

**SRI LANKA STANDARD 1146 : 2001**  
**UDC 664.92 : 637.525.1**

**SPECIFICATION FOR**  
**HAM**  
**(FIRST REVISION)**

**SRI LANKA STANDARDS INSTITUTION**



**SPECIFICATION FOR HAM  
(FIRST REVISION)**

**SLS 1146 : 2001**

(AMD 327, 336 and 486 Attached)

**Gr. 6**

**SRI LANKA STANDARDS INSTITUTION  
No. 17, Victoria Place  
Elvitigala Mawatha  
Colombo 08  
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.

© SLSI 2001

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the SLSI.

## SRI LANKA STANDARD SPECIFICATION FOR HAM

### 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 2001-10-29.

This Specification was originally issued in 1977. This revision has been undertaken to keep abreast with the technological developments made in the industry since then. The scope has been expanded to accommodate all types of ham available in the market. A list has been included to cover new food additives being used in the industry. A limit for *E coli* has been included.

In order to ensure a product conforming to this specification, the manufacturers are advised to adhere to strict hygienic practices in processing and storage. They are also advised to give instructions to their dealers with respect to cold storage and handling.

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 the general provisions made in the regulations framed under Food Act.

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 specification 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 to be retained in the rounded off value shall be the same as that of the specified value in this specification.

In the revision of this specification, the valuable assistance derived from the following publications are gratefully acknowledged:

Draft Codex General standard for Food Additives October 2000  
Food Standards Code Australia/New Zealand

### 1 SCOPE

- 1.1 This specification prescribes the requirements and methods of test for ham.
- 1.2 This specification does not cover canned ham.

## 2 REFERENCES

- SLS 79 Edible common salt  
CS 102 Presentation of numerical values  
SLS 143 General principles of food hygiene  
SLS 191 Sugar  
SLS 294 Test for meat and meat products – determination of moisture content  
SLS 295 Determination of nitrogen content  
SLS 301 Determination of copper  
SLS 311 Determination of lead  
SLS 312 Determination of arsenic  
SLS 330 Test for meat and meat products – determination of chloride content  
SLS 384 Test for meat and meat products – determination of nitrite content  
SLS 396 Test for meat and meat products – determination of nitrate content  
SLS 428 Random sampling methods  
SLS 464 Bees honey  
SLS 467 Labelling of prepackaged foods  
SLS 516 Microbiological test methods  
Part 3 : Detection and enumeration of *Coliforms*, *Faecal Coliforms*  
and *Escherichia coli*  
Part 5 : Detection of *Salmonella*  
Part 6 : Enumeration of *Staphylococcus aureus*  
SLS 614 Potable water  
SLS 772 Treacle  
SLS 779 Test for meat and meat products – determination of fat content  
SLS 845 Gelatine (food grade)  
SLS 971 Ice for use in food processing and catering industries  
SLS 1065 Code of hygienic practice for processed meat products.  
SLS 1218 Comminuted meat products

## 3 DEFINITIONS

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

- 3.1 ham** : The product made of meat from the hind leg of a pig carcass.  
**3.2 shoulder ham** : The product made of meat from the shoulder of a pig carcass.  
**3.3 ham loaf** : The product made of meat from suitable muscles of a pig carcass.

### NOTE :

*Ham made from the meat of any permitted species shall carry the related name of the species preceding the word ham . eg. Chicken ham.*

**3.4 cooked ham** : Ham prepared from cured meat which has been subjected to boiling or heating with steam and ready-to-serve

**3.5 cooked and smoked ham** : Ham prepared from cured meat which has been, smoked and cooked. Smoked and cooked ham are ready-to-serve or may require slight warming before serving.

**3.6 meat** : The uncured, wholesome flesh of an animal or bird which is normally used for human consumption.

## **4 TYPES**

Ham shall be of the following types :

**4.1** Cooked ham; and

**4.2** Smoked and cooked ham.

## **5 STYLES**

Ham may be of the following styles :

**5.1** Loafs;

**5.2** Slabs; and

**5.3** Slices.

## **6 INGREDIENTS**

### **6.1 Basic ingredients**

#### **6.1.1 Meat**

All meat used shall be sound and fit for human consumption and shall be obtained from healthy animals or birds slaughtered in licensed premises and subjected to meat inspection by a competent authority . The meat shall be moderately firm, neither oily nor soft, bright in colour and of fine texture. It shall be free from foreign odour or flavour, discolouration, presence of extraneous matter or any form of deterioration. Frozen meat shall be thawed before use and shall be free from any evidence of freezer deterioration.

**6.1.2 Brine**, consisting of water and common salt.

## **NOTE**

*Salt shall conform to SLS 79. – edible common salt*

**6.1.3** *Curing salts*, Nitrite and/or Nitrate, Potassium and/or sodium salts, singly or in combination.

**6.1.4** *Water/ice*, water and ice used shall conform to SLS 614 and SLS 971.

## **6.2** *Optional ingredients*

One or more of the following ingredients may be used:

**6.2.1** Sugar (sucrose) invert sugar, dextrose (glucose), lactose, maltose, glucose syrup (including corn syrup), honey.

### **NOTE**

*Sugar when used shall conform to SLS 191.*

*Bees honey when used shall conform to SLS 464.*

*Treacle when used shall conform to SLS 772.*

**6.2.2** *Spices, seasonings and condiments*

**6.2.3** *Hydrolyzed vegetable protein, water soluble*

**6.2.4** *Potassium chloride*

**6.2.5** *Antioxidants*, Tocopherol maximum level in final product not more than 3000 mg/kg and/or ascorbic acid, iso-ascorbic acid and its sodium salts, ascorbyl palmitate 500 mg/kg max expressed as ascorbic acid, singly or in combination.

**6.2.6** *Flavours*

**6.2.6.1** Natural flavouring substances

**6.2.6.2** Smoke flavourings

**6.2.7** *Flavour enhancers*

**6.2.7.1** 5' – Guanylate, disodium

**6.2.7.2** 5' – Inosinate, disodium

**6.2.7.3** Monosodium glutamate

**6.2.8** *Acidity regulators*

**6.2.8.1** Citric acid and/or its sodium and/or potassium salts

**6.2.8.2** Lactic acid and/or its sodium and/or potassium salts



### **6.2.9** *Water retention agents*

**6.2.9.1** Phosphates (mono-, di- and poly-) sodium and potassium salts, 1100 mg/kg (expressed as P), singly or in combination.

## **7** **REQUIREMENTS**

### **7.1** **Hygienic requirements**

The product shall be processed, packed, stored and transported in accordance with the conditions prescribed in **SLS 143** and **SLS 1065**. Storage and transport temperature for chilled products shall be 0 °C to 4 °C. Frozen products shall be stored below -18 °C with possibly brief upward fluctuations of no more than 3 °C during transport .

### **7.2** **Physical requirements**

#### **7.2.1** *Appearance*

The product shall be free from extraneous matter, appearance of mould or slime or any discolouration.

#### **7.2.2** *Texture*

The meat shall be uniformly and thoroughly cured and the product shall be capable of being sliced.

#### **7.2.3** *Flavour*

The product shall be of a pleasant, characteristic flavour pertaining to each type (see 4). It shall be free from objectionable flavours.

#### **7.2.4** *Other physical requirements for sliced ham*

##### **7.2.4.1** **Thickness**

There shall be 3 to 4 slices of ham within a 10-mm thickness, but thickness of a slice shall be not more than 3 mm.

##### **7.2.4.2** **Separation or tear of slices**

Separation or tear in any slice shall not exceed one half of the length of the slice.

##### **7.2.4.3** **Breaks**

A break in any slice shall not exceed half of the slice width at any break.

### 7.3 Chemical requirements

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

**TABLE 1 – Requirements for ham**

<b>Sl. No.</b> <b>(1)</b>	<b>Characteristic</b> <b>(2)</b>	<b>Requirement</b> <b>(3)</b>	<b>Method of test</b> <b>(4)</b>
i)	Moisture content, per cent by mass, max	75.0	<b>SLS 294</b>
ii)	Meat protein, (on fat free basis), per cent by mass, min	16.5	Appendix B and <b>SLS 295</b>
iii)	Fat content, per cent by mass, max	10.0	<b>SLS 779</b>
iv)	Nitrates and Nitrites, as NaNO <sub>2</sub> , mg/kg, max.	125	<b>SLS 384 and SLS 396</b>
v)	Acid insoluble ash content, per cent by mass, max.	0.5	Appendix D of <b>SLS 1218</b>
vi)	Sodium chloride content, per cent by mass, max.	3.0	<b>SLS 330</b>

### 7.4 Microbiological limits

The product shall conform to the microbiological limits given in Table 2 when tested according to the methods prescribed in Column 4 of the table.

**TABLE 2 – Microbiological limits**

<b>Sl. No.</b> <b>(1)</b>	<b>Micro-organism</b> <b>(2)</b>	<b>Limit</b> <b>(3)</b>	<b>Method of test</b> <b>(4)</b>
i)	<i>Staphylococcus aureus</i>	Not more than 100 per g	<b>SLS 516 : Part 5</b>
ii)	<i>E. coli</i>	Absent in 1 g	<b>SLS 516 : Part 3</b>
iii)	<i>Salmonella</i>	Absent in 25 g	<b>SLS 516 : Part 6</b>

## 7.5 Limits for heavy metals

The product shall conform to the limits for heavy metals given in Table 3 when tested according to the methods prescribed in Column 4 of the table.

**TABLE 3 – Limits for heavy metals**

<b>Sl. No.</b>	<b>Heavy metals</b>	<b>Limit</b>	<b>Method of test</b>
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
i)	Arsenic, mg/kg, max	1.0	<b>SLS 312</b>
ii)	Copper, mg/kg, max	20.0	<b>SLS 301</b>
iii)	Lead, mg/kg, max	1.0	<b>SLS 311</b>

## 8 PACKAGING AND MARKING

### 8.1 Packaging

The product shall be packed in suitable, flexible packaging material of food grade so as to protect the product from contamination. It shall not impart any foreign flavour to the product. Bulk packaging shall be as agreed to between the purchaser and supplier.

### 8.2 Marking

**8.2.1** The following information shall be legibly and indelibly marked or labelled on each package.

- a) Name of the product; - see Note under clause 3.3
- b) Type of the product;
- c) Brand name or registered trade mark;
- d) Name and address of the manufacturer and/or distributor;
- e) The country of origin;
- f) Net mass, in grams;
- g) Batch or code number;
- h) Date of manufacture;
- j) Date of expiry;
- k) List of ingredients and additives in descending order of proportion by name or INS No.;
- l) Instructions for storage; and
- m) Directions for preparation, where necessary.

**8.2.2** Marking and labelling shall 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 this standard.*

**9 METHOD OF TEST**

The product shall be tested as prescribed in Appendix **F** of **SLS 294, SLS 295, SLS 301, SLS 311, SLS 312, SLS 330, SLS 384, SLS 396, Part 3, 5 and 6** of **SLS 516, SLS 779**, Appendix **D** of **SLS 1218** and Appendix **B** of this specification.

**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 assessed based on manufacturer's control systems coupled with type testing and check test or any other procedure, appropriate schemes of sampling and inspection should be adopted.

**A.1 LOT**

In any consignment all the packages of ham of the same style and type belonging to one batch of manufacture or supply shall constitute a lot.

**A.2 GENERAL REQUIREMENTS OF SAMPLING**

When drawing samples, the following precautions shall be observed :

**A.2.1** Samples for microbiological analysis shall be drawn first.

**A.2.2** Samples shall be protected against adventitious contamination.

**A.2.3** Sampling instruments shall be clean and dry when used. When drawing samples for microbiological examination, the sampling instruments shall be sterilized.

**A.2.4** Samples shall be kept in clean and dry containers. The samples for microbiological examination shall be kept in sterilized containers.

**A.2.5** Sample containers shall be sealed air-tight and marked with necessary details of sampling.

**A.2.6** Samples shall be stored at a temperature as prescribed on the label of the package, in such a way that there will be no deterioration of quality of the material.

### **A.3 SCALE OF SAMPLING**

**A.3.1** The number of packages to be selected from a lot shall be in accordance with Table 4.

**TABLE 4 – Scale of sampling**

<b>Number of packages in the lot</b> <b>(1)</b>	<b>Number of packages to be selected</b> <b>(2)</b>	<b>Size of sub sample</b> <b>(3)</b>
up to 150	5	3
151 to 280	6	3
281 to 500	8	4
501 and above	12	5

**A.3.2** If the lot is in the form of bulk packaging, the number of bulk packages to be selected shall be in accordance with Column 2 of Table 4.

### **A.3.3 Samples for microbiological tests**

The packages selected as in **A.3.1**, shall be opened and sufficient quantities of material shall be transferred into individual sterilized containers to form the number of samples as given in Column 3 of Table 4. After taking the samples packages shall be sealed air-tight.

**A.3.4** 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.4 NUMBER OF TESTS**

**A.4.1** Each package selected as in **A.3.1** shall be inspected for marking and packaging requirements.

**A.4.2** Each package inspected as in **A.4.1** shall be further inspected for the requirements given in **7.2.1**, **7.2.2** and **7.2.3**.

**A.4.3** A composite sample shall be prepared by taking sufficient quantities of material from each package inspected as in **A.4.2** and shall be tested for the requirements as given in **7.3** and **7.5**.

**A.4.4** The sample prepared as in **A.3.3** shall be individually tested for the microbiological requirements given in **7.4**.

## **A.5 CRITERIA 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.4.2** satisfies the relevant requirements.

**A.5.2** The sample tested as results on the composite sample when tested as in **A.4.3** satisfy the relevant requirements.

**A.5.3** The samples tested as in **A.4.4** satisfy the relevant microbiological requirements.

## **APPENDIX B DETERMINATION OF MEAT PROTEIN**

### **B.1 PROCEDURE**

Determine the total nitrogen content as given in **SLS 295**.

### **B.2 CALCULATION**

Percentage of protein in the product = percentage of total nitrogen x 6.25

---

**AMENDMENT NO : 1 APPROVED ON 2006-02-21 TO  
SLS 1146 : 2001 SPECIFICATION FOR HAM (FIRST REVISION)**

**Page 7**

**Sub Clause 6.2.9.1**

Delete the existing limit 1100 mg/kg and substitute with '2200 mg/kg (expressed as P) singly or in combination as the total phosphate content.'

**AMENDMENT NO : 2 TO SLS 1146 : 2001  
SPECIFICATION FOR HAM (FIRST REVISION)**

**EXPLANATORY NOTE**

This amendment is issued after the decision was taken by the working group on meat products, in order to incorporate *E.coli* O157 : H7 as a pathogenic organism.



**AMENDMENT NO : 2 APPROVED ON 2006-07-26 TO  
SLS 1146 : 2001 SPECIFICATION FOR HAM (FIRST REVISION)**

**Page 8**

**Clause 7.4**

Delete the existing Table 2 and substitute with the following Table.

**TABLE 2 – Microbiological limits**

<b>Sl No. (1)</b>	<b>Micro-organism (2)</b>	<b>Limit (3)</b>	<b>Method of Test (4)</b>
i)	<i>Staphylococcus aureus</i>	Not more than 100 per g	SLS 516 : Part 6
ii)	<i>E.coli</i> (indicator)	Absent in 1 g	SLS 516 : Part 3
iii)	<i>E.coli</i> O157 : H7	Absent in 1 g	AOAC : 1998 Method 996.09
iv)	<i>Salmonella</i>	Absent in 25 g	SLS 516 : Part 5

**Page 10**

**Clause 9 Method of Test**

Also include Association of Official Analytical Chemists (AOAC : 1998) – Method 996.09.

...../

**AMENDMENT NO : 03 APPROVED ON 2016-10-06 TO SLS 1146 : 2001**

**SPECIFICATION FOR HAM (FIRST REVISION)**

**EXPLANATORY NOTE**

This amendment is issued for the requirement for total phosphate content as phosphorus, to be in line with the Codex Alimentarius standard.

**AMENDMENT NO : 03 APPROVED ON 2016-10-06 TOSLS 1146 : 2001**

**SPECIFICATION FOR HAM (FIRST REVISION)**

Withdraw AMD 327 : 2006 (Amendment No: 01 approved on 2006-02-21)

**Page 08**

**TABLE 1**

Insert following request as vi)

vi)	Total phosphate content as P, mg/kg, max	3500	<b>SLS 1161 : 2003</b> <b>Appendix E</b>
-----	---	------	---



## **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.*



## **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.