

**SRI LANKA STANDARD 852 : 1989**

UDC 676.237

**SPECIFICATION FOR  
SCHOOL DRAWING BOOKS**

**SRI LANKA STANDARDS INSTITUTION**



# SPECIFICATION FOR SCHOOL DRAWING BOOKS

SLS 852 : 1989

(AMD 459 Attached)

Gr. 6

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Sri Lanka.



# SRI LANKA STANDARD SPECIFICATION FOR SCHOOL DRAWING BOOKS

## FOREWORD

This Sri Lanka Standard was authorized for adoption and publication by the Council of the Sri Lanka Standards Institution on 1989-07-25, after the draft, finalized by the Drafting Committee on Paper and Board had been approved by the Chemicals Divisional Committee.

Usually the roughness of drawing paper is not equal on both sides. Generally the rougher side is preferred for drawing and should be selected by students.

Clause 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, final value observed or calculated, expressing the result of a test or an 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 (ISO) and the Bureau of Indian Standards is gratefully acknowledged.

## 1 SCOPE

This specification prescribes the requirements and methods of sampling and test for school drawing books.

## 2 REFERENCES

- ISO 2470 Paper and Board- Measurement of diffuse blue reflectance factor (ISO brightness).
- ISO 2494 Paper and Board - Recommended procedure for the determination of roughness -Constant -pressure air-flow method.
- CS 3 Paper sizes.
- CS 102 Presentation of numerical values.
- SLS 338 Determination of substances of paper and paper board.
- SLS 428 Random sampling methods.
- SLS 473 Testing of paper and board for water absorption-Cobb method.
- SLS 474 Testing of paper and board for tensile strength.
- SLS 679 Testing of paper for tearing resistance.
- SLS 681 Testing of paper and board for thickness of single sheets.

### 3 DEFINITIONS

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

3.1 **cartridge paper** : A well-sized strong paper free from fillers and having a rough surface free from fluffing.

3.2 **cross direction** : The direction in the plane of paper at right angles to the machine direction (see 3.2).

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

3.4 **page** : One side of a leaf of a book.

### 4 REQUIREMENTS

#### 4.1 General

4.1.1 The drawing paper used in the manufacture of school drawing books shall be of white cartridge paper. The drawing paper shall be of uniform formation, with a rough finish and free from patches, holes and creases.

4.1.2 The cover of school drawing books shall be free from patches, holes and creases.

4.1.3 The school drawing books shall be clean and without any defect which may effect their serviceability. The books shall not contain any pages which project over others. The edges of the books shall be clean cut.

#### 4.2 Construction

4.2.1 The school drawing books shall be wire stapled with at least two zinc coated or copper coated rustless wire staples having a minimum thickness of 0.5 mm. The staples shall have a minimum crown length of 13 mm and minimum leg length of 6 mm.

4.2.2 If two staples are used, the staple shall be positioned so that they divide the length of the bound edge of book approximately in the ratio 1:2:1. If more than two staples are used, the spaces shall be as nearly equal as possible. The ends of the staples shall be properly closed inside the book.

#### 4.3 Dimensions

The school drawing books shall be of A4 or B4 size. The dimensions of A4 size school drawing books shall be 210 mm x 297 mm and B4 size school drawing books shall be 250 mm x 353 mm when measured as in 7.1. A tolerance of  $\pm 2$  mm shall be permitted on each dimension.

#### 4.4 Number of pages

The number of pages of school drawing books, shall be 12, 20 and 32, excluding the cover.

#### 4.5 Squareness

The school drawing books shall pass the squareness test, when determined as given in Appendix A.

#### 4.6 Drawing paper

The drawing paper shall comply with the physical requirements given in Table 1, when tested in accordance with the methods specified in Column 4 of the table.

TABLE 1 - Physical requirements for drawing paper

Sl. No. (1)	Characteristic (2)	Requirement (3)	Method of test (Ref. to relevant SLS, ISO and Clauses) (4)
i)	Grammage (substance), g/m <sup>2</sup>	100 ± 5	SLS 338 and 7.2
ii)	Thickness, mm, min.	0.140	SLS 681
iii)	Tensile index, N.m/g		SLS 474 and 7.3
	a) Machine direction, min.	37.0	
	b) Cross direction, min.	20.0	
iv)	Water absorption (Cobb <sub>60</sub> ), g/m <sup>2</sup> , max.	17	SLS 473 and 7.4
v)	Brightness, per cent	70 to 80	ISO 2470
vi)	Roughness Bendtsen, ml/min, min.	250	ISO 2494 and 7.5

#### 4.7 Cover

The cover of school drawing books shall comply with the physical requirements given in Table 2, when tested in accordance with the methods specified in Column 4 of the table.

TABLE 2 - Physical requirements for cover

Sl. No. (1)	Characteristic (2)	Requirement (3)	Method of test (Ref. to relevant SLS) (4)
i)	Grammage (substance), g/m <sup>2</sup> , min.	119*	SLS 338 and 7.2 <sup>1</sup>
ii)	Tearing resistance, mN		SLS 679 and 7.6 <sup>1</sup>
	a) Machine direction, min.	440	
	b) Cross direction, min.	534	

\* The grammage (substance) of 119 g/m<sup>2</sup> corresponds to nominal grammage (substance) of 125 g/m<sup>2</sup>.

5 PACKAGING AND MARKING

5.1 Packaging

The school drawing books of the same size and having the same number of pages shall be packed as agreed to between the purchaser and the supplier. A package shall consist of ten or integral multiples of ten books.

5.2 Marking

5.2.1 The cover of each drawing book shall be legibly and indelibly marked with the following;

- a) The following words in Sinhala, Tamil and English:
  - i) 'පාසැල් විභාග පොත'
  - ii) பரீட்சைக் கட்டுரை புத்தகம்
  - iii) 'School Drawing Book'
- b) Number of pages;
- c) The size designation, A4 or B4 and dimensions '210 mm x 297 mm' or '250 mm x 353 mm';
- d) Name and address of the manufacturer, and country of origin; and
- e) Registered trade mark and/or brand name, if any.

5.2.2 The following words shall be printed on the front cover in not smaller than 12 point type size.

නම

பெயர் .....  
Name:

ශ්‍රේණි

பட்டம் .....  
Grade:

5.2.3 Designs, if printed on the cover may be selected from traditional designs of Sri Lanka and the designs shall be in line drawings.

5.2.4 Each package of school drawing books shall be legibly and indelibly marked with the following:

- a) Name and address of the manufacturer and country of origin;
- b) Registered trade mark and/or brand name, if any;
- c) The size designation A4 or B4 as appropriate; and
- d) Number of drawing books in the package.

6 SAMPLING

6.1 Lot

In any consignment all the school drawing books of the same size, having the same number of pages 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 The number of drawing books to be selected from a lot shall be in accordance with Table 3.

TABLE 3 - Scale of sampling

No. of books in the lot (1)	No. of books to be selected (2)	Acceptance number (3)
Up to 100	5	0
101 to 500	7	1
501 to 1 000	9	1
1 001 and above	13	2

6.2.3 In order to select books, 10 per cent of the packages subject to a minimum of two packages shall be selected and as far as possible an equal number of books shall be drawn from each package so selected to form a sample of size as given in the table.

6.2.4 The packages and books 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 Number of tests

6.3.1 Each package selected as in 6.2.3 shall be inspected for packaging and marking (5) requirements.

6.3.2 Each drawing book selected as in 6.2.2 shall be examined for marking requirements (5.2), dimensions (4.3), number of pages (4.4), squareness (4.5), and for the requirement given in 4.1.1 and 4.1.3.

6.3.3 Each drawing book selected as in 6.2.2 shall be examined for the requirements given in 4.1.2, 4.2.1 and 4.2.2.

6.3.4 Each book selected as in 6.2.2 shall be tested for the requirements given in 4.6 and 4.7.

## 7 METHODS OF TEST

Tests shall be carried out in accordance with 7.1 to 7.6 of this specification, ISO 2470, ISO 2494, SLS 338, SLS 437, SLS 474, SLS 679, and SLS 681.

### 7.1 Dimensions

Measure the length and width of each school drawing book at the centre and the two edges to the nearest millimetre. Record the average of the three measurements as the length and width respectively of the school drawing book.

### 7.2 Grammage (substance)

Determine the grammage (substance) of two specimens of drawing paper and one specimen of cover from each school drawing book.

### 7.3 Tensile index

Tensile 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 is the tensile in machine direction or cross direction, in newton metres per gram;

S is the tensile strength in machine direction or cross direction, in kilonewtons per metre; and

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

### 7.4 Water absorption

Determine the water absorption of two specimens of drawing paper from each school drawing book.

### 7.5 Roughness

Condition the specimens in a conditioning atmosphere having a temperature of  $27 \pm 1$  °C and a relative humidity of  $65 \pm 2$  per cent.

### 7.6 Tearing resistance

Determine the tearing resistance using a single tear tester. Carry out one determination for each direction keeping four test pieces together for each school drawing book.

## 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 package inspected as in 6.3.1 satisfies the relevant requirements.

8.2 Each school drawing book examined as in 6.3.2 satisfies the relevant requirements.

8.3 The number of school drawing books not satisfying one or more requirements when tested as in 6.3.3 is less than or equal to the corresponding acceptance number given in Column 3 of Table 3.

8.4 Each school drawing book tested as in 6.3.4 satisfies the requirements for brightness and roughness.

8.5 The values of the expressions  $\bar{x} - 1.1s$  (see Notes) and  $\bar{x} + 1.1s$  calculated using the test results on grammage (substance) of paper lie between the two 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.

8.6 The values of the expression  $\bar{x} - 1.1s$  calculated using the test results on tensile index, thickness, grammage (substance) of cover and tearing resistance of cover are not less than the relevant specification limits.

8.7 The value of the expression  $\bar{x} + 1.1s$  calculated using the test results on water absorption is less than or equal to the relevant specification limit.

### APPENDIX A DETERMINATION OF SQUARENESS

#### A.1 APPARATUS

A.1.1 A test grid, prepared by drawing two rectangles conforming to the upper and lower limits of the size of the book under test, which symmetrically disposed on a common centre point. (Test grid for A4 size school drawing books is illustrated in Figure 1.)

A.2 PROCEDURE

Place the book upon the grid and note whether its periphery falls entirely within the zone bounded by two rectangles.

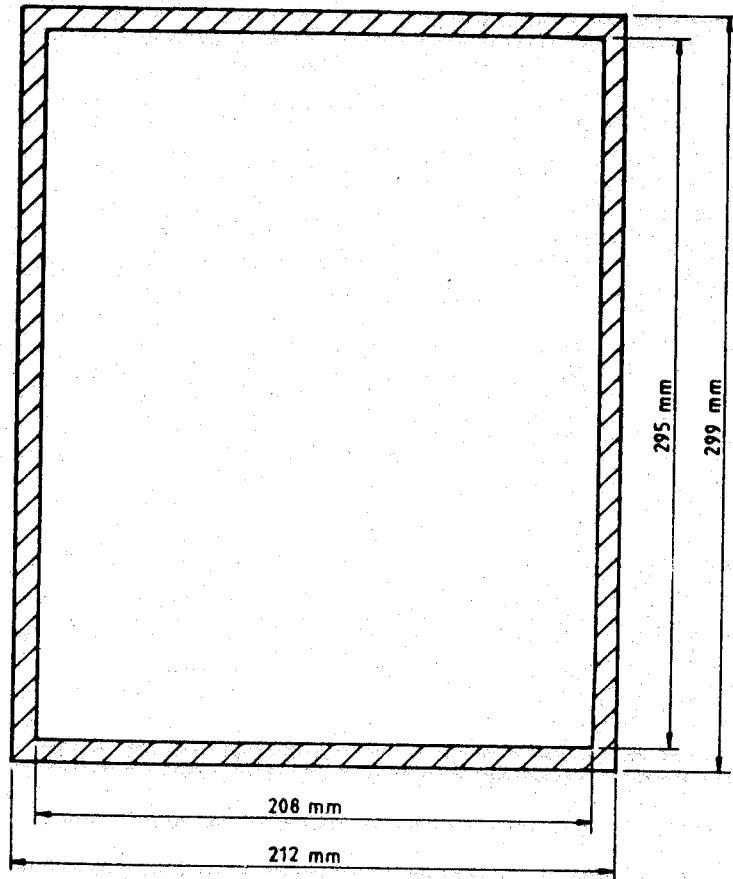


FIGURE 1 - Test grid for determination of squareness of A4 size school drawing books

**Amendment No: 01 approved on 2013-10-30 to SLS 852 : 1989**

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**2 REFERENCES**

Delete CS 3 paper sizes and substitute the following :

“SLS 3 Paper sizes”

**5 PACKAGING AND MARKING**

Delete the text in **5.2.3** and substitute the following :

“ Designs, if printed on the cover may be selected from historical/traditional designs and shall free from obscence scenes and gruesome scenes.”

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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.

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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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