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# **DRAFT EAST AFRICAN STANDARD**

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**Metre rules and rulers — Specification**

**EAST AFRICAN COMMUNITY**

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## Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards. XXXXXX.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 079, *[name of committee]*

Attention is drawn to the possibility that some of the elements of this document may be subject of patent rights. EAC shall not be held responsible for identifying any or all such patent rights.

This second edition cancels and replaces the first edition (EAS 490:2008), which has been technically revised.

## Metre rules and rulers— Specification

### 1 Scope

This Draft East African Standard specifies requirements, sampling and test methods for metre rules and rulers for general use.

### 2 Normative references

There are no normative references in this document.

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply. ISO and IEC maintain terminological databases for use in standardization at the following addresses: — ISO Online browsing platform: available at <http://www.iso.org/obp>

#### 3.1

##### **meter rule**

device which is used to measure length of different sizes straight lines or measure distances

#### 3.2

##### **ruler**

device used in geometry, technical drawing, engineering, construction etc. to measure distances or draw straight lines

### 4 Types

4.1 All metre rules shall be rectangular cross section and shall be of one of the following types:

#### 4.1.1 Type 1

A metre rule 1 m long, 25 mm wide and 5 mm thick, with the  $\frac{1}{4}$ ,  $\frac{1}{2}$  and  $\frac{3}{4}$  length indicated by lines across one face only and no figures indicated.

#### 4.1.2 Type 2

A rule 1 m long, 25 mm wide and 5 mm thick. Graduated and numbered at centimetre intervals from 1 to 99 with graduation lines running across the width of the rule but broken at the centers to take the numbering. With minor graduation marks at 5 mm intervals on each side of the rule, the figure 10 and multiple thereof marked boldly, the word, 'cm' hard up against the left-hand side of the rule and with '1 m' hard up against the right side edge of the rule, in line with the numbers

### 4.1.3 Type 3

Rule 1 m long, 25 mm wide and 5 mm thick. Graduated and numbered at 10 mm intervals from 10 to 990 with graduation lines running across the width of the rule but broken at the centers to take the numbering, with graduation marks on the lower edge at 1 mm and 5 mm intervals. The word, 'mm,' hard up against the left hand side of the rule, and with '1 m' hard up against the right hand side of the rule, in line with the numbers

Note The application of colour to some spaces on the rules is permissible.

4.2 All rulers shall be rectangular cross section and shall be of one of the following types:

#### 4.2.1 Type 1

A ruler 300 mm long plus ends, bevelled edges, 25 mm x 3 mm Or 30 mm x 3 mm cross – section between bevels. One edge of the ruler to be marked and numbered in centimetre intervals from 1 cm to 30 cm, with additional marking at 1 mm and 5 mm intervals, with the letters 'cm' in the zero mark position. When turned end for end, the other side of the ruler shall be marked at 10 mm intervals from 10 mm to 300 mm with additional markings at 5 mm intervals with the word, 'mm' in the zero mark position, or marked at 1 inch intervals from 1 inch to 12 inch, with additional marking 1/16, 1/8 and 1/2 in intervals, with the word 'inch' in the zero position mark.

#### 4.2.3 Type 2

A ruler 150 mm long plus ends, bevelled edges, 28 mm x 3 mm or 30 mm x 3 mm cross section between bevels. One edge of the ruler to be marked and numbered in centimetre intervals from 1 cm to 15 cm. Additional markings at 1 mm and 5 mm turned end for end. The other edge of the ruler shall be marked similarly or numbered at 10 mm intervals from 10 mm to 150 mm. Additional markings at 5 mm intervals with the word 'mm' in the zero mark position or marked and numbered at 1 inch intervals from 1 inch to 6 inch with the word 'inch' in the zero position mark.

## 5 Requirements

### 5.1 General Requirements

#### 5.1.1 Tolerance

Rulers shall have the following dimensional tolerance for the width, central and bevel thickness:

- a) Plastic rulers; printing on the top width,  $\pm 1$  mm, central thickness above 2.5 mm, bevel thickness, 1 mm to 2 mm.
- b) Plastic rulers; printing underneath width,  $\pm 1$  mm. central thickness, above 2.5 mm, bevel thickness, 1 mm to 2 mm.
- c) Wooden rulers; width,  $\pm 1$  mm. central thickness, 4 mm minimum, bevel thickness,  $2.5 \pm 0.5$  mm.

#### 5.1.2 Accuracy for metre rules and rulers

5.1.2.1 The degree of accuracy of the straightness of the edges shall be within 0.25 mm in 300 mm.

5.1.2.2 The degree of accuracy of the spacing of the markings shall be within 0.75 mm in 300 mm, and within 0.25 mm in any 25 mm of length.

5.1.3 Dimensions and graduation lines

5.1.3.1 The dimensions shall be as given in Figure 1. The length from the edge inwards of the lines where not taken fully, across the face shall be approximately as shown in figure 1.

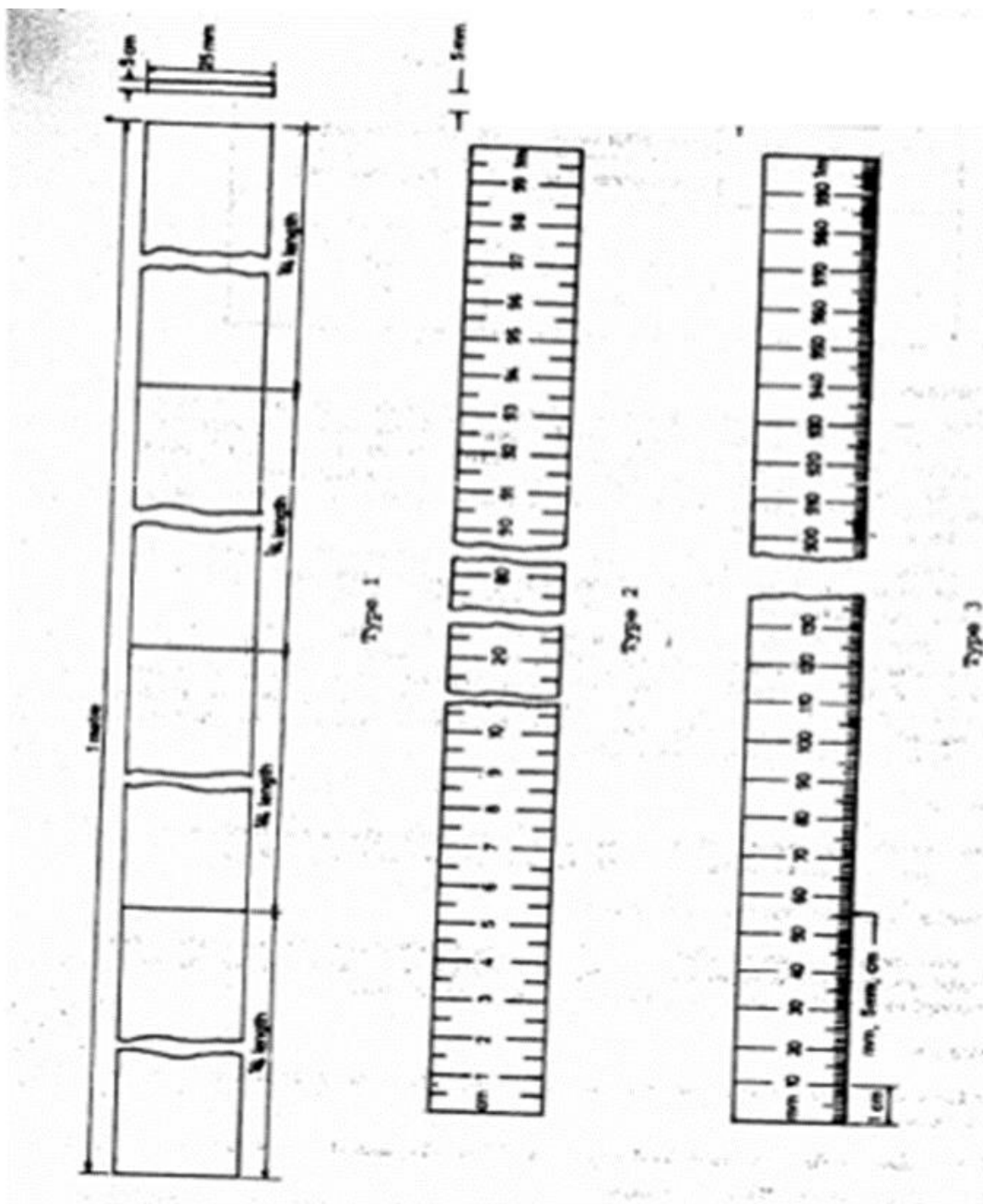


Figure 1 – Dimensions for meter rules and rulers

5.1.3.2 The lines shall be such as to give clarity in reading and enable the different lengths of line to be easily distinguished. Table 1 is an approximate guide.



5.1.3.3 The graduation lines shall be of contrasting colour from that of the base material.

**Table 1 – Length of graduation lines**

Type of line	Length of line on rule or ruler	
	Minimum (mm)	Maximum (mm)
1	3	4.75
5	4	5.5
10	4	7

**5.1.4 Materials**

5.1.4.1 Metre rules and rulers shall be made of wood, plastic, metal or other suitable materials of adequate rigidity and shall be free from embrittlement.

5.1.4.2 The finished metre rules and rulers shall be flat and shall remain flat under normal use.

5.1.4.3 They shall not be highly flammable and toxic.

5.1.4.4 The metre rules and rulers shall not have sharp edges which may be injurious to the user

**5.1.5 Finish**

The finish for the metre rule or ruler shall be free from any defects that might affect its serviceability.

**5.1.6 Warping and twisting**

A rule or ruler shall show no signs of twisting or warping that would render it unusable after being conditioned for 48 hours in an atmosphere of 80 per cent relative humidity at 20°C.

**5.2 Specific Requirements**

The meter rules and rulers shall comply with the requirements given in Table 2 when tested in accordance with the methods prescribed therein.

**Table 2 – Specific requirements for meter rules and rulers**

Parameter	Requirement	Test method
Moisture content (wooden), %v/v, max	10	Annex A
Drop test	remain intact	Annex B

**6 Packaging**

Each meter rule or ruler shall be individually packed in suitable packages to avoid any breakage or scratches during storage and transportation.

## 7 Labelling

Each metre rule or ruler shall be legibly and indelibly labelled in English and/or any other official language (French, Kiswahili, etc.) used in the importing East African Partner State with the following information:

- a) Manufacturer's name and address
- b) Registered Trademark if any
- c) Country of manufacture/origin
- d) Batch number

## 7 Sampling

Sampling shall be done in accordance with Annex C

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## Annex A (normative)

### Determination of moisture content

#### A.1 Test Specimen

The entire wooden meter rule or ruler may form the test specimen for the determination of moisture content or a piece cut from it. When for any reason, additional determination of moisture content is required, separate samples shall be prepared from the sample material used in preparing the test specimens. Smaller specimens may be used when deemed necessary. The test shall be carried out immediately after cutting the specimen

#### A.2 Procedure

Weigh accurately each test specimen and dry in a ventilated oven at a temperature of  $105\text{ °C} \pm 2\text{ °C}$  until the mass becomes constant between two successive weighing made at an interval of not less than one hour

#### A.3 Calculation

$$\% \text{ Moisture content} = \frac{W_1 - W_0}{W_0} \times 100$$

Where:

$W_1$  initial mass in grams of test specimen, and

$W_0$  oven-dry mass in grams of the test specimen

## **Annex B (Normative)**

### **Drop test**

#### **.B.1 Drop test (impact resistance)**

##### **B.3.1 Procedure**

**B.3.1.1** The meter rule or ruler without any packaging is dropped from a height of 0.9 to 1.2 m

**B.3.1.2** This is repeated three more times

##### **B.3.2 Result**

The product must remain intact

## Annex C (normative)

### Sampling of meter rules and rulers Criteria for Conformity

#### C.1 Scale of Sampling

**C.1.1** Lot – In any consignment, all meter rules and rulers of the same size, material and shall constitute a lot. Care shall be taken to ensure that meter rules or rulers included in a lot do not differ in construction as far as possible

**C.1.2** The conformity of the meter rules or rulers in a lot to the requirements of this specification shall be ascertained for each lot separately. The number of meter rules or rulers to be selected for this purpose shall be in accordance with col. 1 and col. 2 of Table C1

**C.1.3** The meter rules or rulers shall be selected at random. To ensure randomness of selection one of the following procedures is recommended for use:

- a) If all the meter rules or rulers in a lot are packed in one box, then starting from any metre rule or ruler, count them in any suitable order as 1, 2, ..... up to r and so on, where r is the integral part of  $N/n$  (N and n being the lot size and sample size respectively). Every  $r^{\text{th}}$  meter rule or ruler thus counted shall be withdrawn to constitute the sample.
- b) If the meter rules or rulers in a lot are packed in more than one box, approximately equal number of meter rules or rulers shall be picked up at random from as many boxes as possible so as to obtain the required number of meter rules or rulers as specified in Table C1.

**Table C1 — Scale of Sampling**

No. of meter rules or rulers in a lot N	No. of meter rules or rulers to be selected n
Up to 10	2
11 to 25	3
26 to 50	4
51 to 100	6
101 to 150	6
151 to 300	7
301 to 500	8
501 and Above	10

#### C.2 Criteria for Conformity

For declaring the conformity of the lot to the requirements of this specification, all the meter rules or rulers selected according to C.1.3 shall satisfy the relevant requirements given in clause 5, 6 and 7

## Bibliography

- [1] EAS 490:2008, *Metre rules and rulers for school and office use — Specification*
- [2] TZS 1006: 2011, *Metre rules and rulers for the school and office use – Specification*

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