මෙය රාජ්‍ය භාෂාවෙන් වෙනම මුද්‍රණය කර ඇත.

ලංකා ප්‍රමිති 57: 1969
CEYLON STANDARD 57: 1969

විශ්ව දශම වර්ග කිරීම UDC 667. 41: 686 863. 6

උල්පත් (=පවුන්ටන්) පැන්වල භාවිතය සඳහා ගන්නා නිත්‍ය නිල්-කළු තීන්ත පිළිබඳ ලංකා ප්‍රමිති පිරිවිතර

Ceylon Standard Specification for Permanent blue-black ink for fountain pens

ලංකා ප්‍රමිති කාර්යාංශය
BUREAU OF CEYLON STANDARDS

SPECIFICATION FOR PERMANENT BLUE-BLACK INK FOR FOUNTAIN PENS

C. S. 57: 1969

Gr. 3

BUREAU OF CEYLON STANDARDS
53, Dharmapala Mawatha,
Colombo 3.

Ceylon Standards are subject to periodical revision in order to accomodate 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.

BUREAU OF CEYLON STANDARDS
53, Dharmapala Mawatha,
Colombo 3.

Telegrams: 26051, 26054, 26055. *Telephone:* "PRAMIKA"

CEYLON STANDARD SPECIFICATION FOR PERMANENT BLUE-BLACK INK FOR FOUNTAIN PENS

FOREWORD

The Ceylon Standard specification has been prepared by the Drafting Committee on Writing Inks. It was approved by the Agricultural and Chemicals Divisional Committee of the Bureau of Ceylon Standards and was authorized for adoption and publication by the Council of the Bureau on 13th January, 1969.

This specification is a revision of the tentative Ceylon Standard 33 of 1961, published by the Standards Advisory Council of the then Department of Industries.

Ink suitable for general writing purposes is provided for in this specification. The writing should be allowed to dry naturally without blotting in order to achieve the best results with the writing ink.

The publications of the British and Indian Standards Institutions and the United States Supply Service have been of considerable assistance in the preparation of this standard.

1. SCOPE

This specification prescribes the requirements and methods of test for permanent blue black writing inks for use with fountain pens.

2. DESCRIPTION

The ink shall be of the ferro gallo tannate or the ferro-gallate type and shall be free from sediment when examined visually.

3. REQUIREMENTS

The ink shall filter readily and comply with the following requirements: (The composition of the standard reference ink shall be as given in the Appendix).

3.1 **Composition**

3.1.1 The iron content shall be not less than 1.0g per litre, calculated as metallic iron, ascertained by the method given in Sub-clause 6.1.

3.1.2 The blue dye content shall be sufficient to match the colour of the standard reference ink.

3.2 **Corrosive action** — The corrosive action of the ink shall be measured on brass and shall not exceed 5 per cent when tested as per method given in Sub-clause 6.2.

3.3 **Freedom from sediment** — The ink shall show no greater sediment than that of freshly prepared standard reference ink when tested by the method given in Sub-clause 6.3.

3.4 **Stability** — The ink when tested as in Sub-clause 6.4 shall be as free from deposit, surface growth and scale, as freshly prepared standard reference ink tested concurrently.

3.5 Performance

3.5.1 **Penetration** — Writing and stripes shall not penetrate unreasonably deep through cream wove paper of substance 60g/m^2 and of sizing 30 sec. at a temperature of 27 $\pm$ 2°C and relative humidity of 75 $\pm$ 10 per cent. The penetration shall not be any deeper than the standard reference ink.

3.5.2 **Permanence** — When tested according to the method given in Sub-clause 6.5, the writing and stripes shall be a close-match in colour and shall remain as dark as, and be no more affected in respect of permanence to light and resistance to water than those from the appropriate standard reference ink.

3.6 **Flow properties** — The ink shall be deemed suitable for fountain pen use if it gives satisfactory writing performance after having been stored in the manner described in Sub-clause 6.6.

4. PACKING AND MARKING

4.1 The type, size, shape and seal of the containers shall be subject to mutual agreement between the purchaser and vendor. If containers are of glass, they shall be of alkali-free quality. If plain, uncoloured glass is used an outer container which excludes light shall be used.

4.2 Each of the containers used shall be marked with the following information:

(i) name of manufacturer;
(ii) registered trade-mark;
(iii) exact hue of the material (preferably shown with a thick line of the same hue on a white background);
(iv) volume of material in the container;
(v) date of manufacture of the ink (this may be in code);

5. SAMPLING

5.1 **Lot** — All containers of the same size in a single consignment of the material drawn from a single batch of manufacture shall constitute a lot.

If a consignment is declared or known to consist of different sizes of containers, the containers belonging to the same batch and of the same size shall be grouped together and each such group shall constitute a seperate lot.

5.2 The number (n) of containers to be chosen from a lot shall depend on the size of the lot (N) and shall be in accordance with Table 1.

TABLE 1.

SCALE OF SAMPLING

Lot Size (N)	No. of containers to be taken (n)
(1)	(2)
Up to 100	3
101 to 300	4
301 to 500	5
501 to 800	7
801 and above	10

5.4 Additional number of containers may be drawn from the lot if the total quantity of the material taken out proves to be inadequate for all the tests and these containers shall be taken at random from the lot.

5 5 **Test Sample**

5.5.1 Each container in the sample shall be examined for sediment. If any of the containers are found to contain sediment, the whole lot shall be declared as not conforming to this specification.

5.2.2 If the containers in the sample are free from sediment, the contents of all thé "n" containers taken shall be mixed well, and a representative sample not less than 500 ml total volume, shall be drawn.

6. TESTS

Samples shall be tested from each lot for ascertaining the conformity of the material to the requirements of the specification. Test shall be carried out as prescribed in the following clauses:

6.1 Determination of iron

6.1.1 Reagents

(i) Sodium thiosulphate, approximately 0.025N

(ii) Hydrochloric acid dilute, 1: 1 by volume

(iii) Chlorine water

(iv) Potassium iodide, 20 per cent solution

(v) Starch indicator, 0.5 per cent freshly prepared solution

6.1.2 Procedure

Evaporate to dryness on a steam bath 10.0 ml of the fluid ink in a porcelain basin of about 50 ml capacity. Ignite the residue at moderate heat and add 5 ml of hydrochloric acid to the ash. Cover with a watch-glass and heat on a steam bath till the oxides of iron are dissolved. Add 2 ml of chlorine water and evaporate to dryness, until no traces of chlorine are present in the residue. Dissolve the iron salts in 1 ml of the hydrochloric acid and dilute to 20 ml with water. Filter. wash and add 10 ml of potassium iodide solution to the filtrate and washings collected in a flask. Stopper the flask and heat in a bath maintained at 55°C for one hour and cool rapidly with cold water to room temperature.

Make up the solution to about 100 ml and titrate with the standard sodium thiosulphate. Perform a blank experiment on the reagents and apply the necessary correction.

6.1.3 Calculation

$$\text{Iron content per litre} = \frac{55.84 \times N}{10} \times Vg$$

where N = normality of sodium thiosulphate solution used

and V = volume in millilitres of N normal sodium thiosulphate solution required.

6.2 **Determination of corrosion**

6.2.1 **Apparatus** Brass pieces, containing 70 per cent copper and 30 per cent zinc, having the dimensions approximately 25mm x 25mm x 0.3mm. All the surfaces of the brass pieces shall be smooth and well polished.

6.2.2 **Procedure** Thoroughly clean the brass piece with ethyl alcohol and ether, Dry at $105° \pm 2°C$ and weigh accurately to the nearest milligramme. Suspend the brass piece by means of a silk thread in 50 ml of ink contained in a beaker. Keep it completely immersed and without touching the beaker for 7 days at room temperature. The beaker shall remain covered during this period. After 7 days, remove the brass piece, washwith water and wipe with a soft lint free cloth. Rinse with alcohol and dry as before to constant weight.

6.2.3 **Calculation**

$$\text{Percentage loss in weight} = \frac{W_o - W_1}{W_o} \times 100$$

where W_o = original weight of the brass used

and W_1 = final weight of the brass

6.3 **Determination of sediment**

6.3.1 **Procedure** Shake the inks thoroughly, withdraw 10 ml of each and transfer them to clean, dry centrifuge tubes. Place tubes in a counterpoised head and centrifuge the inks for 2 minutes at 1800 r. p. m. Remove the tubes carefully without shaking and decant liquid inks slowly. Inspect the bottom and sides of the tubes for sediment.

6.4 **Determination of stability**

Procedure Place 25 ml of the ink in a 50 ml unlipped beake which is covered with filter paper and allow it to remain at room temperature for 2 weeks.

6.5 **Determination of permance**

6.5.1 **Preparation of strips** Place a clean, unused sheet of substance 60g/m and of sizing 30 sec, flat and unwrinkled on a piece of board or glass plate so that the surface of the paper makes an angle of 45° with the vertical. Take 1 ml of the ink in a one millilitre pipette and allow the nozzle just to touch the paper near the top edge, the pipette remaining vertical. Release the ink carefully to form across the paper a perfect stripe of uniform width, intensity and free of wavy effect.

Dry the stripe for 15 minutes and remove the paper from the board. Cut off a strip of paper 4 cm in width from the bottom of the sheet at right angles to a stripe and reject it. Cut the remaining paper into strips. each 5cm wide and at right angles to the stripe. Repeat the experiment with the standard reference ink at the same time and under the same conditions.

6.5.1.1 **Visual exmination before development.** The stripes of ink must be visually examined immediately for colour, depth and intensity by incident and transmitted light, and must not show inferiority to standard reference ink when tested in the same way.

Performance after development. Expose the stripes for 15 days to air and diffused daylight in the shade at room temperature to allow full development. Then examine for fhe following:

(i) **Intensity of colour.** The fully developed strips should be at least equal to those of the standard reference ink when examined visually by incident and transmitted light.

(ii) **Resistance to immersion in water.** After immersion in water for 24 hours the stripes should not show signs of bleeding, and the loss of colour should not be more than that of the standard reference ink tested in a separate vessel.

(iii) **Resistance of fading.** Expose the stripes to an ultra-violet lamp at the distance of 25cm from the source for 48 hours. The lamp should emit radiations at 3660 A° units so that the intensity at 90 cm from the lamp is approximately 450 micro-watts per square centimetre. The loss in intensity of fading should not be greater than that of standard reference ink tested under the same conditions.

6.6 **Method of storage.** A cleaned neck-filling fountain pen is filled with the ink being tested and checked for satisfactory writing.

The pen is then placed capped in a vertical position with the nib upwards and left unused for five days at ambient room temperature.

APPENDIX

Standard reference ink

The standard reference ferro-gallo-tannate ink shall have the following composition:

Tannic acid	3.8 g
Gallic acid	1.3 g
Sulphuric acid (sp.gr.1.84)	2.5 g
Ferrous sulphate ($FeSO_4,7H_2O$)	5.0 g
Phenol	1.0 g
Blue dye, Ink Blue (British Colour Index* 42780, ammonium salt of trisulphonated triphenyl para rosaniline)	3.25 g

Dissolved in distilled water to one litre.

All materials employed shall be of the purest quality available.

*Colour Index, Second Edition 1956, published by the Society of Dyers and Colourists.

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.

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)