Reaffirmed
2016

SRI LANKA STANDARD 954 : 1992

UDC 665.944.73

SPECIFICATION FOR

FRENCH POLISH

SRI LANKA STANDARDS INSTITUTION

Blank Page

SPECIFICATION FOR FRENCH POLISH

SLS 954 : 1992

Gr.9

Copyright Reserved

SRI LANKA STANDARDS INSTITUTION
53, Dharmapala Mawatha,
Colombo 3,
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 FRENCH POLISH

FOREWORD

This standard was approved by the Sectoral Committee on Paints and Varnishes and Allied Products and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 1992-03-26.

Clause 4.5 of this specification calls for agreement between the purchaser and the supplier.

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 an analysis shall be rounded off in accordance with SLS 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 International Organization for Standardization, American Society for Testing and Materials and the Bureau of Indian Standards is gratefully acknowledged.

1 SCOPE

This specification prescribes the requirements and methods of sampling and test for french polish used for finishing wood work.

2 REFERENCES

SLS 102 Presentation of numerical values.
SLS 428 Random sampling methods.
SLS 490 Shellac
  Part 1 : Hand-made shellac.
  Part 2 : Machine-made shellac.
SLS 523 Methods of sampling paints.
SLS 535 Methods of test for paints.
  Part 3 : Tests associated with paint film formation.
SLS 692 Safety colours and safety signs.

3 DEFINITIONS

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

3.1 **sticklac** : Natural product of lac insects.

3.2 **seedlac** : Product obtained by washing crushed sticklac.

3.3 **shellac:** Product obtained by refining seedlac by heat process, by solvent process or by both heat and solvent processes.

3.4 **acid value** : The number of milligrams of potassium hydroxide required to neutralize 1 g of polish.

4 REQUIREMENTS

4.1 French polish shall contain at least 25 per cent by mass of shellac dissolved in denatured alcohol or isopropyl alcohol or a mixture of the two.

NOTE

Shellac conforming to SLS 490 : Part 1 or Part 2 is suitable to use in the manufacture of french polish.

4.2 French polish shall be free from visible impurities .

4.3 French polish shall be capable of being applied by brush or roller or by spraying. The dry film shall have a uniform glossy appearance and shall be free from wrinkles and other surface imperfections.

4.4 French polish shall retain its properties at least one year from the date of manufacture. The material shall also be free from any extraneous matter such as fungal growth and bacterial degradative products.

4.5 The acid value of french polish shall be as agreed to between the purchaser and the supplier when tested as given in Appendix A.

4.6 French polish shall also comply with the requirements given in **Table** 1 when tested in accordance with the methods given in Column 4 of the table.

TABLE 1 - Requirements for french polish

Sl. No. (1)	Characteristic (2)	Requirement (3)	Method of test (4)
i)	Hard drying time, hours, max.	2	SLS 535:Part 3:1981 Section 3.5
ii)	Colour index, max.	18	Appendix B
iii)	Iodine value of the residue, max.	20	Appendix C
iv)	Matter insoluble in hot alcohol of the residue, per cent by mass, max.	0.5	Appendix D
v)	Wax, per cent by mass, max.	5.5	Appendix E
vi)	Ash, per cent by mass, max.	0.5	Appendix F

5 PACKAGING AND MARKING

5.1 Packaging

The product shall be suitably packed in clean, dry containers. The containers shall be properly sealed to prevent leakage and shall be strong enough to withstand breakage during handling.

5.2 Marking

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

a) Name of the product;
b) Name and address of the manufacturer and/or distributor (including the country of origin);
c) Registered trade mark, if any;
d) Volume, in millilitres/litres;
e) Pictorial marking for risk of fire (see warning sign B.3.2 given in SLS 692 : 1985)
f) "Best before" date ; and
g) Batch or code number.

NOTE

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

6 SAMPLING

6.1 Lot

In any consignment all the containers of french polish of same size and belonging to one batch of manufacture or supply shall constitute a lot.

6.2 Scale of sampling

6.2.1 Samples shall be tested from each lot for ascertaining its conformity to the requirements of this specification.

6.2.2 Representative samples shall be drawn as prescribed in the relevant clauses of SLS 523.

6.2.3 The containers shall be selected at random. In order to ensure randomness of selection, tables of random numbers as given in SLS 428 shall be used.

6.3 Preparation of the composite sample

Approximately an equal quantity shall be drawn from each sample container selected as in 7.2.1 (e) of SLS 523 : 1981 and mixed thoroughly to form a composite sample. The composite sample shall be transferred to sample container.

6.4 Number of tests

6.4.1 The containers selected as in **6.2.2** shall be inspected for packaging and marking requirements.

6.4.2 Each sample selected as in **6.2.2** shall be tested for the requirements given in 4.2, 4.3 and 4.4.

6.4.3 The composite sample prepared as in 6.3 shall be tested for the requirements given in 4.5, and 4.6.

7 METHODS OF TEST

7.1 Unless otherwise specified, reagents of analytical grade and distilled water or water of equivalent purity shall be used.

7.2 Tests shall be carried out as prescribed in **SLS 535 : Part 3:1981** and Appendices A to F of this specification.

8 CRITERIA FOR CONFORMITY

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

8.1 Each container inspected as in **6.4.1** satisfies the packaging and marking requirements.

8.2 Each sample tested as in **6.4.2** satisfies the relevant requirements.

8.3 The composite sample tested as in **6.4.3**satisfies the relevant requirements.

APPENDIX A
DETERMINATION OF ACID VALUE

A.1 REAGENTS

A.1.1 *Ethanol,* 95 per cent (V/V) solution.

A.1.2 *Standard potassium hydroxide,* c(KOH) = 0.1 mol/1 alcoholic solution.

A.1.3 *Thymol blue indicator*
Dissolve 1 g in 1 litre of ethanol.

A.2 PROCEDURE

Weigh, to the nearest milligram, about 2 g of the sample and dissolve in 50 ml of the alcohol (A.1.1). Allow to reach room temperature. Titrate against potassium hydroxide (A.1.2) using thymol blue (A.1.3) as the indicator.

A.3 CALCULATION

$$\text{Acid value} = 56.1 \times$$

where,

V is the volume, in ml, of the potassium hydroxide solution;
c is the concentration, in mol/l, of the potassium hydroxide solution; and
m is the mass, in g, of the sample.

APPENDIX B
DETERMINATION OF COLOUR INDEX

B.1 REAGENTS

B.1.1 *Ethanol,* 95 per cent (V/V) solution.

B.1.2 *Standard iodine solution,* $c(I_2) = 0.0025$ mol/l. Transfer 5 ml of 0.05 mol/l solution of iodine in potassium iodide, from a burette, into a 100-ml volumetric flask and make up to the mark with water. This solution corresponds to colour index 5. Shake the solution before use.

B.2 PROCEDURE

Dilute 40.0 g of sample to 100 ml with ethanol (B.1.1) and stir well. Filter through a funnel using a medium grade filter paper. Discard the first 15 ml of the filtrate. Pipette 5 ml of the filterate into a thin-walled test tube. Take 5 ml of the standard iodine solution (B.1.2) in another test tube for comparison. Hold the two test tubes against a light with a piece of moistened filter paper or opal glass interposed in between the light source and the test tubes.

Add the alcohol from a burette to the test solution while shaking, until the colour is the same as that of the standard iodine solution. Note the volume of alcohol added.

B.3 EXPRESSION OF RESULTS

The colour index is expressed as the total volume of the test solution after dilution which could be calculated by adding 5 to the volume of alcohol added to the test solution.

APPENDIX C
DETERMINATION OF IODINE VALUE (WIJS-LANGMUIR METHOD)

C.1 REAGENTS

C.1.1 *Glacial acetic acid,* 99 per cent. (V/V) solution, free from reducing impurities.

C.1.2 *Chloroform*

C.1.3 *Potassium iodide,* 100 g/l solution.

C.1.4 *Wijs-Langmuir iodine monochloride solution.*

Dissolve 8 g of iodine trichloride in 500 ml of acetic acid (C.1.1). Add 5 ml of this solution to 10 ml of potassium iodide solution (C.1.3). Add 100 ml of distilled water and titrate with the sodium thiosulfate solution (C.1.5) using the starch solution (C.1.6) as the indicator.

Calculate the exact quantity of iodine trichloride present in the solution using the following relationship :
1 ml of 0.05 mol/l sodium thiosulfate = 0.005 832 g iodine trichloride.

Dissolve 9 g of iodine in 500 ml of acetic acid (C.1.1). Determine the exact quantity of iodine present by titrating 10 ml of this solution with the standard sodium thiosulfate solution (C.1.5) using the starch solution (C.1.6) as the indicator.

One gram of iodine trichloride reacts with 1.098 g of iodine to form iodine monochloride. From this relationship, calculate the volume of iodine solution required to be added to the iodine trichloride solution.

Add this calculated volume of iodine solution to the iodine trichloride solution and mix thoroughly. Dilute with the acetic acid (C.1.1) until 10 ml is equivalent to 20 ml of the standard sodium thiosulfate solution, when it is titrated in the presence of excess of potassium iodide solution and water using the starch solution (C.1.6) as the indicator. Heat the solution to 100 °C for 20 minutes and allow to cool. Keep the solution in an amber-coloured container protected from light.

C.1.5 *Standard sodium thiosulfate,* $c(Na_2S_2O_3)$ = 0.05 mol/l solution.

C.1.6 *Starch,* 2 g/l solution, freshly prepared.

C.2 PROCEDURE

C.2.1 Take a sufficient amount of the sample (for determination of iodine value and matter insoluble in hot alcohol) in a porcelain dish and evaprate at 40 °C. Cool the residue to room temperature.

C.2.2 Weigh, to the nearest milligram, about 0.2 g of the prepared sample (C.2.1) into a 250-ml flask, having a ground glass stopper. Add 20 ml of the acetic acid (C.1.1) and place the flask on a water bath maintained at 67 ± 2.5 °C, swirling the flask occasionally until dissolution is complete, except for the wax. Add 10 ml of the chloroform (C.1.2) and cool the solution to 22 ± 0.5 °C. Allow the flask to stand at a temperature of 22 ± 0.5 °C for at least 30 minutes, half immersed in water in a shallow pan which is either well insulated or equipped with a suitable thermostat. Add 20 ml of Wijs-Langmuir solution (C.1.4) at a temperature of 22 ± 0.5 °C from a pipette within 30 minutes. Place it again in the pan of water and note the time. Keep the flask half-immersed in water at 22 ± 0.5 °C for 60 minutes, swirling the flask occasionally during this time. Add 10 ml of the potassium iodide solution (C.1.3) to the flask and wash into it any Wijs - Langmuir solution left on the stopper. Dilute with about 100 ml water and titrate the solution immediately running in rapidly 25 ml to 30 ml of standard sodium thiosufate solution (C.1.5) shaking vigorously until a straw colour appears. Add 1.5 ml of the starch indicator solution (C.1.6) and slowly finish the titration.

Carry out a blank determination.

C.3 CALCULATION

$$\text{Iodine number} = \frac{(V_1 - V_0)\, c}{m} \times 12.69$$

where,

V_1 is the volume, in ml, of the sodium thiosulfate solution required for titration of the test solution;

V_0 is the volume, in ml, of the sodium thiosulfate solution required for titration of the blank solution;

c is the concentration, in mol/l, of the sodium thiosulfate solution; and

m is the mass, in g, of the sample.

APPENDIX D
DETERMINATION OF MATTER INSOLUBLE IN HOT ALCOHOL

D.1 REAGENT

Ethanol, 95 per cent (V/V) solution.

D.2 APPARATUS

D.2.1 **Extraction apparatus**, comprising of

D.2.1.1 *Condenser*, all glass, of the type and dimensions shown in Figure 1a, the tip of which is cut at an angle of 45°. The condenser has two holes in its tip through which passes the wire holding the siphon tube (D.2.1.2).

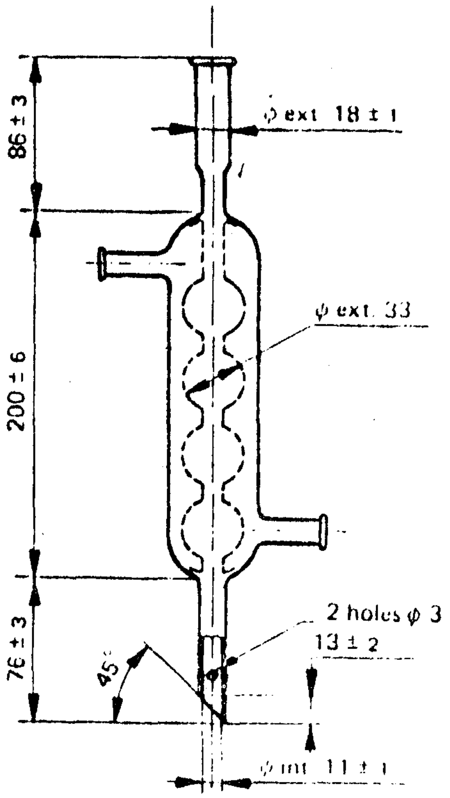
D.2.1.2 *Siphon tube*, of glass, of the type and dimensions shown in Figure 1b. The siphon tube has two holes near the top for a wire to be fastened to the condenser tip, leaving about 6 mm space between the top of the tube and the condenser tip.

D.2.1.3 *Conical flask*, heat resistant, wide mouthed, preferably of borosilicate glass of height approximately 175 mm and approximately 50 mm inside diameter at the top. The flask has a tight-fitting cork of depth 25 mm, bored to fit the stem of the condenser. The bottom of the cork is just above the holes for the wire in the condenser. To support the flask, a suitable ring support with iron clamp and nickel-chromium or iron gauze is used. The gauze has no asbestos covering.

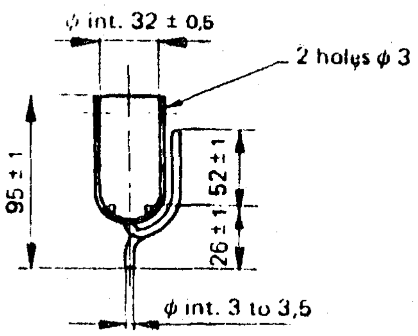
D.2.1.4 *Carbon filter tube*, of the type and dimensions shown in Figure 1c, having a light spiral spring at the bottom to hold up the extraction cartridge (D.2.2). The stem of the filter tube is fitted with a rubber stopper and firmly held in the hot water bath (D.2.7).

Dimensions in millimetres

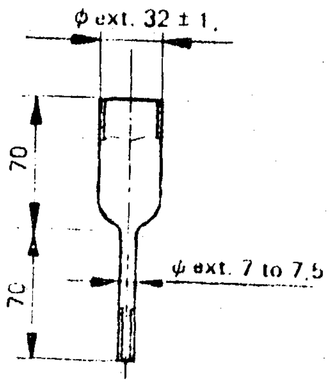
All dimensions are approximate



(a) Condenser



(b) Siphon tube



(c) Filter tube

FIGURE 1 - **Extraction apparatus**

D.2.2 **Extraction cartridges**, of fat-free paper, of diameter approximately 25 mm and height approximately 60 mm.

D.2.3 **Electric oven**, maintained at 100 ± 2 °C.

D.2.4 **Weighing bottle**, glass-stoppered, of height approximately 80 mm and diameter approximately 40 mm.

D.2.5 **Desiccator**, containing sulfuric acid (rel. den. 1.84).

D.2.6 **Balance**, accurate to 1 mg.

D.2.7 Hot water bath, made of copper or stainless steel, having a width of approximately 100 mm and other dimensions as given in Figure 2.

The cover has a flanged hole of diameter 57 ± 1 mm, for a 200 ml beaker, and also a hole of diameter 35 ± 1 mm through which the top of the filter tube (D.2.1.4) projects. Directly below this hole, in the bottom of the bath, is a flanged hole, of diameter 25 ± 1 mm, to hold the rubber stopper, through which the stem of the filter tube extends, to discharge into the flask (D.2.1.3). The hot water bath is mounted on a low tripod or stand.

Dimensions in millimetres
All dimensions are approximate

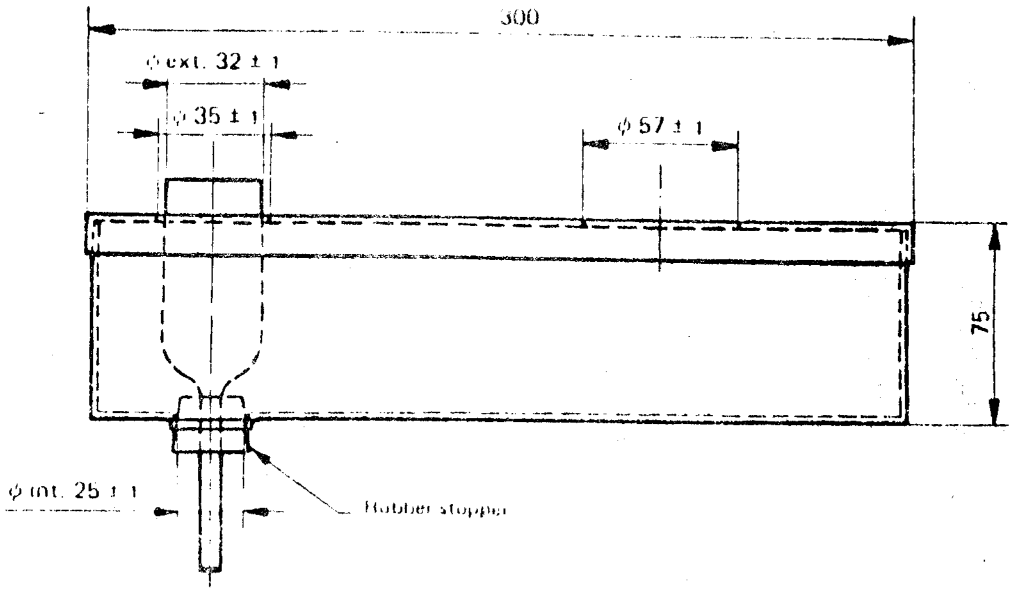


FIGURE 2 - Hot **water bath**

D.2.8 Gas burner, low form, adjustable, Bunsen type, carrying a draught shield, or any other suitable heating device.

D.2.9 Stop-watch

D.3 PROCEDURE

D.3.1 Preparation of extraction cartridge

Place 125 ml of the alcohol (D.1) in the conical flask (D.2.1.3) and a new extraction cartridge (D.2.2) in the siphon tube (D.2.1.2). Introduce the siphon tube into the flask and connect it to the condenser (D.2.1.1), making sure that there is an ample flow of cold water through the condenser. Adjust the rate of heating so as to give a cycle of filling and emptying in the siphon tube every 2 minutes and extract for 30 minutes. Dry the cartridge in the oven (D.2.3) maintained at 100 ± 2 °C. After 2 hours, weigh it in the tared weighing bottle (D.2.4), which has been kept in the desiccator (D.2.5), lifting the stopper of the bottle momentarily before weighing. Repeat the process of drying, cooling and weighing until the difference between two successive weighings does not exceed 1 mg.

NOTE

Use only new cartridges. A number of cartridges may be extracted dried, weighed and kept in weighing bottles in the desiccator until needed for use.

D.3.2 Determination

Weigh to the nearest milligram about 4.5 g of the sample prepared as in C.2.1. Place it in a 200 ml tall, lipped beaker, add 125 ml of the alcohol (D.1), cover with a watch-glass and place on the hot water bath (D.2.7) (see Figure 2). Boil the solution vigorously for 30 minutes. Keep the volume of alcohol constant by adding from a wash-bottle, washing down the sides of the beaker.

Meanwhile, place an extracted and weighed cartridge (D.3.1) in the filter tube (D.2.1.4). Maintain the hot water around the tube at a temperature of not less than 90 °C. Wet the cartridge with hot alcohol and decant the boiling solution into the heated cartridge until the beaker is nearly empty.

Wash the remaining solution and the insoluble matter into the cartridge, with successive portions of hot alcohol contained in a wash-bottle kept hot on the water bath. Finally, wash the cartridge from the top downwards with a fine stream of hot alcohol.

NOTE

A complete washing and transfer from the original beaker will require at least 75 ml of hot alcohol.

Transfer the cartridge containing the insoluble matter to the siphon tube (D.2.1.2), place 125 ml of the alcohol in the conical flask (D.2.1.3) and connect up the apparatus. Start the water flowing through the condenser (D.2.1.1), making sure that there is an adequate supply for efficient condensation. Light the burner (D.2.8) and time the extraction from the first emptying of the siphon, running the extraction for exactly 1 hour. Immediately adjust the rate of heating so that a complete filling and emptying of the siphon tube takes place every 2 minutes. In this way exactly 30 cycles per hour are accomplished. It is also necessary to protect the apparatus from draughts while in operation, otherwise the proper cycle rate cannot be maintained.

Remove the cartrige, drain in an upright position on filter paper and dry in the oven (D.2.3), maintained at 100 ± 2 °C. After drying for 2 hours, place the cartridge in the weighing bottle (D.2.4), cool in the desiccator (D.2.5) and weigh, removing the stopper momentarily just before weighing. Repeat the process of drying, cooling and weighing until the difference between two succesive weighings does not exceed 1 mg.

D.4 CALCULATION

$$\text{Matter insoluble in hot alcohol, percent by mass} = \frac{m_1}{m_0} \times 100$$

where,

m_0 is the mass, in g, of the sample ; and
m_1 is the mass, in g, of the residue.

APPENDIX E
DETERMINATION OF WAX

E.1 REAGENTS

E.1.1 *Sodium carbonate,* anhydrous.

E.1.2 *Filter aid,* previously extracted with chloroform and dried before use.

E.1.3 *Chloroform,* redistilled, free from non-volatile residue.

E.2 APPARATUS AND MATERIALS

E.2.1 *Water bath,* maintained at 100 ± 10 °C.

E.2.2 *Buchner funnel,* having an inside diameter of 55 mm to 90 mm and prepared just before use in the following manner:
Fit a disk of filter paper over the bottom of the funnel and then with the suction on, pour over the filter paper, in a layer of uniform thicknes, 1 g of filter aid (E.1.2) suspended in water.

E.2.3 *Electric oven,* maintained at 40 ± 2 °C.

E.2.4 *Filter paper,* fat free.

E.2.5 *Extraction cartridge,* of fat-free paper, diameter approximately 25 mm and height approximately 60 mm and extracted with chloroform by the procedure given in E.3.1.

E.2.6 *Suitable continuous extraction apparatus,* such as the standard apparatus for the determination of matter insoluble in hot alcohol (see D.2.1).

E.2.7 *Electric oven,* maintained at 100 ± 2°C.

E.2.8 *Desiccator*

E.3 PROCEDURE

E.3.1 Weigh, to the nearest milligram, about 10 g of the sample into a beaker. Dissolve 2.5 g of sodium carbonate (E.1.1) in 150 ml of hot water and add to the beaker. Immerse the beaker in the water bath (E.2.1) and stir. Cover the beaker with a watch-glass and allow it to remain in the bath without agitation for 2 hours to 3 hours. Remove the beaker from the bath and place it in cold water. (The wax will now come to the top and either solidify as a layer or float as small, hard particles, according to the amount of wax present in the sample.) Add 0.5 g of filter aid (E.1.2) to the test solution and filter through the Buncher funnel (E.2.2) with suction. After the filtration is complete leave the vacuum for a few minutes so as to suck out water as much as possible. Place the funnel in the oven (E.2.3) and dry its contents for several hours.

E.3.2 Insert a thin spatula under the edge of the filter paper and transfer the contents of the funnel to a sheet of fat free filter paper (E.2.4) securely wrap and bind it firmly with fine wire.

Place it in the prepared extraction cartridge (E.2.5). Wash both, the beaker in which the test solution was originally dissolved and the Buchner funnel, with portions of hot chloroform, filtering the chloroform solutions through the extraction cartridge into the flask to be used in the extraction. Place the extraction cartridge in the continuous extraction apparatus (E.2.6) and extract with hot chloroform for 2 hours.

E.3.3 Transfer the chloroform extract to a weighed beaker and heat on a steam bath until most of the chloroform is evaporated. Dry the residue in the oven maintained at 100 ± 2 °C (E.2.7) for 30 minutes, cool in a desiccator and weigh. Repeat the process of drying, cooling and weighing until the difference between two successive weighings does not exceed 1 mg.

E.5 CALCULATION

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

where,

m_0 is the mass, in g, of the sample; and
m_1 is the mass, in g, of the wax.

APPENDIX F
DETERMINATION OF ASH

F.1 APPARATUS

F.1.1 *Crucible,* porcelain, silica or platinum.

F.1.2 *Muffle furnace,* maintained at 550 ± 25 °C.

F.2 PROCEDURE

Weigh, to the nearest milligram, about 5 g of the sample in a tared crucible (F.1.1). Ignite in the furnace (F.1.2) at 550 ± 25 °C. Cool in a desiccator and weigh. Repeat the process of heating, cooling and weighing until the difference between two successive weighings does not exceed 1 mg.

NOTE

If a carbon-free ash cannot be obtained in this manner, extract the charred mass with hot water, collect the insoluble residue on an ashless filter paper, wash the filter paper and ignite until all the carbon is consumed. Transfer the filtrate and washings to the crucible, evaporate to dryness and ignite at 550 ± 25 °C. Cool in a desiccator and weigh.

F.3 CALCULATION

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

where,

m_0 is the mass, in g, of the sample; and
m_1 is the mass, in g, of the ash.

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.*

Printed at SLSI (Printing Unit)

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.

Printed at the Sri Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha,
Colombo 08.