SRI LANKA STANDARD 807 : 1988

UDC 676.22

SPECIFICATION FOR

DUPLICATING PAPER

SRI LANKA STANDARDS INSTITUTION

SPECIFICATION FOR DUPLICATING PAPER

SLS 807:1988

(Attached AMD 257)

Gr. 6

SRI LANKA STANDARDS INSTITUTION
53, Dharmapala Mawatha,
Colombo 3,
Sri Lanka.

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This standard does not purport to include all the necessary provisions of a contract.

SRI LANKA STANDARD
SPECIFICATION FOR DUPLICATING PAPER

FOREWORD

This Sri Lanka Standard was authorized for adoption and publication by the Council of the Sri Lanka Standards Institution on 1988-01-25, after the draft, finalized by the Drafting Committee on Paper and Board, had been approved by the Chemicals Divisional Comittee.

The requirement given in 5.1 of this specification calls for agreement between the purchaser and the supplier.

All standard values in this specification are given 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 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, the British Standards Institution and the Bureau of Indian Standards is gratefully acknowledged.

1 SCOPE

This specification prescribes the requirements and methods of sampling and test for duplicating paper.

2 REFERENCES

ISO 2470 Paper and Board - Measurement of diffuse blue reflectance factor (ISO brightness).

CS 3 Paper sizes.

CS 102 Presentation of numerical values.

SLS 338 Determination of substances of paper and paper board.

SLS 374 Standard atmospheric conditions for conditioning and testing.

SLS 428 Random sampling methods.

SLS 474 Testing of paper and board for tensils strength.

SLS 587 Stencil paper.

SLS 604 Duplicating ink for twin cylinder rotary machines.

SLS 808 Method of sampling of paper and board.

3 DEFINITIONS

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

3.1 cross direction : The direction in the plane of a paper at right angles to the machine direction (see **3.3**).

3.2 duplicating paper : Semi-absorbent paper used for making copies by means of a duplicating machine using a stencil.

3.3 machine direction : The direction in a paper corresponding to the direction of travel of the web on the paper machine.

3.4 print through : The degree to which a print on one side of the sheet can be seen from the reverse.

3.5 set-off : The unintentional transfer of wet ink from one sheet to another, subject to pressure when in contact.

4 REQUIREMENTS

4.1 General requirements

Duplicating paper shall be of uniform formation, evenly finished and free from ground wood pulp.

4.2 Colour

Duplicating paper shall be white or coloured. They shall not be a perceptible variation in the colour of the sheets in a supply lot. If a reference sample is supplied, the colour of the paper shall closely match the supplied reference sample, visually.

4.3 Size

Duplicating paper shall be cut with clean edges to A3 and A4 sizes as specified in CS 3. A tolerance of ± 2 mm shall be permitted on each dimension.

4.4 Grammage (Substance)

The grammage (substance) of duplicating paper shall be 63 g/m^2 or 71 g/m^2 when determined as given in **SLS 338**. A tolerance of ± 5 per cent shall be permitted on the specified grammages (substances).

4.5 Performance

Duplicating paper when tested as given in Appendix A shall produce duplicated (cyclostyled) copies free from set-off and excessive print through.

4.6 Physical requirements

Duplicating paper shall also comply with the requirements specified in the table .

TABLE - PHYSICAL REQUIREMENTS FOR DUPLICATING PAPER

Sl. No. (1)	Characteristic (2)	Requirement (3)	Method of test (Ref. to relevant clause, Appendix and ISO) (4)
i)	Tensile index, N m/g		
	a) Machine direction, min.	24.0	7.2
	b) Cross direction, min.	12.0	
ii)	Absorption of water, mm	8 to 13	Appendix B
iii)	Brightness, per cent, min.*	65	ISO 2470

*In case of white duplicating paper.

5. PACKAGING AND MARKING

5.1 A ream of 500 sheets shall be packed as agreed to between the purchaser and the supplier.

5.2 Each ream shall be marked legibly and indelibly with the following :

a) Name of the product ;

b) Size of the paper ;

c) Colour of the paper ;

d) Grammage (substance) of the paper, in grams per square metre ;

e) Name and address of the manufacturer and/supplier and country of origin ;

f) Registered trade mark, if any ;

g) Mass of ream excluding the wrapper, in kilograms ; and

h) Batch or code number.

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

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

6 SAMPLING

6.1 A representative sample of duplicating paper shall be selected in accordance with relevant Clauses of SLS 808.

6.2 Sixty sheets, if the lot contains 100 or less reams or 120 sheets, if the lot contains 101 to 500 reams or 180 sheets otherwise shall be selected from the reams selected as in 6.1 of SLS 808:1988.

6.3 Number of tests

6.3.1 Each ream selected as in 6.1 of SLS 808:1988 shall be inspected for packaging and marking 5 requirements.

6.3.2 The sheets selected as in 6.2 shall be divided into three equal parts.

6.3.2.1 The sheets of one part shall be tested for performance 4.5 requirement.

6.3.2.2 The sheets of another part shall be tested individually for the following requirements :

a) colour ;

b) size ; and

c) grammage (substance).

6.3.2.3 Half the sheets of the remaining part shall be individually tested for tensile index and the sheets of the other half shall be individually tested for absorption of water, and brightness (for white duplicating paper).

Note - The required test specimens shall be cut in accordance with relevant test methods.

7 METHODS OF TEST

7.1 Tests shall be carried out according to **ISO 2470**, **SLS 338** and Appendices **A** and **B**.

7.2 Tensils index shall be calculated as follows, from the tensile strength values determined as given in **SLS 474** :

$$Y = \frac{s}{g} \times 10^3$$

where,

Y = tensile index in machine direction or cross direction, in newton metres per gram ;

s = tensile strength in machine direction or cross direction, kilonewtons per metre ; and

g = grammage (substance), in grams per square metre.

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 ream inspected as in **6.3.1** satisfies the packaging and marking requirements.

8.2 Each duplicating paper tested as in **6.3.2.2** satisfies the colour and size.

8.3 The values of the expression $(\bar{x} - 1.5s)$ calculated using the test results on tensile index and brightness (for white duplicating paper) are greater than or equal to the specification limits.

NOTES

1. Mean $(\bar{x})$ = The sum of values of the observations divided by the number of observations.

2. Standard deviation (s) = The positive square root of the quotient obtained by dividing the sum of squares of the deviations of the observations from their mean by one less than the number of observations in the sample.

8.4 *The values of the expression $(\bar{x} - 1.5s)$ and $(\bar{x} + 1.5s)$ calculated using the test results on grammage (substance) and water absorption lie between specified limits.*

APPENDIX A

TEST FOR PERFORMANCE

A.1 APPARATUS

A.1.1 Duplicating machine, An electrically operated twin cylinder rotary machine.

A.1.2 **Stencil paper**, conforming to SLS 587.

A.1.3 **Duplicating ink**, confirming to SLS 604.

A.2 **Test specimens**

Duplicating paper (see 6.3.2.1).

A.3 **PROCEDURE**

Clean the machine, the screen, the impression roller and the ink roller carefully and place them in proper position on the duplicating machine (A.1.1). Cut on the stencil (A.1.2) 25 lines of typed matter, each nearly 155 mm long with an electric typewriter having clean pica type, using all the letters both upper and lower case along with numerals and symbols. Apply a sufficient quantity of duplicating ink and run the machine till the ink spreads evenly on the rollers. Fix the stencil securely in position and apply some more ink. Place properly the sheets of duplicating paper on the feedboard and run the machine at a speed of 125 + 5 copies per minute. Cyclostyle both sides of all the sheets.

Examine all the copies excluding the first five copies for freedom from set-off and excessive print through which interferes with the legibility of the finished work on either side of the paper.

APPENDIX B

DETERMINATION OF ABSORPTION OF WATER

B.1 **REAGENT**

B.1.1 **Distilled water**

B.2 **APPARATUS**

B.2.1 **Transparent container**, at least 250 mm in depth.

B.2.2 **Combined lid and test piece support**, fitted with two adjustable distance pieces at least 200 mm in length (see Figure).

B.2.3 **Stop-watch**

B.2.4 **Ruler**, at least 300 mm in length and capable of being read to the nearest 0.5 mm.

B.2.5 **Suitable pegs or pins**, for attaching test pieces to the test piece support.

B.2.6 **Paper clips**

B.3 **CONDITIONING OF SAMPLES**

Condition the samples as given in SLS 374.

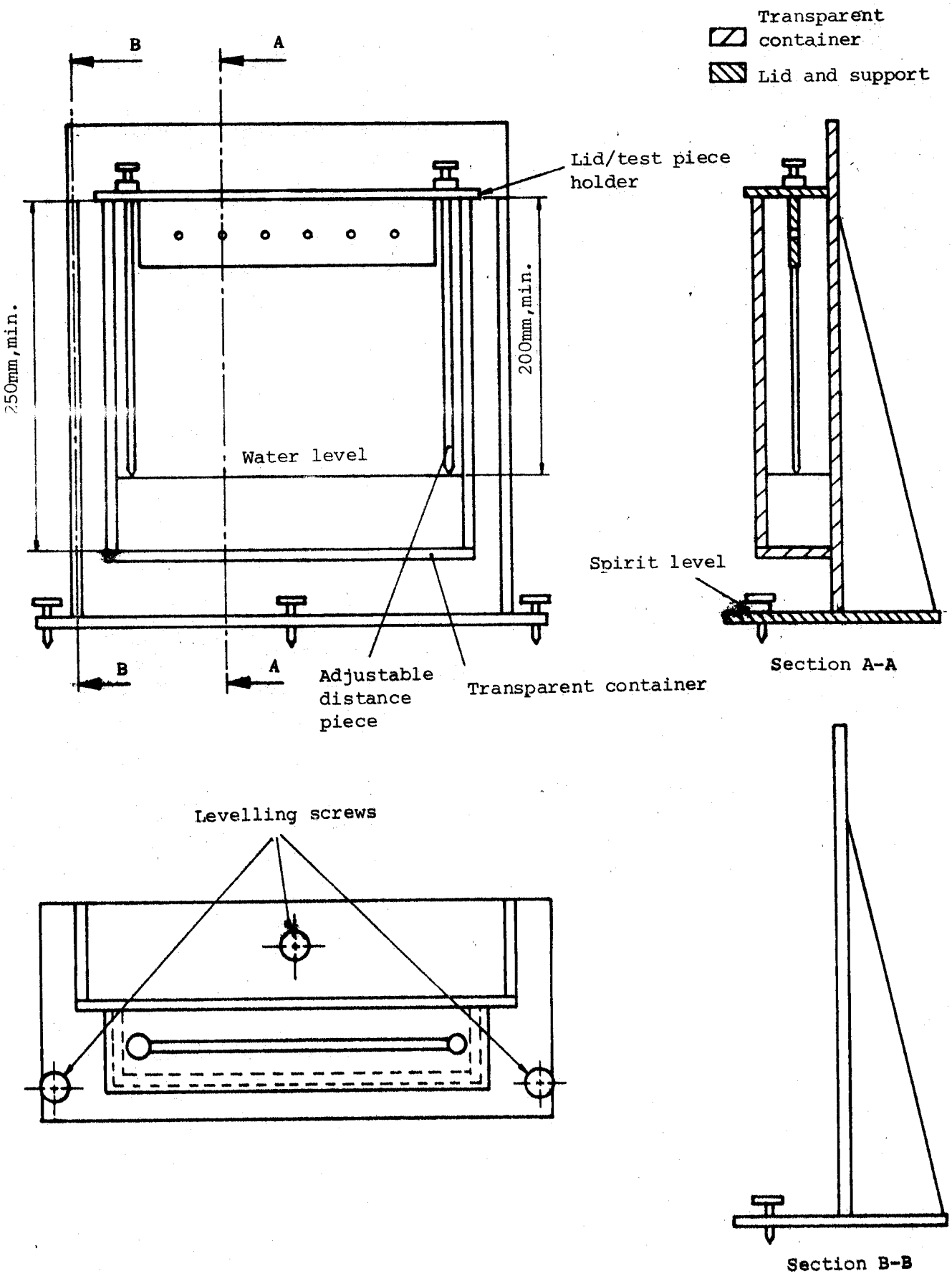

FIGURE - Apparatus for determination of absorption of water

B.4 PREPARATION OF TEST PIECES

Cut 25 mm wide and 200 mm long strips in the machine direction from the conditioned sample (see **6.3.2.3**). Draw a pencil line across each test piece at a distance of 15 ± 1 mm from one end and fix a paper clip midway between the line and that end.

B.5 PROCEDURE

Fill the container **(B.2.1)** with distilled water at 27 ± 2 ^{0}C to a depth of 50 ± 5 mm. Place the lid on the container and adjust the distance pieces so that the points just touch the water surface.

Remove the lid and fix the test pieces to the lid by pins or pegs through the holes provided such that the pencil lines are aligned with the points of the two distance pieces. It is convenient to test five strips at a time.

Replace the lid on the water container so that the weighted ends of the strips are immersed in water and immediately start the stop-watch.

After 1 minute, remove the lid with the strips and within 10 seconds of removal from the water, draw pencil lines through the water front of the strips. If the front is uneven, estimate the average position.

Measure the distance between the pencil lines to the nearest 0.5 mm and report the mean value of the results.

Amendment No. 1 approved on 2000-02-10
to SLS 807: 1988 -

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Clause 5.1 Packaging

Include the following sentence at the end of the paragraph.

"Tolerance of ±1% in the number of sheets shall be permitted".

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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.*

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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.

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