits given in Table 2, when tested according to the relevant methods given in Column 4 of the table.

TABLE 2 - Microbiological limits

Sl. No. (1)	Test (2)	Limit (3)	Method of test (4)
i)	Aerobic plate count, per g, max.	1×10^4	**SLS 516 : Part 1**
ii)	Coliform, per g, max.	10	**SLS 516 : Part 3**
iii)	*E. coli.*	Absent in 1 g	**SLS 516 : Part 3**
iv)	*Salmonella*	Absent in 25 g	**SLS 516 : Part 5**

6 PACKAGING AND MARKING

6.1 PACKAGING

The product shall be packed in flexible thermoplastic films of multilayers or mono-layer construction, or their laminates with paper and/or aluminium foil or metalized film so as to provide a high resistance to the passage of oxygen and moisture and to produce an effective heat seal. The product shall be hermetically sealed with or without nitrogen flushing to retain the contents in fresh condition.

6.2 MARKING

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

a) Name of the product as "Ready to eat extruded snacks";
b) Brand name or trade mark, if any;
c) Net mass, in grams or kilograms;
d) Name and address of manufacturer or distributor (including the country of origin);
e) Batch or code number;
f) Date of expiry; and
g) List of ingredients.

6.2.2 Marking and labelling shall also be in accordance with **SLS 467.**

NOTE

Attention is drawn to certification marking facilities offered by the Sri Lanka Standards Institution. See the inside back cover of the standard.

7. METHODS OF TEST

7.1 Preparation of the test samples

Preparation of test samples shall be done as quickly as possible, preferably in a dry place. Sample shall be ground to a powder and transferred immediately to air-tight container.

7.2 Tests shall be carried out as prescribed in **Part 1, Part 3** and **Part 5** of **SLS 516**, and Appendices **B** to **E** of this standard.

APPENDIX A
COMPLIANCE OF A LOT

The sampling scheme given in this Appendix should be applied where compliance of a lot to the requirements of this standard is to be assessed based on statistical sampling and inspection.

Where compliance with this standard is to be assured based on manufacturer's control systems coupled with type testing and check tests or any other procedure, appropriate scheme of sampling and inspection should be adopted.

A.1LOT

In any consignment all packages of ready to eat extruded snacks of the same size belonging to one batch of manufacture or supply shall constitute a lot.

A.2GENERAL REQUIREMENTS OF SAMPLING

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

A.2.1 Samples shall be drawn in an environment not exposed to damp, air, dust and soot.

A.2.2 The samples shall be placed in clean, dry, glass or any other suitable containers. The sample containers shall be sealed air-tight after filling and shall be marked with necessary details of sampling.

A.2.3 The material being sampled, the sample, the sampling instruments and the sample containers shall be protected from adventitious contamination.

A.2.4 Samples shall be stored, so that conditions of storage do not affect the quality of the material.

A.2.5 When drawing samples for microbiological examination in addition to the requirements specified in **A.2.1** to **A.2.4** the following precautions shall be observed:

A.2.5.1 Samples shall be drawn under aseptic conditions.

A.2.5.2 The sampling instrument and sample containers shall be sterilized using an appropriate method.

A.3SCALE OF SAMPLING

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

A.3.2 The number of packages to be selected from a lot shall be in accordance with the following table.

TABLE 3 - Scale of sampling

Number of containers in the lot (1)	Number of containers to be selected (2)	Sub sample size (3)
Up to 150	8	3
151 to 500	10	3
501 to 1200	13	4
1201 to 3200	15	5
3201 and above	20	5

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

A.4NUMBER OF TESTS

A.4.1 Each package selected as in **A.3.2** shall be inspected for marking and packaging requirements.

A.4.2 A sub sample of size given as in the table shall be individually tested for microbiological requirements.

A.4.3 Remaining packages shall be individually inspected for the requirements given in **5.2**, **5.3**, **5.4** and **5.5**.

A.4.4 A composite sample prepared using the material taken from the packages after inspection as in **A.4.3** shall be tested for the requirements given in **5.6**.

A.5CRITERIA FOR CONFORMITY

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

A.5.1 Each package inspected as in **A.4.1** and **A.4.3** satisfies the relevant requirements.

A.5.2 Each package tested as in **A.4.2** satisfies the relevant microbiological requirements.

A.5.3 The composite sample tested as in **A.4.4** satisfies the relevant requirements.

APPENDIX B
DETERMINATION OF MOISTURE

B.1 APPARATUS

B.1.1 Dish, of stainless steel, silica or aluminium.

B.1.2 Oven, maintained at $105 \pm 1\ ^{0}C$.

B.2 PROCEDURE

Weigh, to the nearest milligram, about 5 g of the powdered sample in the previously dried dish (**B.1.1**). Dry in the oven (**B.1.2**) for 4 hours. Cool in a desiccator and weigh. Repeat the process of drying, cooling and weighing at 30-minute intervals until the difference between the two consecutive weighings does not exceed one milligram.

B.3 CALCULATION

$$\text{Moisture, per cent by mass} = \frac{m_1 - m_2}{m_1 - m_0} \times 100$$

where,

m_0 is the mass, in g, of the empty dish ;
m_1 is the mass, in g, of the dish with the sample before drying ; and
m_2 is the mass, in g, of the dish with the sample after drying.

APPENDIX C
DETERMINATION OF FAT

C.1 REAGENT

C.1.1 Petroleum ether, distilled below 65 ^{0}C.

C.2 APPARATUS

C.2.1 Soxhlet extraction apparatus.

C.3 PROCEDURE

Weigh, to the nearest milligram, about 10 g of the powdered sample to a suitable thimble and extract with the solvent (**C.1.1**) in a Soxhlet extraction apparatus (**C.2.1**) for about 16 hours. Dry the extract contained in the Soxhlet flask, whose empty mass has been previously determined at 95 ^{0}C to 100 ^{0}C for 30 minute. Cool in a desiccator and weigh. Continue drying and weighing alternately at 30-minute intervals until the loss in mass between two successive weighings is not more than one milligram.

NOTE

*Preserve the extracted fat for the estimation of peroxide value (**See Appendix D**).*

C.4 CALCULATION

$$\text{Fat, on dry basis, per cent by mass} = \frac{(m_1 - m_0)}{(m_2 - m_0)} \times \frac{10000}{(100 - M)}$$

where,

m_0 is the mass, in g, of the empty flask;
m_1 is the mass, in g, of the flask with the fat;
m_2 is the mass, in g, of the dish containing the sample; and
M is the percentage of moisture.

APPENDIX D
DETERMINATION OF THE PEROXIDE VALUE

D.1 REAGENTS

D.1.1 Potassium iodide, freshly powdered.

D.1.2 Solvent mixture, mixture of 2 volumes of glacial acetic acid and 1 volume of chloroform.

D.1.3 Carbon dioxide

D.1.4 Potassium iodide, 50 g/l solution, freshly prepared.

D.1.5 Sodium thiosulfate, 0.002 mol/l solution, freshly prepared dilution, from an accurately standardized 0.1 mol/l solution.

D.1.6 Starch indicator

Titrate 5 g of starch and 0.01 g of mercuric iodide with 30 ml of cold water and slowly pour it while stirring into one litre of boiling water. Boil for three minutes, allow to cool and decant off the supernatant clear liquid.

D.2 APPARATUS

D.2.1 Test tubes,150-mm x 25-mm

Before use wash thoroughly with soap solution, rinse with hot water and allow to stand in chromic acid mixture for a few hours. Then rinse thoroughly (the last time with distilled water) and dry in an oven before use.

D.2.2 Rubber bung, to fit the test tube with a hole in the centre through which is inserted a small glass rod (of 3-mm to 4-mm diameter) flattened at one end and rounded at the other end.

D.3 PROCEDURE

The test should preferably be carried out in artificial light free from ultra-violet radiation.

Weigh, quickly but accurately, a suitable quantity of sample (See Appendix C), the mass of the sample taken for the test should be such that the titration does not exceed 10 ml, into the test tube (**D.2.1**). Add 1 g of powdered potassium iodide (**D.1.1**) and 20 ml of the solvent mixture (**D.1.2**) to the still liquid. Gently bubble carbon dioxide (**D.1.3**) through the mixture of fat and solvent (for routine test this is not necessary). Heat the contents of the tube to boiling within 30 seconds, preferably in a steam bath, and allow to boil vigorously for not more than 30 seconds. As solvent vapors begin to escape from the hole in the bung (**D.2.2**), close the opening with a glass rod. Cool immediately under a tap and transfer into a conical flask containing 20 ml of potassium iodide (**D.1.4**) and wash out the test tube twice with 25 ml to 30 ml of distilled water. Titrate the solution with the sodium thiosulfate solution (**D.1.5**) using the starch indicator (**D.1.6**). Do not add the starch until the end point is almost reached. Perform a blank test and the titre value should not be more than 0.1 ml.

D.4 CALCULATION

$$\text{Peroxide value, as milliequivalents oxygen per kilogram fat} = \frac{2V}{m}$$

where,

V is the volume, in ml, of sodium thiosulfate solution required for the titration; and

m is the mass, in g, of the fat taken.

APPENDIX E
DETERMINATION OF ACID INSOLUBLE ASH

E.1 APPARATUS

E.1.1 Dish, made of silica or porcelain.

E.1.2 Muffle furnace, maintained at 600 $\pm$ 20 ^{0}C.

E.1.3 Water bath.

E.2 REAGENT

E.2.1 Dilute hydrochloric acid, approximately 5 mol/l solution.

E.3 PROCEDURE

Weigh, to the nearest milligram, about 20 g of the powdered sample in the dish (**E.1.1**). Heat the dish with the sample over a hot plate or a flame until the contents of the dish are charred. Ash in the muffle furnace at 600 $\pm$ 20 ^{0}C until a light grey ash is obtained. Allow to cool to room temperature. Add 25 ml of hydrochloric acid (**E.2.1**) cover with a watch glass and heat in the water bath for 10 minutes. Mix the contents with a glass rod and filter through an ashless filter paper (Whatman No. 42 or equivalent). Wash the filter paper with water until washings are free from acid when tested with a blue litmus paper. Return the washed filter paper to the dish and ash in the muffle furnace.

Cool the dish in a desiccator and weigh. Repeat the process of heating, cooling and weighing at 30 minute intervals until the difference between two successive weighings does not exceed 1 milligram.

E.4 CALCULATION

$$\text{Acid insoluble ash, per cent by mass (on dry basis)} = \frac{(m_1 - m_0)}{(m_2 - m_0)} \times \frac{10000}{(100 - M)}$$

where,

m_0 is the mass, in g, of empty dish;
m_1 is the mass, in g, of the dish containing ash;
m_2 is the mass, in g, of the dish containing the sample; and
M is the percentage of moisture.

SLS CERTIFICATION MARK

The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLSI *which includes surveillance inspection of the factory, testing of both factory and market samples.*

Further particulars of the terms and conditions of the permit may be obtained from the Sri *Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.*

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SRI LANKA STANDARDS INSTITUTION

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