SRI LANKA STANDARD 790 : 1999

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SPECIFICATION FOR
QUICK FROZEN CUTTLE FISH AND SQUID
(FIRST REVISION)

SRI LANKA STANDARDS INSTITUTION

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SLS 790 : 1999

Gr. 6

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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 QUICK FROZEN CUTTLE FISH AND SQUID
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FOREWORD

This standard was approved by the Sectoral Committee on Agriculture 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 1999-01-14.

This specification was first published in 1987-07-27. In this revision changes have been made in Microbiological limits and labelling of containers.

Non conformity to microbiological limits other than those for *Salmonella* should not be considered as sufficient criteria for rejection of a lot or consignment of these products. This condition may warrant further investigation.

The genus *Sepioteuthis* is considered under the cuttle fish for the purpose of trade practices.

This specification is subject to the provisions of the food Act No. 26 of 1980 and the regulations framed thereunder.

All standard values given in this specification are in SI units.

For the purpose of deciding whether a particular requirement of this specification is complied with, the final value, observed or calculated, expressing the results of a test or analysis, shall be rounded off in accordance with **CS 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 the preparation of this specification, the assistance obtained from the publications of the Indian Standards Institution and the publications of National Aquatic Resources Agency of Sri Lanka is gratefully acknowledge.

1 SCOPE

This specification prescribes the requirements and methods of sampling and test for quick frozen cuttle fish and squid.

Cuttle fish shall belong to the following and other allied genera :

a) *Sepia*; and

b) *Sepiella*.

Squid shall belong to the following and other genera:

a) *Loligo*;

b) *Loliolus*;

c) *Sepioteuthis*; and

d) *Symplectoteuthis*.

2 REFERENCES

CS 102 presentation of numerical values
SLS 428 Random sampling methods
SLS 467 Labelling of prepackaged foods
Part 1 : General guidelines
SLS 516 Microbiological test methods
Part 1 : General guidance for enumeration of micro-organisms-aerobic plate count at $36 \pm 1\ ^{0}C$
Part 5 : General guidance for detection of *Salmonella*
Part 6 : Enumeration of *Staphylococcus aureus*
SLS 614 Potable water
Part 1 : Physical and chemical requirements
Part 2 : Bacteriological requirements
SLS 1018 Code of hygienic practice for cephalapods

3 DEFINITIONS

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

3.1 Cuttle fish : The cephalopods having ten circumoral arms eight of which are short and two slender and tentacular. The suckers of the arms and tentacles are stalked and equipped with armature. The internal shell (cuttle bone) present is calcareous in nature and with a body which is avoid and somewhat flattened, dorsoventrally. The fins are narrow and marginal in position extending on either side along the entire length of the mantle without uniting at the end.

3.2 Squid : Cephalopods having ten circumoral arms, eight of which are short and two tentacular. The suckers of the arms and tentacles are stalked and equipped with armature. The internal shell (cuttle bone) which is chitinous in nature and the body is cylindrically elongated. The fins are either terminal or marginal in position and uniting at the apex of the mantle.

3.3 Fillet : The mantle which is opened lengthwise along the dorsal side and where the cuttle bone, viscera, inksac, skin and head with tentacles are removed.

3.4 Tube : The mantle which is not opened but is kept intact and where the cuttle bone, viscera, inksac, skin and head with tentacles are removed.

3.5 Count : The number of fillets of cuttle fish or tubes of squids per kilogram.

3.6 Dehydration : Fillet of cuttle fish or tube of squid containing whitish areas which affect its appearance, texture or palatability.

NOTE

Fillet of cuttle fish and tube of squid shall be deemed dehydrated only if more than 20 per cent of the surface area shows signs of dehydration.

3.7 Discolouration : Fillet of cuttle fish or tube of squid possessing a yellowish or pinkish colour which affects its appearance, texture or palatability.

4 STYLE OF PRESENTATION

The product shall be presented in the following types

4.1 Whole

Head tentacles and the marginal fins and skin are on with the cuttle bone, removed.

4.2 Fillet

Mantle opened lengthwise along the dorsal side where the cuttle bone, viscera, inksac, skin, and the head with tentacles are removed.

The fillets may be frozen individually (IQF) or in block form.

4.3 Tube

The mantle which is not opened but is kept intact and where the cuttle bone, viscera, inksac, skin and head with tentacles are removed.

5 SIZE GRADE

The product of types **4.2** and **4.3** may be sized or unsized. If they are sized they shall be size graded on the basis of count per kilogram as agreed to between the purchaser and the vendor subject to the tolerance provided in Appendix **A**.

6 REQUIREMENTS

6.1 Raw material requirements

6.1.1 Clean, wholesome and fresh cuttle fish/squid which do not show any signs of spoilage or any breaking or abrasions of the skin and which have been properly and adequately iced, shall be used.

6.1.2 The cleaned mantle shall be kept immersed in iced water nearest to 0^0 C and containing 5 mg/kg available chlorine until removed for packing and freezing and such immersion at any rate should not exceed 2 h.

6.2 Hygienic requirements

The material shall be prepared and processed under hygienic conditions in premises maintained in a clean and hygienic manner and shall conform to the relevant hygienic requirements prescribed in **SLS 1018**.

6.3 Processing requirements

6.3.1 The material shall preferably be gutted inside the processing plant. It shall be opened along the dorsal side lengthwise with a sharp and narrow stainless steel knife. The head and tentacles; entrails; cuttle bone, inksac, and skin shall be removed. Opened and eviscerated mantle shall be washed thoroughly with potable water conforming to SLS 614 containing 5 mg/kg available chlorine to remove the ink and all impurities.

6.3.2 The material shall be quick-frozen within 4 h . The time taken for freezing the core of the materials 50 mm thick shall not exceed 3 h.

6.4 Finished product requirements

6.4.1 *Colour*

The material after thawing as in appendix B, shall have the characteristic colour.

6.4.2 *Physical defects*

6.4.2.1 Dehydration

The material after thawing as in Appendix B, shall be free from dehydration or if such dehydration exists, it shall be within the tolerance limits specified in Table 2 of Appendix **C**.

6.4.2.2 Discolouration

The material after thawing as in Appendix B, shall be free from discolouration or if such discolouration exists it shall be within the tolerance limits specified in Table 2 of Appendix **C**.

6.4.2.3 Abnormal texture

The material after thawing as in appendix B, shall not show any abnormal textural properties or if such abnormality exists it shall be within the tolerance limits specified in Table 2 of Appendix **C** with respect to abnormal textural properties (see note).

NOTE

The flesh of the material shall be firm and fibrous and shall not yield when pressed with fingers.

6.4.3 *Odour*

The material shall not have a foul odour.

6.4.4 *Flavour on cooking*

The material when tested in accordance with 9.1 shall have a flavour characteristic of cooked fresh meat of cuttle fish and squid.

6.4.5 *Microbiological limits*

6.4.5.1 The material when tested in accordance with **SLS 516 : Part 5**, shall be free of *Salmonella*.

6.4.5.2 Tests for microorganisms specified in Table 1 shall be carried out to monitor the hygienic conditions of processing.

TABLE 1 - Microbiological limits

SL No. (1)	Micro-organism (2)	n (3)	c (4)	Limit per g m (5)	Limit per g M (6)	Method of test Ref. to (7)
i)	Aerobic plate count	5	3	10^6	10^7	**SLS 516 : Part 1**
ii)	*Staphylococcus aureus*	5	3	200	2 000	**SLS 516 : Part 6**
iii)	*E. coli*	5	3	11	500	**SLS 516 : Part 3**
iv)	*Salmonella*	5	0	0	-	**SLS 516 : Part 5**

where,

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

7 PACKAGING AND MARKING

7.1 Packaging

7.1.1 The frozen product shall be packed in suitable containers as agreed to between the purchaser and the vendor.

7.1.2 The material used in packaging shall be new and shall not impart any injurious substances or any off flavour to the product.

7.1.3 The frozen product may be packed in inner containers manufactured from ;

- waxed cardboard with a water-vapour proof inner liner
- welded polyethylene or other suitable plastic material.

7.1.4 All inner containers shall be packed in outer master carton which shall be wire-bound.

7.2 Marking

7.2.1 The following shall be marked legibly and indelibly on the container. (Master carton)

a) Name and size grade of the material;
b) Name and address of the manufacturer;
c) Registered trade mark or brand name, if any;
d) Lot number in code;
e) Gross mass, in kg;
f) Net mass, in kg;
g) Date of packaging.
h) Style of presentation

7.2.2 The marking and labelling shall be done in accordance with **SLS 467 : Part 1**.

7.2.3 The product may also be marked with the Certification Mark of the Sri Lanka Standards Institution illustrated below permission being granted for such marking by the Sri Lanka Standards Institution.

NOTE

The use of the Sri Lanka Standards Institution Certification Mark (SLS Mark) is governed by the provisions of the Sri Lanka Standards Institution Act and the regulations framed thereunder. The SLS mark on products covered by a Sri Lanka Standard is an assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control, which is devised and supervised by the Institution and operated by the producer. SLS marked products are also continuously checked by the Institution for conformity to that standard as a further safeguard. Details of conditions under which a permit for the use of Certification Mark may be granted to manufacturers or processors may obtained from the Sri Lanka Standards Institution.

8 SAMPLING

The method of drawing representative samples of the material for testing shall be according to the method prescribed in Appendix **D**.

9 METHODS OF TEST

9.1 Flavour

The material shall be tested for flavour (see 6.4.4) as prescribed in Appendix **E**.

9.2 Microbiological limits

The material shall be tested for *Salmonella* as specified in **6.4.5.1** and for other micro-organisms included in Table 1 according to the methods specified in Column 7 of the table.

10 CRITERIA FOR CONFORMITY

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

10.1 Each master carton inspected as in **D.4.1** satisfies the relevant requirements.

10.2 The number of defective master cartons in a sample, when inspected as in **D.4.2** for physical defects set out in Table 2, shall be less than or equal to the corresponding acceptance number given in Column 3 of the table.

10.3 Each fillet/tube or whole item tested as in **D.4.3** satisfies the requirements for odour **(6.4.3)** and flavour **(6.4.4)** .

10.4 *Salmonella* are not detected in any one of the sample units tested as in **D.4.4** satisfy the tolerances given in Appendix A (Tolerances for uniformity of size).

10.5 The fillets/tubes tested as in **D.4.6** satisfy the tolerances given in Appendix A (Tolerances for uniformity of size).

APPENDIX A

TOLERANCE FOR UNIFORMITY OF SIZE

(Applicable for Types 4.2 and 4.3 only)

Average mass of a fillet or tube in a container determined by dividing the total mass of fillets or tubes by the number of such fillets or tubes in the containers shall be within the designated mass range (size grade). Not more than 10 per cent of fillets or tubes by number shall be outside the designated mass range (size grade).

APPENDIX B

THAWING

B.1 A sample is thawed by enclosing it in a film type bag and immersing in an agitated water bath held at ambient temperature.

B.2 Complete thawing of the sample is determined by gently squeezing the bag occasionally so as not to damage the texture of the product, until no hard core of ice crystals are felt.

APPENDIX C

TOLERANCES FOR PHYSICAL DEFECTS

At least 20 fillets/tubes or whole cuttle fish or squid from each of the master cartons selected shall be inspected for physical defects given in Table 2, and shall be within the tolerance allowed in accordance with Column 3 of the table.

TABLE 2 - Physical defects

SL No. (1)	Type of defect (2)	Permissible number of whole, fillets/tubes per master carton (3)
i)	Dehydration	10 per cent by count
ii)	Discolouration*	Nil
iii)	Abnormal texture	5 per cent by count

* Not applicable for whole cuttle fish/squid.

APPENDIX D

SAMPLING

D.1 LOT

In any consignment all master cartons containing cuttle fish/ squid processed at one place under the same conditions or processing shall constitute a lot.

D.2 GENERAL REQUIREMENTS OF SAMPLING

D.2.1 The sampling instruments and the sample containers shall be clean and dry. When taking samples for microbiological examination they shall be sterile.

D.2.2 The samples shall be protected against adventitious contamination.

D.2.3 The samples shall be stored in a such manner that there is no deterioration of frozen materials.

D.3 SCALE OF SAMPLING

D.3.1 The samples shall be tested from each lot for ascertaining conformity of the material to the requirements of this specification.

D.3.2 The number of master cartons to be selected from a lot shall be in accordance with Table 3.

D.3.3 As far as possible the master cartons shall be selected to represent all the size grades in the lot.

TABLE 3 - Scale of sampling

Number of master cartons in a lot (1)	Number of master cartons to be selected (2)	Acceptance number (3)
Up to 100	3	0
101 to 150	5	0
151 to 300	8	0
301 to 500	10	1
501 and above	13	2

D.3.4 The master cartons shall be selected randomly. In order to ensure randomness of selection random number tables given in **SLS 428** shall be used.

D.4 NUMBER OF TESTS

D.4.1 Each master carton selected as in **D.3.2** shall be inspected for marking and packaging requirements.

D.4.2 Twenty sample units shall be selected from each master carton selected as in **D.3.2** and the sample units thus obtained shall be inspected for the requirements given in **6.4.2** (Physical defects) and **6.4.3** (odour).

Fillets/tubes or whole unit from each master carton shall be inspected separately.

D.4.3 One sample unit shall be selected from each of the master cartons, selected as in **D.3.2** and the sample units thus obtained shall be tested for requirements given in **6.4.4** .

D.4.4 Five sample units each weighing approximately 250g of the material shall be drawn using sterile instruments and under aseptic conditions from five master cartons selected as in **D.3.2** and the sample units thus obtained shall be tested for the micro-organisms listed **6.4.5**.

D.4.5 Three master cartons shall be selected to represent three different size grades from the master cartons selected as in **D.3.2** .

D.4.6 Sample units or all (whatever the minimum) shall be selected from the master cartons taken as in **D.4.5** and tested for conformity of their size grades.

APPENDIX E

DETERMINATION OF FLAVOUR

E.1 METHOD

E.1.1 Determine the flavour of the material on the thawed material after cooking as given in **E.1.1.1** .

E.1.1.1 Place a fillet of cuttle fish or squid or whole item into the boilable type of film pouch with some salt for taste. Immerse the fillet in boiling water and cook until the internal temperature of the muscle reaches 70^0 C in about 20 minutes and determine the flavour.

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

The Sri Lanka Standards Institution (SLSI) is the National Standards Organization of Sri Lanka established under the Sri Lanka Standards Institution Act No. 6 of 1984 which repealed and replaced the Bureau of Ceylon Standards Act No. 38 of 1964. The Institution functions under the Ministry of Science & Technology.

The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

The Institution is financed by Government grants, and by the income from the sale of its publications and other services offered for Industry and Business Sector. Financial and administrative control is vested in a Council appointed in accordance with the provisions of the Act.

The development and formulation of National Standards is carried out by Technical Experts and representatives of other interest groups, assisted by the permanent officers of the Institution. These Technical Committees are appointed under the purview of the Sectoral Committees which in turn are appointed by the Council. The Sectoral Committees give the final Technical approval for the Draft National Standards prior to the approval by the Council of the SLSI.

All members of the Technical and Sectoral Committees render their services in an honorary capacity. In this process the Institution endeavours to ensure adequate representation of all view points.

In the International field the Institution represents Sri Lanka in the International Organization for Standardization (ISO), and participates in such fields of standardization as are of special interest to Sri Lanka.

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