

SRI LANKA STANDARD 189:1983
UDC 665.18

SPECIFICATION FOR
ILLUMINATING PARAFFIN WAX CANDLES
(FIRST REVISION)

BUREAU OF CEYLON STANDARDS

SPECIFICATION FOR ILLUMINATING PARAFFIN WAX CANDLES
(FIRST REVISION)

SLS 189 : 1983

(Attached AMD 250)

Gr. 7

Copyright Reserved

BUREAU OF CEYLON STANDARDS

53, Dharmapala Mawatha,

Colombo 3,

Sri Lanka.

CONSTITUTION OF THE DRAFTING COMMITTEE

CHAIRMAN

Prof. S. Sotheeswaran

REPRESENTING

University of Peradeniya

MEMBERS

Dr. S. Hettiarachchi

University of Colombo

Mr. A. Hewa

Ceylon Institute of Scientific
and Industrial Research

Mr. G.P. Jayawardene

Starline Candle Industries

Mr. E.M. Nanayakkara

Ceylon Petroleum Corporation

TECHNICAL SECRETARIAT

BUREAU OF CEYLON STANDARDS

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 ILLUMINATING PARAFFIN WAX CANDLES
(FIRST REVISION)

FOREWORD

This Sri Lanka Standard was authorized for adoption and publication by the Council of the Bureau of Ceylon Standards on 1983-04-08, after the draft, finalized by the Drafting Committee on Candles had been approved by the Chemicals Divisional Committee.

This specification was first published in 1968. The main changes in this revision are the introduction of additional requirements for the melting point, oil content and luminous intensity of candles and the inclusion of a modified sampling scheme.

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 result 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 should be the same as that of the specified value in this specification.

In the formulation of this specification, the assistance derived from the publications of the Indian Standards Institution and the Federal Supplies Service of the General Services Administration of USA is gratefully acknowledged.

1 SCOPE

This specification prescribes the requirements and methods of sampling and test for illuminating paraffin wax candles. It does not apply to ornamental candles.

2 REFERENCES

- CS 102 Presentation of numerical values
- SLS 428 Random sampling methods
- SLS ... Tests for petroleum and petroleum products*
 - Part 17 Determination of melting point
 - Part 18 Determination of oil content.

* Under preparation.

3 TYPES

There shall be two types of illuminating paraffin wax candles, namely ,

Type 1 Standard illuminating candles

Type 2 Large illuminating candles.

4 REQUIREMENTS

4.1 Appearance and workmanship

4.1.1 The candles shall be translucent, clean, free from dirt and foreign matter, uniform, free from fractures (breaks) and distortions (warped, sags, runs, two or more fused together) and free from cracks or bubbles. It shall be straight, cylindrical, with a properly finished shoulder and completely flat base without recess.

4.1.2 The wick of the candles shall be of braided or plaited cotton yarn. The wick shall be properly centered and shall not be visible along the shaft of the candle. The wick shall be visible at the bottom of the candle and shall extend the entire length of the candle and at least 6 mm beyond the tip.

4.2 Mass and dimensions

Candles shall conform to the requirements given in Columns 3 and 4 of Table 1.

TABLE 1 - Requirements for mass and dimensions

Sl. No. (1)	Characteristic (2)	Type 1 (3)	Type 2 (4)
i	Mass of 8 candles	Not applicable	450 ± 15 g
ii	Mass of 40 candles	450 ± 15 g	not applicable
iii	Length from the base to the tip excluding wick, min.	110 mm	210 mm
iv	Diameter, min.	11.0 mm	18.0 mm

4.3 Odour

The candles shall be free from offensive odour during burning and storage.

4.4 Solubility

The candle material shall dissolve with no more than a trace of residue when tested as prescribed in 7.1.

4.5 Deflection

The candles shall have a deflection of not more than 3 angular degrees when tested as prescribed in 7.2.

4.6 Deformation

When tested as prescribed in 7.3, the candles shall be easily separated and shall not be deformed to the extent that the performance of the candle is affected as specified in 4.7.

4.7 Burning time and burning quality

4.7.1 *Burning time*

Type 1 candles and Type 2 candles shall have a burning time of not less than 15 hours and 7 hours respectively when tested as prescribed in 7.4.

4.7.2 *Burning quality*

The candles shall burn steadily and the flame shall consume the candle and wick without excessive smoking or objectionable odour and without the necessity of trimming the wick when tested as specified in 7.4.

4.8 Luminous intensity

Type 1 candles and Type 2 candles shall have a luminous intensity of not less than 0.6 candela and 0.8 candela respectively, when tested as prescribed in 7.5.

4.9 Oil content

The candles shall have an oil content of not more than 1 per cent by mass of the candle material, when tested as prescribed in 7.6.

4.10 Melting point

The candle material shall have a melting point of not less than 54 °C and not more than 58 °C when tested as prescribed in 7.7.

5 PACKAGING AND MARKING

5.1 The candles shall be suitably packed to afford adequate protection against physical damage in handling.

5.2 The following shall be marked legibly and indelibly on the label of each package.

- a) Name of the product ;
- b) Name and address of the manufacturer ;
- c) Type of candle as 'standard' and 'large' ;
- d) Number of candles ;
- e) Batch or code number ; and
- f) Net mass, in grams.

5.3 The packages may also be marked with the Certification Mark of the Bureau of Ceylon Standards illustrated below on permission being granted for such marking by the Bureau of Ceylon Standards.



NOTE - The use of the Bureau of Ceylon Standards Certification mark (SLS mark) is governed by the provisions of the Bureau of Ceylon Standards Act and the regulations framed thereunder. The SLS mark on products covered by a Sri Lanka Standard is an assurance that these 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 Bureau and operated by the producer. SLS marked products are also continuously checked by the Bureau for conformity to the relevant standards as a further safeguard. Details of conditions under which a permit for the use of the Certification Mark is granted to manufacturers or processors may be obtained from the Bureau of Ceylon Standards.

5.4 Where packages are packed into containers, the date of manufacture and the number of packages in the container shall be marked on the outside of the container.

6 SAMPLING

Representative samples of candles for carrying out tests shall be drawn as prescribed in Appendix A.

7 METHODS OF TEST

7.1 Solubility

Place a candle in a 250-ml beaker and melt carefully at a low temperature. Stir the molten material. Pour off a portion of about 5 grams into a 250-ml Erlenmeyer flask. Allow to cool, add 100 ml of carbon tetrachloride and heat until the candle material is dissolved. No more than a trace of insoluble material shall remain.

7.2 Deflection

7.2.1 Apparatus

7.2.1.1 Deflection tester, shall consist of an accurate protractor chart marked off at each 10 degrees, with the first 10 degrees subdivided into 10 equal parts. A suitable clamp arrangement shall be used to hold the candle and protractor chart (see Figure 1). The protractor chart shall be in a vertical position.

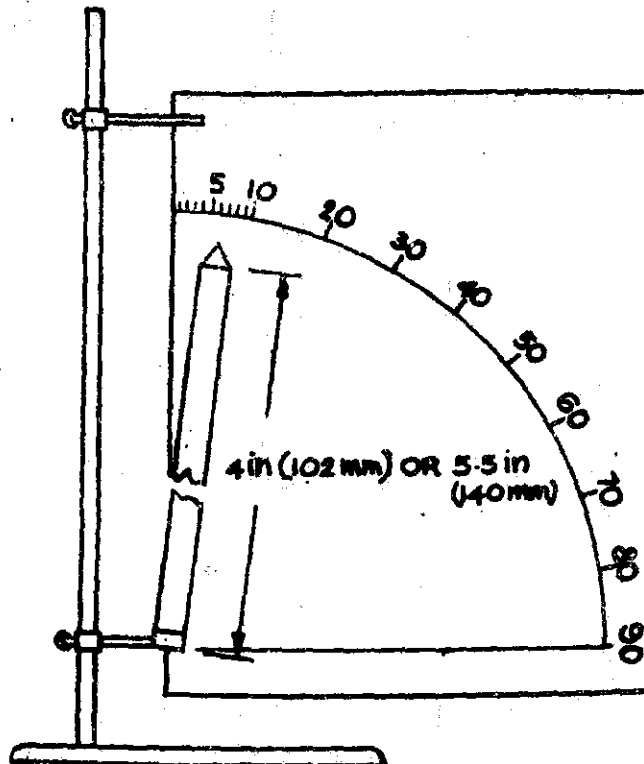


FIGURE 1 - Deflection tester

7.2.1.2 Constant temperature cabinet, shall be large enough to hold the deflection tester assembly and shall be capable of maintaining a temperature of 35 ± 1 °C (throughout the cabinet continuously for 24 hours).

7.2.2 Procedure

The candle shall be placed in the deflection tester with the length of the candle (excluding tip) 100 mm in the case of Type 1 candles and 140 mm in the case of Type 2 candles above the top of the clamp. The candle shall be at an angle of 5 degrees from the vertical, and so placed that an angular deflection of the specimen can be noted on the protractor chart. The assembly shall be placed in the constant temperature cabinet maintained at 35 ± 1 °C. Allow to remain at this temperature for 24 hours with periodic observations for possible failure. Record angular deflection; the angular deflection shall be considered as the increase from the initial 5 degree position.

7.3 Deformation

Four candles (two on two) shall be placed in 12.5-mm thick, rigid, wooden box with the wicks in a horizontal position. The box shall be just wide enough for two candles (see Figure 2). A weighted flat board shall be placed on the top layer of candles so that 8.0 ± 0.1 kg are evenly distributed over the top two candles. The assembly with the candles shall be placed in a constant temperature cabinet maintained at a temperature of 38 ± 1 °C for 24 hours. The candles shall be tested as prescribed in 7.4, immediately after removal from the constant temperature cabinet.

7.4 Burning time and burning quality

The burning time and burning quality of the candles shall be determined at ambient temperature under conditions free from drafts, but with access to air. The burning time and burning quality (as described in 4.7) shall be recorded including odour.

7.5 Luminous intensity

7.5.1 Photometric equipment

The mean horizontal luminous intensity of the candle shall be measured against a metal-filament standard electric lamp (or any suitable standard light source), mounted on a standard photometer bench, with a suitable form of photometer head.

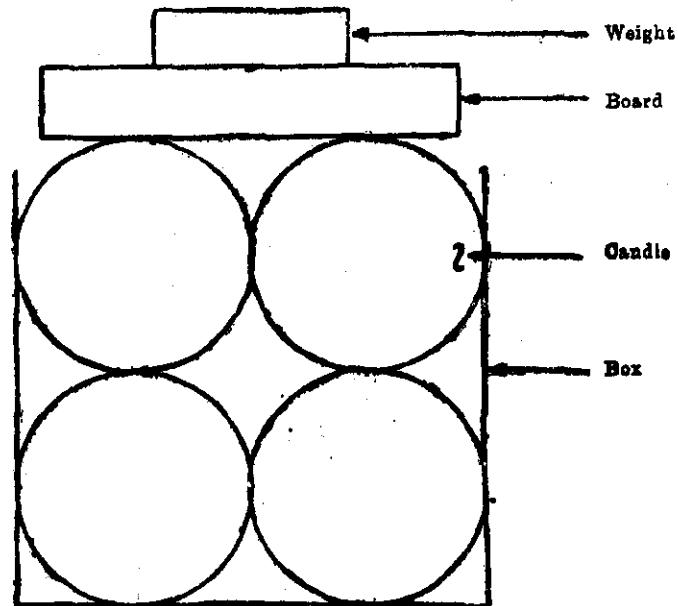


FIGURE 2 - Deformation tester

7.5.2 Procedure

7.5.2.1 The candle shall be mounted on a table fixed on one of the carriages of the photometer bench. Let the candle burn for more than 5 minutes to obtain a steady flame. The middle portion of the flame, photometer head and the standard electric lamp, shall be in the same horizontal plane and the photometer head shall be placed perpendicular to the incident light from the flame head. The standard electric lamp and the photometer head shall be kept fixed at any convenient position on the bench.

7.5.2.2 The candle shall be moved transversely on one side of the photometer head, until the position of balance is found. Measurement shall be made in a horizontal plane by changing position of the candle in four directions at right angle to the axis of the appliance, differing by 90° . A number of readings in each direction shall be taken and the average of all these measurements in the four directions shall be taken as the final value.

7.5.2.3 The temperature and the relative humidity of the test room shall be reported along with the test results.

7.6 Oil content

The oil content of the candle material shall be tested as prescribed in SLS ... Part 18*.

7.7 Melting point

The melting point of the candle material shall be tested as prescribed in SLS ... Part 17*.

8 CONFORMITY TO STANDARD

The lot shall be declared to be in conformity to the requirements of this specification if the following conditions are satisfied.

8.1 Each package satisfies the packaging and marking requirements (see A.3.1).

8.2 The candles of each package conform to the mass requirements specified in Table 1 (see A.3.2).

8.3 The number of candles not conforming to any one or more of the specified requirements when inspected as in A.3.2 is less than or equal to the corresponding acceptance number given in Column 2 of Table 2.

8.3.1 The candles of each sub-sample satisfies the relevant requirements (see A.3.3).

TABLE 2 - Acceptance number

No. of samples inspected	Acceptance number
Up to 12	0
13 to 19	1
20 to 31	2
31 to 49	3
50 to 79	5
80 to 99	7
100 and above	10

* Under preparation.

APPENDIX A
SAMPLING

A.1 LOT

In a single consignment, all the packages containing an equal number of candles of the same type and belonging to the one batch of manufacture shall be grouped to form a lot.

A.2 SCALE OF SAMPLING

A.2.1 Samples shall be tested separately from each lot for ascertaining conformity of the candles to the requirements of this specification.

A.2.2 The number of packages to be selected from the lot shall be in accordance with Columns 1 and 2 of Table 3.

TABLE 3 - Scale of sampling

No. of packages in the lot (1)	No. of packages to be selected (2)	Sub-sample size	
		Type 1 (3)	Type 2 (4)
Up to 25	3	5	3
26 to 100	5	6	5
151 to 300	8	8	6
301 to 500	10	10	7
501 and above	12	12	8

A.2.3 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.3 NUMBER OF TESTS

A.3.1 Each package selected as in A.2.2 shall be examined for packaging and marking requirements.

A.3.2 Ten candles in case of Type 1 candles or three candles in case of Type 2 candles shall be drawn from each package selected and shall be inspected for the requirements given below.

A.3.2.1 Appearance and workmanship (see 4.1).

A.3.2.2 Mass and dimensions (see 4.2).

A.3.2.3 Odour (see 4.3).

A.3.3 Three sub-samples each of size given in Columns 3 or 4 of Table 3 shall be drawn at random from the candles obtained as in A.3.2. The candles of each sub-sample shall be subjected to the following test or series of tests.

A.3.3.1 Sub-sample 1 shall be tested for odour, burning time, burning quality and luminous intensity (see 4.3, 4.7 and 4.8).

A.3.3.2 Sub-sample 2 shall be tested for deflection and deformation (see 4.5 and 4.6).

A.3.3.3 Sub-sample 3 shall be tested for solubility, oil content and melting point (see 4.4, 4.9 and 4.10).

~~DRAFT~~ AMENDMENT NO. 1 TO SLS 189:1983
SPECIFICATION FOR ILLUMINATING PARAFFIN WAX CANDLES
(FIRST REVISION)

EXPLANATORY NOTE

ASTM methods for the determination of oil content and melting point of paraffin wax candles is introduced since test methods are not available in Sri Lanka Standards on petroleum and petroleum products.

Printing error on the burning time of type 1 candles is corrected as 1.5 hours. The heading of the column (1) of Table 2 is changed to avoid misinterpretation.

Printing error in column (1) of Table 3 is corrected. Clause A.3.2.3 is entirely deleted since the odour is tested under the clause A.3.3.1.

~~DRAFT~~ AMENDMENT NO. 1 APPROVED ON 1999-11-11
SLS 189 : 1983
SPECIFICATION FOR ILLUMINATING PARAFFIN WAX CANDLES
(FIRST REVISION)

FOREWORD

Substitute paragraph 5 with the following

"In the formulation of this specification, the assistance derived from the publications of the Indian Standards Institution, the Federal Supplies Service of the General Administration of USA and the American Society for Testing and materials is gratefully acknowledged."

Clause 2 REFERENCES

Insert following under references as line 1 and line 2.

"ASTM D 87 Standard test method for melting point of petroleum wax (cooling curve)

ASTM D 721 Standard test method for oil content of petroleum waxes."

Clause 4.7.1 Burning time

In line 2, delete '15' and substitute '1.5'.

Clause 7.6 Oil content

In line 2, delete 'SLS Part 18*' and substitute 'ASTM D 721'.

Clause 7.7 Melting point

In line 2. delete 'SLS Part 17*' and substitute 'ASTM D 87'.

Clause 8.3.1

Table 2

Number the columns as "(1)" and "(2)" from left to right.

Delete the heading, 'No. of samples inspected' in column (1) and substitute 'No. of candles'.

Clause A.2.2

Table 3

In column 1. line 2. delete '100' and substitute '150'.

Clause A.3.3

Delete entirely the clause A.3.2.3.

BUREAU OF CEYLON STANDARDS

The Bureau of Ceylon Standards (BCS) is the national standards organization of Sri Lanka and was established by the Hon. Minister of Industries & Fisheries, as provided for by the Bureau of Ceylon Standards Act. No. 38 of 1964.

The principal object of the Bureau as set out in the Act are to promote standards in industry and commerce, prepare national Standards Specifications and Codes of Practice and operate a Standardization Marks Scheme and provide testing facilities, as the need arises.

The Bureau is financed by Government grants and the sale of its publications. Financial and administrative control is vested in a Council appointed in accordance with the provisions of the Act.

The detailed preparation of Standard Specifications is done by Drafting Committees composed of experts in each particular field assisted by permanent officers of the Bureau. These Committees are appointed by the Divisional Committees, which are appointed by the Council. All members of the Drafting and Divisional Committees render their services in an honorary capacity. In preparing the Standard Specifications, the Bureau endeavours to ensure adequate representation of all view points.

In the international field the Bureau represents Sri Lanka in the International Organization for Standardization (ISO) and will participate in such fields of Standardization as are of special interest to Sri Lanka.