

SRI LANKA STANDARD 106 : 1977

UDC 633.74

**SPECIFICATION FOR
COCOA BEANS
(FIRST REVISION)**

BUREAU OF CEYLON STANDARDS

SPECIFICATION FOR COCOA BEANS
(FIRST REVISION)

SLS 106:1977
(Attached AMD 92, AMD 103)

Gr. 6

Copyright Reserved
BUREAU OF CEYLON STANDARDS
53, Dharmapala Mawatha,
Colombo 3,
Sri Lanka.

SRI LANKA STANDARD
SPECIFICATION FOR COCOA BEANS
(FIRST REVISION)

FOREWORD

This Sri Lanka Standard Specification has been prepared by the Drafting Committee of the Bureau on Cocoa Beans. It was approved by the Agricultural and Chemicals Divisional Committee of the Bureau of Ceylon Standards and was authorised for adoption and publication by the Council on 1977-06-22.

Cocoa beans are the seeds of the ripe pods of *Theobroma cacao* L. The seeds are fermented during which process the chocolate aroma and flavour potential are developed. The fermented seeds are then dried to produce the cocoa of commerce.

Sri Lanka is well known for its *fine* or *flavour* cocoas which find wide use in chocolate confectionery.

This specification has been formulated with a view to establishing uniformity in the grades with respect to foreign trade. It also serves as a guide to growers, dealers, and others associated with the local trade.

This standard is in SI units.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of the test, shall be rounded off in accordance with CS 102*. The number of figures to be retained in the rounded off value shall be the same as that of the specified value in this standard.

The publications of the International Organization for Standardization (ISO) and Food and Agriculture Organization (FAO) have been consulted in the preparation of this standard and the assistance gained is gratefully acknowledged.

*CS 102 *Presentation of numerical values.*

1 SCOPE

The specification covers the requirements for cocoa beans.

2 DEFINITIONS

For the purpose of this standard the following definitions shall apply.

- 2.1 cocoa bean : The fermented and dried whole seed of the cocoa tree *Theobroma cacao* L.
- 2.2 flat bean : A cocoa bean of which the two cotyledons are atrophied to such an extent that it is not possible to obtain a cotyledon surface by cutting.
- 2.3 germinated bean : A cocoa bean the testa or seed coat of which has been pierced, split or broken by the growth of the seed germ.
- 2.4 insect damaged bean : A cocoa bean, the internal parts of which contain insects at any stage of development or have been attacked by insects which have caused damage, visible to the naked eye.
- 2.5 mouldy bean : A cocoa bean on or inside of which mould is visible to the naked eye.
- 2.6 slaty bean : A cocoa bean which shows a slaty appearance on half or more of the surface exposed by a cut made lengthwise through the centre.
- 2.7 cocoa nib : Cocoa bean without the skin or testa.
- 2.8 meat (rice cocoa) : Broken pieces of cocoa nibs.
- 2.9 extraneous matter : Matter other than cocoa beans, whole or broken.

3 GRADES

Cocoa beans shall be of the following grades:

- a) Grade 1,
- b) Grade 2,
- c) Grade 3,
- d) Blacks,
- e) Garblings, and
- f) Meat or rice cocoa.

4 REQUIREMENTS

4.1 General characteristics

4.1.1 *Grade 1*

The beans shall be well cured, free from mould on the outside and sun/kiln dried. The skin or testa of the beans could vary from a rosy red to brown in colour. The beans shall also be well formed and there shall not be more than 1000 beans/kg. Black beans and garblings are not permitted.

4.1.2 *Grade 2*

The beans shall be well cured, sun/kiln dried and well formed. The skin or testa of the beans shall be brown or reddish brown in colour. Black beans and garblings are not permitted.

4.1.3 *Grade 3*

The skin or testa of the beans shall be of a brown to blackish brown colour that is darker than those mentioned in Grade 2.

4.1.4 *Blacks*

The skin or testa of the beans shall be predominantly blackish in colour. Beans of Grade 1 and Grade 2 quality shall not be permitted, but up to 5 per cent by count of beans of Grade 3 and up to 5 per cent by mass of garblings shall be permitted.

4.1.5 *Garblings*

Shrivelled, flat and defective beans. A maximum of 10 per cent by mass of meat or rice cocoa shall be permitted.

4.1.6 *Meat or rice cocoa*

Broken pieces of cocoa nibs.

4.2 Other requirements for Grades 1, 2 and 3

Cocoa beans shall also comply with the requirements given in Table 1 when examined in accordance with the method given in 8.1.

TABLE 1

Grade	Mouldy beans per cent by count, max.	Slaty beans per cent by count, max.	Other defectives (insect damaged, germinated and flat beans) per cent by count, max.
1	4	3	3
2	5	8	5
3	8	10	10*

*Includes any garblings present.

4.3 Other requirements for blacks, garblings, and meat or rice cocoa

Requirements for mouldy beans, slaty beans and other defectives (insect damaged, germinated and flat beans) are not specified and shall be the agreement between the buyer and seller.

4.4 Freedom from insects

Cocoa beans shall be free from living insects and shall be practically free from dead insects, insect fragments and rodent contamination visible to the naked eye (corrected if necessary for abnormal vision) with such magnification as may be necessary in any particular case. If the magnification exceeds x 10, this fact shall be stated in the test report.

4.5 Extraneous matter

The maximum limits for extraneous matter for the different grades of cocoa beans shall be as follows:

Grade 1, Grade 2 and Grade 3	0.5 per cent by mass
Blacks and garblings	1 per cent by mass
Meat or rice cocoa	2 per cent by mass

4.6 Moisture content*

The moisture content of all grades of cocoa beans shall not exceed 7.5 per cent by mass when tested in accordance with the method stipulated in 8.2.

5 PACKING FOR EXPORT

The packing material shall be of a sound merchantable quality as agreed to between the buyer and the seller.

6 MARKING FOR EXPORT

The packages shall be marked with the following information.

- a) Name of the material,
- b) Grade designation,
- c) Net mass,
- d) Trade mark, if any,
- e) Markings identifying the exporter, and
- f) The words *Produce of Sri Lanka/(Ceylon)*.

**It is not necessary to carry out this determination as a routine for all samples. This determination shall be made in case of dispute and when required either by the purchaser or the vendor if already provided for in the agreement.*

7 SAMPLING FOR EXPORT

7.1 Definitions

7.1.1 lot : A quantity of cocoa beans of the same grade shall constitute a lot.

7.1.2 primary sample : A small quantity of cocoa beans taken from each selected container of the lot.

7.1.3 bulk sample : A quantity of cocoa beans formed by combining and mixing the primary samples.

7.1.4 final lot sample (Laboratory sample) : A sample representative of the quality of the lot, obtained from the bulk sample and intended for laboratory examination.

7.2 General

7.2.1 The samples shall be representative of the lot and since the composition of the lot is usually to some extent heterogeneous, a bulk sample shall be taken from the lot by drawing a sufficient number of primary samples and carefully mixing them. The sample for laboratory examination shall be obtained by successive reduction of this bulk sample.

7.2.2 Special care is necessary to ensure that all sampling apparatus is clean, dry and free from foreign odours. Sampling shall be carried out in such a way as to protect the samples of cocoa beans, the sampling instruments and the containers in which the samples are placed, from adventitious contamination, such as rain, dust etc. Matters adhering to the outside of the sampling instrument shall be removed before the instrument is emptied of its contents.

7.3 Method of sampling

7.3.1 Primary samples shall be drawn in a representative manner from each of the packages taken at random in accordance with the scale given in Table 2.

TABLE 2 - Scale of sampling

Lot size N	Number of containers to be drawn n
1 to 5 containers	All containers
6 to 49 containers	5 containers
50 to 100 containers	10% of the containers
Over 100 containers	The square root of the number of containers, rounded to the nearest whole number

The containers to be selected from the lot shall be drawn at random from the lot and for this purpose a random number table shall be used. If such a table is not available, the following procedure may be adopted.

Starting from any container, count the containers as 1,2,3, etc., up to r and so on in one order. Every r th container thus counted shall be withdrawn r , being the integral part of N/n , where N is the total number of containers in the lot and n the number of containers to be selected (Table 2).

7.3.2 Bulk sample

To obtain bulk sample, combine the primary samples and mix them thoroughly.

7.3.3 Final lot sample

Reduce bulk sample by successive coning and quartering. The size of the reduced sample shall be more than three times the quantity of the sample required to carry out all the tests. This reduced sample shall be divided into two or more equal parts according to the number of final lot samples required. Each part thus obtained constitutes a final lot sample; one of these samples is intended for testing and the other for reference. The reference sample bearing the seals of the seller (or his representative) and of sampling authority is to be used in case of dispute. It shall be kept at the sampling authority.

7.4 Packing of final lot sample

The containers for the samples and the closure system provided for them shall be perfectly clean and dry. They shall be of material not likely to affect the quality of the product.

7.5 Labelling of final lot sample

The final lot sample shall be labelled and the label shall give information concerning the sample and full details of the sampling, that is :

- a) The date of sampling,
- b) Name and address of the person drawing the sample,
- c) Name of the product,
- d) Grade,
- e) Trade mark,
- f) Name of consignee, and
- g) The country of destination.

If any infestation is found at the time of sampling a record of this shall be included in the details of sampling to be given on the sampling containers.

7.6 Despatch of final lot sample

Final lot sample shall be despatched for testing to the laboratory immediately after the termination of sampling.

7.7 Criteria for conformity

A lot shall be declared as conforming to this specification if the final lot sample satisfies all the requirements given in 4 and the bags drawn in accordance with Table 2 satisfy the requirements of 5 and 6.

8 METHODS OF TEST

8.1 Cut test

The first 300 beans shall be counted off from the final lot sample. These 300 beans shall be cut lengthwise through the middle so as to expose the maximum cut surface of the cotyledons, and both halves of each bean examined. Separate counts shall be made of the number of mouldy, slaty and otherwise defective beans. When a bean is defective in more than one of these respects, only one defect shall be counted, and this shall be the most objectionable defect. The decreasing order of gravity,

Mouldy beans

Slaty beans

Insect damaged beans, germinated beans and flat beans.

8.2 Determination of moisture

8.2.1 *Preparation of sample for test*

Take 10 g of cocoa beans from the final lot sample, crush roughly with a pestle in a mortar and expose it for as short a time as possible to the laboratory atmosphere.

8.2.2 *Procedure*

Weigh a dish with a lid, of glass or corrosion resistant metal with at least 3 500 mm effective surface. Place in it the test sample prepared as in 8.2.1 and weigh to within 0.2 mg and keep in an oven at 103 ± 2 °C for 16 ± 1 hour taking care not to open the oven.

At the end of this period cover the dish with the lid and place in a desiccator to cool. After cooling to ambient temperature (30 - 40 minutes after placing in desiccator) weigh to within 0.2 mg.

Carry out this determination in duplicate.

8.2.3 Calculation

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

where,

m_0 = mass, in g, of empty dish and lid,

m_1 = mass, in g, of dish, lid and test portion, and

m_2 = mass, in g, of dish, lid and test portion
after drying.

AMENDMENT NO. 1 APPROVED ON 1987-10-08

SLS 106:1977 SPECIFICATION FOR COCOA BEANS
(FIRST REVISION)

Page 5

Clause 1 - SCOPE

Substitute the existing clause with the following:

"This specification prescribes the requirements and methods of sampling and test for cocoa beans".

Page 6

Clause 2.1

Substitute the existing clause with the following text:

"fermented bean : A cocoa bean where the colour of the cotyledons range from partly purple and partly brown to an even chocolate brown or cinnamon (light brown) as shown by the cut test.

Page 7

Clause 4.1.2

Amend to read as follows:

"Grade 2 - The beans shall be well cured, sun/kiln dried and well formed. The skin or testa of the beans shall be brown or reddish brown to blackish brown in colour. Black beans and garblings are not permitted".

Clause 4.1.4

Amend to read as follows:

"Blacks (substandard) The skin or testa of the beans shall be predominantly blackish in colour. Beans of the Grade 1 and Grade 2 quality shall not be permitted. Up to 5 per cent by count of Garblings shall be permitted. Blacks should not meet the requirements of Grade 3 beans.

TABLE 1

Amend to read as follows:

Grade	Mouldy beans per cent by count, max.	Slaty beans per cent by count, max.	Other defectives (insect damaged, germinated and flat beans) per cent by count, max.
1	4	3	3
2	5	8	5
3	12	10	*10

*Includes any garblings present.

AMD 92

Page 8

Clause 5 - PACKING FOR EXPORT

Amend to read as follows:

"The packing material shall be of a sound merchantable quality as agreed to between the buyer and the seller. Packing should be preferably in jute bags".

AMENDMENT NO. 2 APPROVED ON 1988-08-25

SLS 106 : 1977 SPECIFICATION FOR COCOA BEANS (FIRST REVISION)

PAGE 6

Clause 6 Marking

Substitute the existing clause with the following :

6 MARKING

6.1 Each package shall be marked legibly and indelibly or a label shall be attached to the package with the following information; except for packages intended for export where marking shall be in accordance with **6.2**.

- a) Name of the product;
- b) Type/Grade;
- c) Trade name, if any;
- d) Batch or code number, if any;
- e) Net weight in grams or in kilograms; and
- f) Name and address of the producer or trader.

6.2 Marking on packages intended for export shall be in accordance with **SLS 809***. In addition to the Standard Shipping Marks stipulated in **SLS 809***, the following information marks shall be given on each package.

- a) Name of the product; and
- b) Grade designation.

***SLS 809** - Recommended Shipping Marks for goods

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.