

මෙහි රාජ්‍ය ආභාෂාවන් වෙනම මුද්‍රණය කර ඇත.

ලංකා ප්‍රමිති 194 : 1973
CEYLON STANDARD 194 : 1973
විස්ව දශම වර්ග කිරීම UDC 744.341

**සාමාන්‍ය කටයුතුන්ට යොදා
ගැනෙන කෝදු පිලිබඳ පිරිමිතර
(මෙට්‍රික් ඒකක)**

**RULERS FOR
GENERAL PURPOSES
(METRIC UNITS)**

ලංකා ප්‍රමිති කාර්යාංශය
BUREAU OF CEYLON STANDARDS

**RULERS FOR GENERAL PURPOSES
(METRIC UNITS)**

C.S. 194 : 1973

Gr.4



Copyright Reserved

BUREAU OF CEYLON STANDARDS
53, DHARMAPALA MAWATHA,
COLOMBO 3.

Ceylon Standards are subject to periodical revision in order to accommodate the progress made by the 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.**

Telephone: 26055
26054
26051

Telegrams: "PRAMIKA"

CEYLON STANDARD SPECIFICATION FOR RULERS FOR GENERAL PURPOSES (METRIC UNITS)

FOREWORD

This Ceylon Standard was prepared by the Drafting Committee on Rulers for General Purposes under the authority of the Metric Divisional Committee of the Bureau of Ceylon Standards. It was authorised for adoption and publication by the Council of the Bureau on 9th July, 1973.

Sri Lanka has committed herself to a changeover to the Metric System of Weights and Measures. Rulers graduated in metric units will be one of the items in great demand when the new system comes into use. This standard specification is intended to guide manufacturers in the production of rulers.

In preparing this standard considerable assistance obtained from the following Standard Specifications is acknowledged:

IS 1480 : 1960—Indian Standard Specification for Metric Scales for General Purposes.

BS 4093 : 1970—British Standard Specification for Metre Rules and Rulers for School Use.

OIML —Recommendations on Linear Measures.

The dimensions given in this standard are in metric (SI) units. Equivalent values in inches are given in an appendix.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accor-

dance with C.S. 102—Ceylon Standard on Presentation of Numerical Values. The number of significant places retained in the rounded off value shall be the same as that of the specified value in this standard.

1. SCOPE

- 1.1** This Ceylon Standard covers the requirements of rulers used for general purposes (trade and commerce) including rulers for use in schools.

2. TYPES

- 2.1** Rulers shall be of the types given in Table 1.

3. MATERIALS

- 3.1 General**—The metre rulers and 500mm rulers shall be made of wood; other rulers shall be of wood plastic or any other suitable material.
- 3.2 Timber**—The timber used for the wooden rulers shall be free from knots, cracks, sap wood and other visible defects such as insect attack etc., and shall have a moisture content of 12% to 15%, determined in the manner described in Appendix A.
- 3.3 Other materials**—Plastics or materials other than timber shall be of adequate rigidity and shall not be highly inflammable nor dangerously toxic.
- 3.4 Hardness**—Materials used shall be comparable in hardness to the recommended timber Halmilla (*berrya cordifolia*) See Appendix A.

TABLE 1—TYPES OF RULERS

Type	Nominal length	Width mm	Cross Sections	Graduations and Figuring†	Ref. to Fig.	Remarks
1000/1 500/1	1m 500mm	25	flat	Graduated from end to end in millimetres on both faces along opposite edges, with the 100mm marks figured in large numerals and the 10mm marks figured in small numerals.	1(a)	
1000/2 500/2	1m 500mm	30	flat	Graduated from end to end in millimetres on both faces along both edges, with the 100mm marks figured in large numerals and the 10mm marks figured in small numerals.	1(b)	
300/3	300mm	30	one edge bevelled on one face	Non-transparent rulers graduated on both faces and transparent rulers graduated on any one face as follows:—bevelled edge in millimetres with the 10mm marks figured, in small numerals, non bevelled, edge in centimetres, with the 10cm, 20cm and 30cm marks figured in large numerals and the other centimetre marks figured in small numerals.	1(c)*	
300/4 150/4	300mm 150mm	30	both edges bevelled on one face	Both edges graduated in millimetres—on both faces in the case of non-transparent rulers and on any one of the faces in the case of transparent rulers, with the 10mm marks figured in small numerals.	1(d)*	
1000/5	1m	25	flat	Graduated from end to end in centimetres on both faces along opposite edges with the 10cm marks figured in large numerals.	1(e)	Special ruler for the textile trade
1000/6	1m	40	flat	Graduated from end to end in millimetres at both edges on one face and along one edge of the other face, with the 100mm marks figured in large numerals and the 10mm marks figured in small numerals.	1(f)	Special ruler for purposes of glass cutting

†See also Clause 6.3.

*The top faces shown in these figures apply to transparent rulers as well as to non-transparent rulers; opposite faces shown are applicable to non-transparent rulers only.

Cross Section

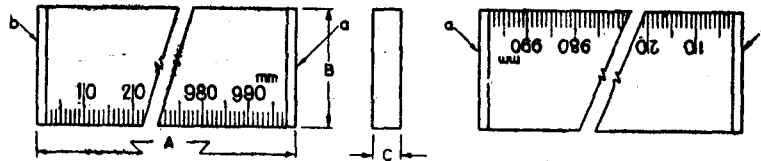


Fig. 1 (a)—Ruler Type 1000/1

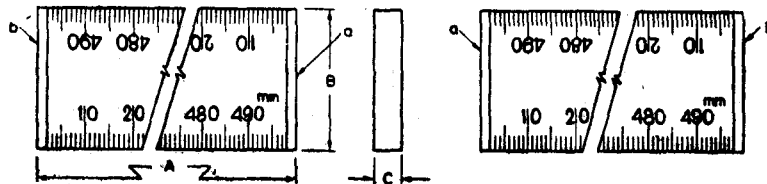


Fig. 1 (b)—Ruler Type 500/2

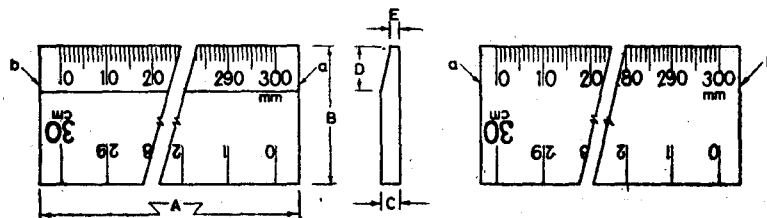


Fig. 1 (c)—Ruler Type 300/3

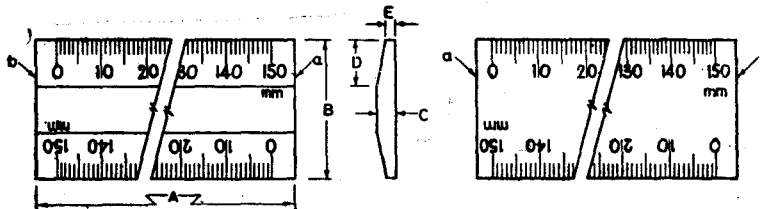


Fig. 1 (d)—Ruler Type 150/4

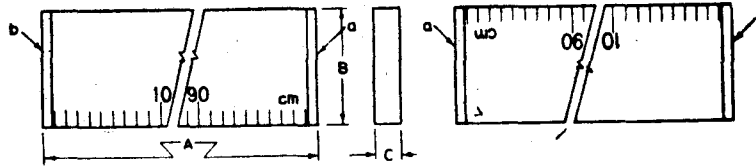


Fig. 1 (e)—Ruler Type 1000/5

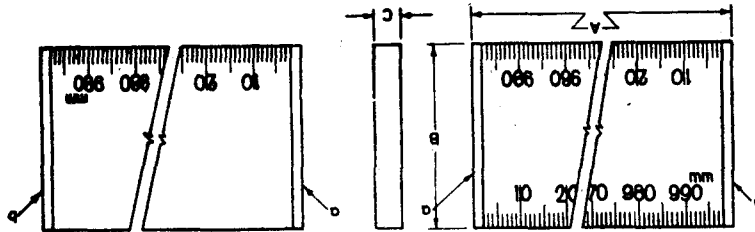


Fig. 1 (f)—Ruler Type 1000/6

4. DIMENSIONS

Dimensions and tolerances on dimensions of the rulers shall be as given in Table 2.

TABLE 2—DIMENSIONS AND TOLERANCES ON DIMENSIONS (in mm)

(1) Type	(2) Overall Length	(3) Width	(4) Thickness	(5) Width of Bevelled edge	(6) Thickness at the Bevelled edge
	A max. min.	B	C	D	E
1000/1	1000	25	6.0	—	—
500/1	500	25	6.0	—	—
1000/2	1000	30	6.0	—	—
500/2	500	30	6.0	—	—
300/3	315—310	30	4.0	10	2.0
300/4	315—310	30	4.0	10	2.0
150/4	165—160	30	4.0	10	2.0
1000/5	1000	25	6.0	—	—
1000/6	1000	40	6.0	—	—
Tolerance		+1	+0.5	+1	+0.2

5. MANUFACTURE

- 5.1 The rulers shall be straight and flat, the edges parallel to each other free from visible nicks and protrusions and the ends square.
- 5.2 The edges of the rulers shall not deviate from a straight line by more than 0.5mm and their plane surfaces shall not vary from a plane by more than 0.5mm at any point.
- 5.3 The rulers shall be even on all sides, free from blisters and porosity and smoothly finished. Metre rulers and 500mm rulers shall be polished. Other wooden rulers may be polished if so agreed between the manufacturer and the purchaser.
- 5.4 Metre rulers and 500mm rulers shall have non-rusting metal caps closely fitted and secured to the ends of the rulers.

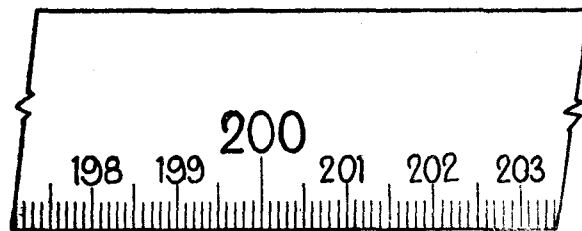


Fig. 2. Use of large and small numerals.

6. GRADUATION MARKS, FIGURING AND UNIT SYMBOLS

- 6.1 **General**—Graduation markings, figuring and the unit symbols shall be scribed on the rulers and filled in a colour which shall contrast with the colour of the base, to a sufficient depth, to maintain legibility and indelibility.
- 6.2 **Graduation markings**—Graduation markings shall be straight and be of uniform depth and width; the width shall be not more than 0.30mm and the length shall be as follows:—

10 centimetre marks	12mm
10 millimetre marks and centimetre marks	9mm
5 millimetre marks	6.0mm
millimetre marks	3.0mm

- 6.3 **Figuring**— Figuring shall be as indicated in Table 1. The heights of large and small numerals shall be 5.0mm and 3.0mm respectively (see Fig. 2).
- 6.4 **Unit symbols**— The symbol of the unit of graduation shall be marked against each scale (see Fig. 1).

7. ACCURACY

- 7.1 The maximum cumulative error for the entire length of the graduated part shall not exceed the errors given in Table 3a either in excess or deficiency.

TABLE 3a—ACCURACY (WHOLE LENGTH)

Type	Nominal length	Maximum error in excess	Maximum error in deficiency
1000/1	1m	0.7mm	0.5mm
1000/2	1m	0.7mm	0.5mm
1000/5	1m	0.7mm	0.5mm
1000/6	1m	0.7mm	0.5mm
500/1	500mm	0.6mm	0.4mm
500/2	500mm	0.6mm	0.4mm
500/3	500mm	0.6mm	0.4mm
300/3	300mm	0.4mm	0.4mm
300/4	300mm	0.4mm	0.4mm
150/4	150mm	0.3mm	0.3mm

- 7.2 For a length 'i' between any two consecutive graduations the error either in excess or deficiency should not be larger than the corresponding maximum tolerated errors specified in Table 3b for such lengths.
- 7.3 The difference in length between two consecutive segments of same nominal length 'i' shall not be larger than the maximum difference specified in Table 3b for such lengths.

TABLE 3b—ACCURACY (LENGTH SEGMENT)

Length considered 'i' in mm	Maximum error in excess or deficiency for a segment of length 'i'	Maximum difference between two such consecutive segments of nominal length 'i'
$1 \text{ mm} \leq i < 10 \text{ mm}$	0.4mm	0.4mm
$10 \text{ mm} \leq i \leq 100 \text{ mm}$	0.6mm	0.6mm

8. MARKING

Each ruler shall be legibly and indelibly marked with the maker's name, initials or recognized trade mark.

9. SAMPLING

- 9.1 Lot**— In any consignment all the rulers of each of the types 300/3, 300/4 and 300/5 shall be grouped as a lot.
- 9.2 Selection of Samples**—Rulers to be chosen from the lot shall be selected at random, preferably with the use of a random number table.
- 9.3 Scale of sampling**— The sample rulers selected shall be examined separately for each lot for ascertaining their conformity to—
- (i) The general requirements given under Clauses 3.2, 3.3, 3.4, 4, 5.3, 6.1, 6.3 and 6.4.
 - (ii) The critical requirements given under Clauses 5.1, 5.2, 6.2 and 7.

The sample size, i.e. the number of rulers to be selected from a lot, shall be in accordance with Table 4.

TABLE 4—SCALE OF SAMPLING

(1)	(2)	(3) (4)	
Lot Size	Sample Size	Permissible number of defective rulers when examined for—	
		General Requirements	Critical Requirements
2 to 8	2	0	0
9 to 15	3	0	0
16 to 25	5	0	0
26 to 50	8	0	0
51 to 90	13	0	0
91 to 150	20	0	0
151 to 280	32	1	1
281 to 500	50	2	1
501 to 1200	80	3	1
1201 to 3200	125	5	2
3201 to 10000	200	8	3
10001 and over	315	12	5

10. CRITERIA FOR CONFORMITY

- 10.1 A ruler shall be considered as defective if it does not conform to any one of either the general requirements or the critical requirements.
- 10.2 The lot shall be declared as conforming to the general requirements if the number of defective rulers is less than or equal to the number stipulated in column 3 of Table 4; otherwise not.
- 10.3 The lot shall be declared as conforming to the critical requirements if the number of defective rulers is less than or equal to the number stipulated in column 4 of Table 4, otherwise not.
- 10.4 In the case of metre rulers and 500mm rulers, every individual ruler shall comply with all the requirements of the specification.

Note: Any ruler found to be defective on examination shall be rejected.

APPENDIX A

A-1. METHOD FOR THE DETERMINATION OF MOISTURE CONTENT

(i) Selection of samples

For the purpose of carrying out the test for moisture content the purchaser, or his representative, may select, during the course of manufacture, suitable samples of the timber used in the manufacture.

If the test for moisture content is to be carried out immediately after the cutting of the samples, these samples may take the form of the test pieces specified in (ii) Method of test, but if the first weighing cannot be carried out immediately after the cutting of the sample, the samples shall consist of pieces not less than 480mm in length cut from the stock. The final test pieces shall be cut from the middle of the above pieces when the test is made.

(ii) Method of test

The test pieces of the timber shall be taken at a point not less than 230mm from the end of the sample and shall be cut to include the full cross section of the sample and shall be 20mm long in the direction of the grain. They shall be weighed (m_1) immediately after cutting and then dried in an oven at a temperature of 100° to 105°C until the mass is constant

(m_0), and again weighed immediately after removal from the drying oven; the percentage of moisture content (X) shall then be determined from the formula:

$$X = \frac{m_1 - m_0}{m_0} \times 100$$

Where m_1 = initial mass, m_0 = dry mass, X = moisture content.

A-2 RECOMMENDED TIMBER

It has been found that the species of timber, most suitable for the construction of rulers is Halmilla. However, other species may be used, provided, clause 3 of the specification is complied with.

A-3 EQUIVALENT INCH VALUES

The equivalent inch values of the standard metric dimensions, calculated in accordance with C.S. 116—Ceylon Standard for Principles of Conversion, are as follows:

Standard Dimension (mm)	Equivalent Value (in)
1000	39.4
500	19.7
480	18.9
315	12.4
310	12.2
300	11.8
230	9.1
165	6.5
160	6.3
150	5.9
40	1.6
30	1.2
25	1.0
20	0.8
10	0.4
9	0.4
6.0	0.24
5.0	0.20
4.0	0.16
3.0	0.12
2.0	0.08
1	0.04
0.50	0.020
0.30	0.012
0.25	0.010
0.2	0.008

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.



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.