भारतीय मानक

Indian Standard

IS 10269 : 2024

चिकित्सा प्रयोगशाला हेतु काँच के उपकरण — रूधिरकोशिकामापी — विशिष्टि

(पहला पुनरीक्षण)

Medical Laboratory Glass Apparatus — Haemocytometer — Specification

(First Revision)

ICS 71.040.20

भारतीय मानक ब्यूरो

BUREAU OF INDIAN STANDARDS

मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002

MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG

NEW DELHI - 110002

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June 2024 **Price Group 7**

Medical Laboratory Instruments Sectional Committee MHD 10

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Medical Laboratory Instruments Sectional Committee had been approved by the Medical Equipment and Hospital Planning Division Council.

This Indian Standard was originally published in 1982 with the title 'Specification for haemocytometer counting chambers clinical and diagnostic apparatuses'. This revision has been brought out to align the cross-references to the latest editions.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this temporary standard is complied with, the final value, observed or calculated expressing the result of a test, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding of numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

MEDICAL LABORATORY GLASS APPARATUS — HAEMOCYTOMETER — SPECIFICATION

(First Revision)

1 SCOPE

This Indian Standard specifies three types of haemocytometer counting chamber with one, two or four rulings and four types of ruling.

2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated was valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of this standard:

IS No.	*Title*
IS 6943 : 2023	Medical glass instruments — Cover glass used with haemocytometer — Specification (*first revision*)

3 TYPES OF CHAMBER

3.1 The counting chamber shall consist of a recess in a glass slide bridged by a cover-glass. The base of the recess shall bear either one, two or four rulings of one of the types specified in **9**.

3.2 If required by the purchaser the counting chamber may be provided with metalized lines (bright lines), satisfying the requirements specified in **9.4**.

4 DESIGN AND DIMENSIONS

4.1 The general design of the glass slides is shown diagrammatically in Fig. 1 to Fig. 3.

4.2 The glass slides shall conform to the dimensions given in Table 1. The upper edges of the slides shall be beveled as shown in Fig. 1 to Fig. 3. The lower surface of the slide may, if required, have concavity below the ruled area or areas so as to minimize the danger of the lower surface becoming scratched.

5 TRANSVERSE GROOVES

5.1 Slides with one or two rulings shall have two transverse grooves parallel to the shorter edges as shown in Fig. 1 and Fig. 2. Slides with four rulings shall have three such grooves, as shown in Fig. 3. The edges where the sides of each groove would meet the surface of the slide shall be slightly beveled.

5.2 The width of each groove measured on the surface of the slide to the outside edges of the bevels, shall be (2.0 ± 0.5) mm.

5.3 The depth of each groove shall be (1.5 ± 0.5) mm measured from the surface of the slide.

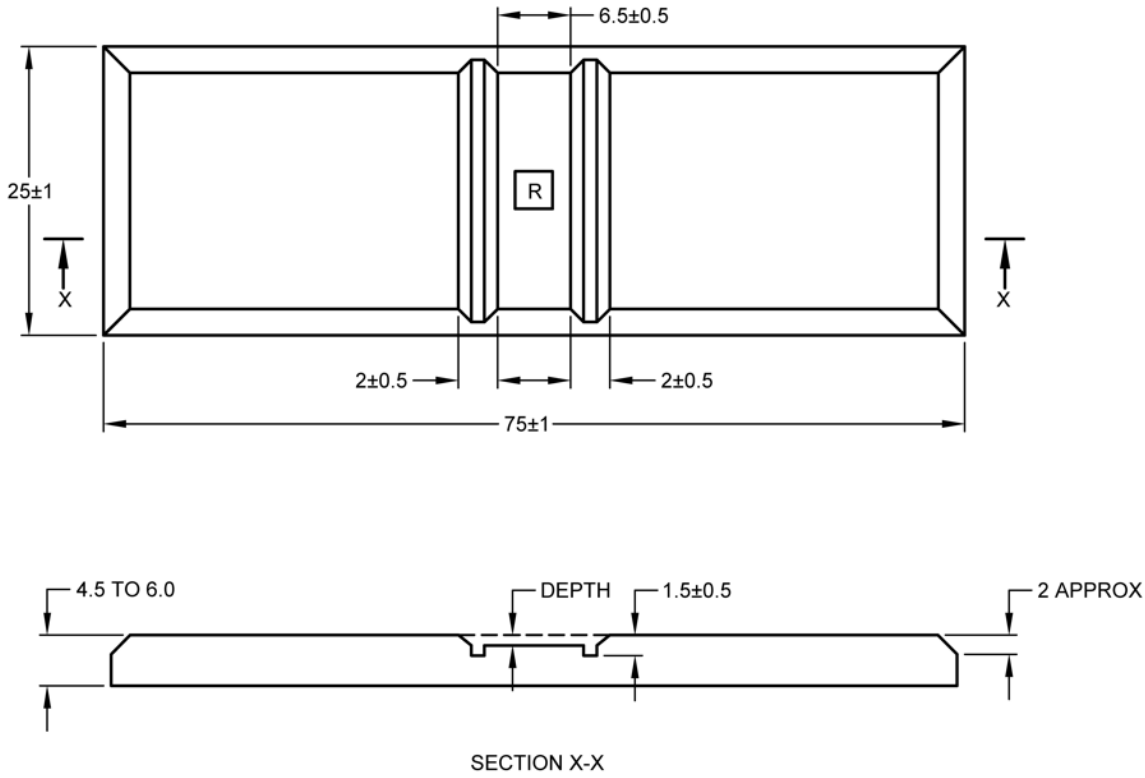
5.4 The grooves shall by symmetrically disposed about the middle of the slide.

5.5 The plane surface of the slide between the bevels of adjacent grooves shall measure (6.5 ± 0.5) mm.

Table 1 Dimensions of Slides

(*Clause* 4.2)

Sl No.	Type of Chamber	Length	Breadth	Thickness
(1)	(2)	(3)	(4)	(5)
i)	One ruling	75.0 ± 1.0	25.0 ± 1.0	4.50 to 6.0
ii)	Two ruling	75.0 ± 1.0	32.0 ± 1.0	4.5 to 6.0
iii)	Four ruling	75.0 ± 1.0	32.0 ± 1.0	4.5 to 6.0



All dimensions in millimeters.

FIG. 1 HAEMOMETER COUNTING CHAMBER WITH ONE RULINGS

6 LONGITUDINAL GROOVE

6.1 Slides with two or four rulings shall have a longitudinal groove of semicircular cross-section connecting the centers of the transverse grooves as shown in Fig. 2 and Fig. 3.

6.2 The width of this groove measured on the surface of the slide shall be (3.0 ± 0.5) mm.

7 FLATNESS OF UPPER SURFACE OF SLIDE

7.1 When tested conjointly by means of an optical flat, the area of the slide which in use is normally covered by the cover glass shall show not more than three interference fringes in the green light from a mercury vapor lamp.

7.2 The ruled areas between the grooves shall be flat and parallel to the plane of the two outer areas, to within 0.001 mm.

8 DEPTH OF CHAMBER

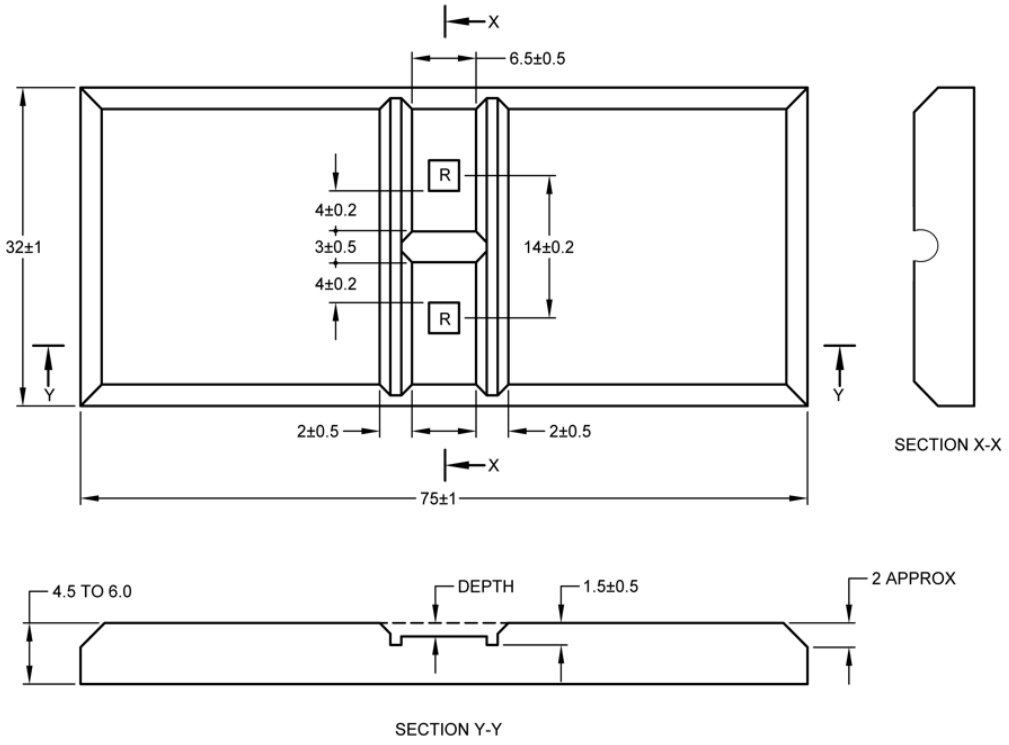
8.1 For Neubauer, Improved Neubauer and Burker rulings, the mean depth shall be 0.100 mm ± 0.001 mm.

8.2 For modified Fuchs-Rosenthal ruling, the depth shall be (0.200 ± 0.001) mm. except for the four-ruled chamber in which the depth shall be (0.100 ± 0.001) mm.

9 RULINGS

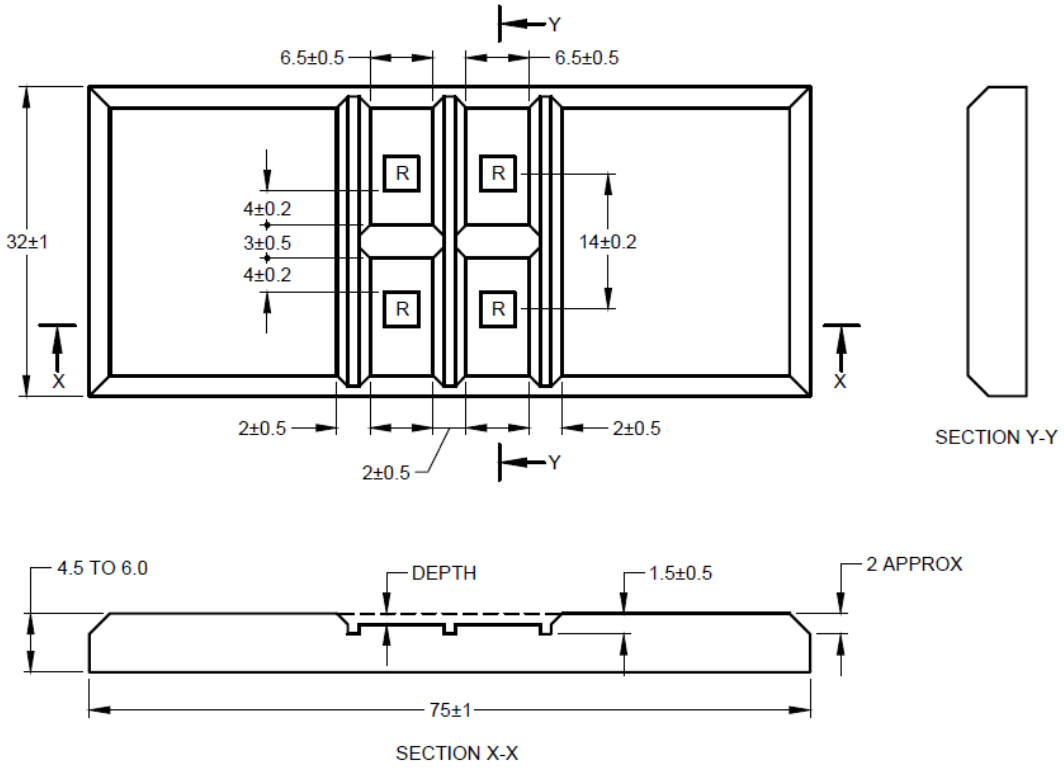
9.1 Position

The ruling shall occupy the position marked ‘R’ in Fig. 1 to Fig. 3 and shall be centrally placed between the transverse grooves subject to a tolerance of (0 ± 0.4) mm.



All dimensions in millimetres.

FIG. 2 HAEMOMETER COUNTING CHAMBER WITH TWO RULINGS



All dimensions in millimetres.

FIG. 3 HAEMOCYTOMETER COUNTING CHAMBER WITH FOUR RULINGS

9.2 Type

The ruling shall be one of the following types:

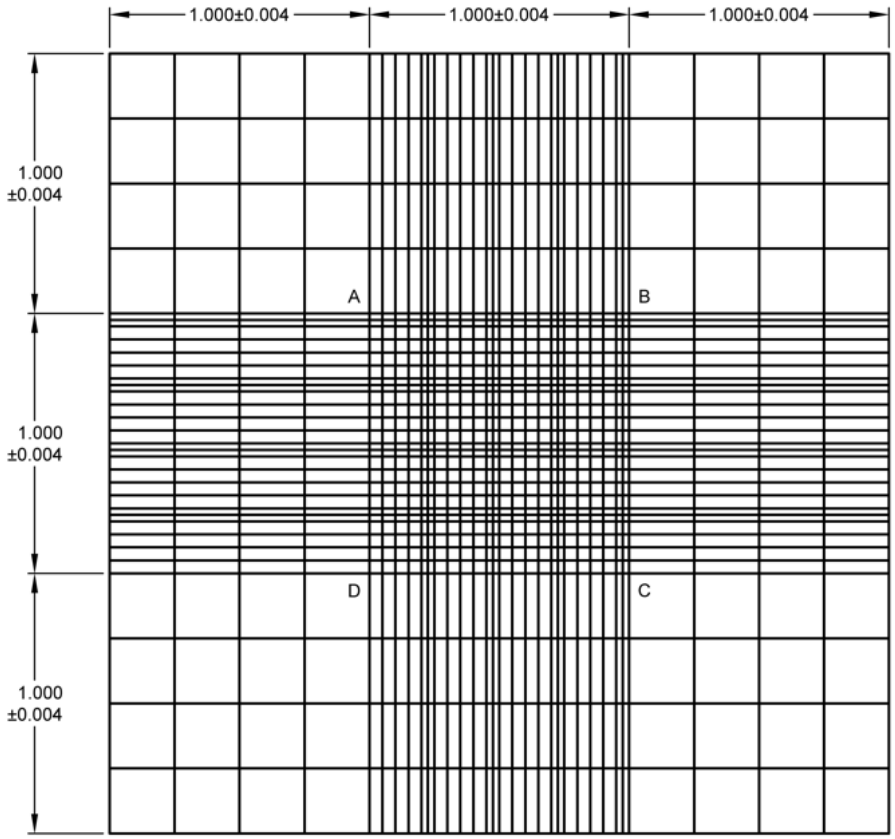
a) *Neubauer* — This ruling is shown in Fig. 4. Each of the nine large squares into which the ruling is divided has sides 1 mm in length. The central square ABCD of Fig. 4, shown on a larger scale in Fig. 5, is subdivided into 16 squares, such as abcd, each of which in turn contains 16 squares having sides 0.05 mm in length. Variations are permissible in the ruling of the four corner squares around the central one, but if a ruling of these squares different from that shown in Fig. 4 is required, details shall be specified by the purchaser. Mirror images of the ruling shown in Fig. 4 are permitted.

b) *Improved Neubauer* — This ruling is shown in Fig. 6. Each of the 9 large squares into which the ruling is divided has sides 1 mm in length. The central square ABCD of Fig. 6, shown on a larger scale in Fig. 7, is subdivided into 25 squares such as abcd, each of which in turn contains 16 squares having sides 0.05 mm in length.

c) *Burker* — This ruling is shown in Fig. 8. Each of the 9 large squares such as ABCD into which the ruling is divided has sides 1 mm in length. Each of these large squares contains 16 small squares such as abcd, having sides 0.2 mm in length, the subdivision being effected by pairs of lines 0.05 mm apart.

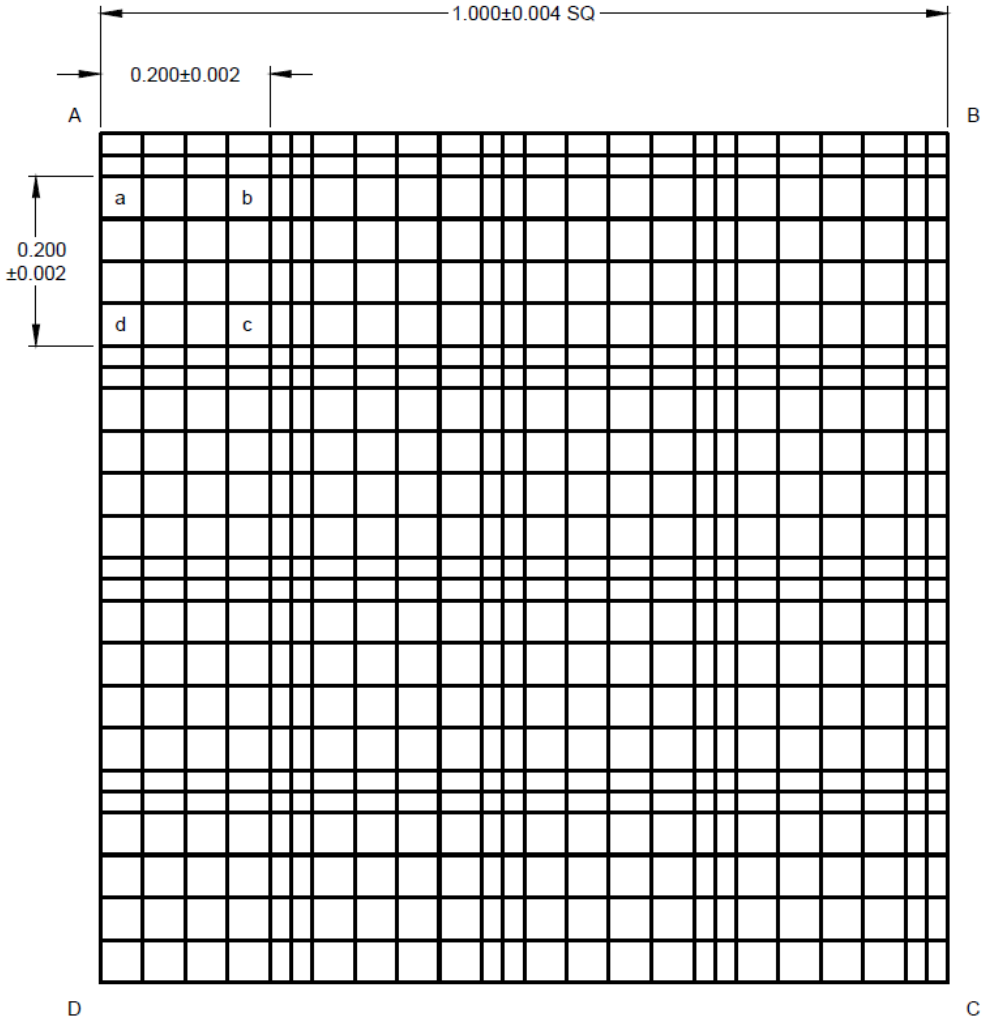
d) *Modified Fuchs-Rosenthal* — This ruling is shown in Fig. 9. Each of the nine large squares such as ABCD into which the ruling is divided has sides 1 mm in length. These squares are indicated by a triple ruling approximately 0.05 mm wide. Each of these large squares is divided into 16 small squares, such as, abcd, having sides 0.25 mm in length, the subdivision being effected by single lines.

NOTE — The counting areas used should be areas such as abcd for red corpuscles or ABCD for white corpuscles, and not the remaining small squares or rectangles. This applies to all rulings except the Modified Fuchs-Rosenthal which is used for counting white corpuscles only.



All dimensions in millimetres.

FIG. 4 NEUBAUER RULINGS



All dimensions in millimetres.

FIG. 5 CENTRAL PORTION OF NEUBAUER RULING

9.3 Accuracy

a) In each type of ruling the length of each side, of each square such as ABCD shall be 1.000 mm ± 0.004 mm;

b) The length of each side of each square such as abcd shall be 0.200 ± 0.002 mm in Neubauer, Improved Neubauer and Burker rulings; and shall be 0.250 mm ± 0.002 mm in Modified Fuchs-Rosenthal ruling; and

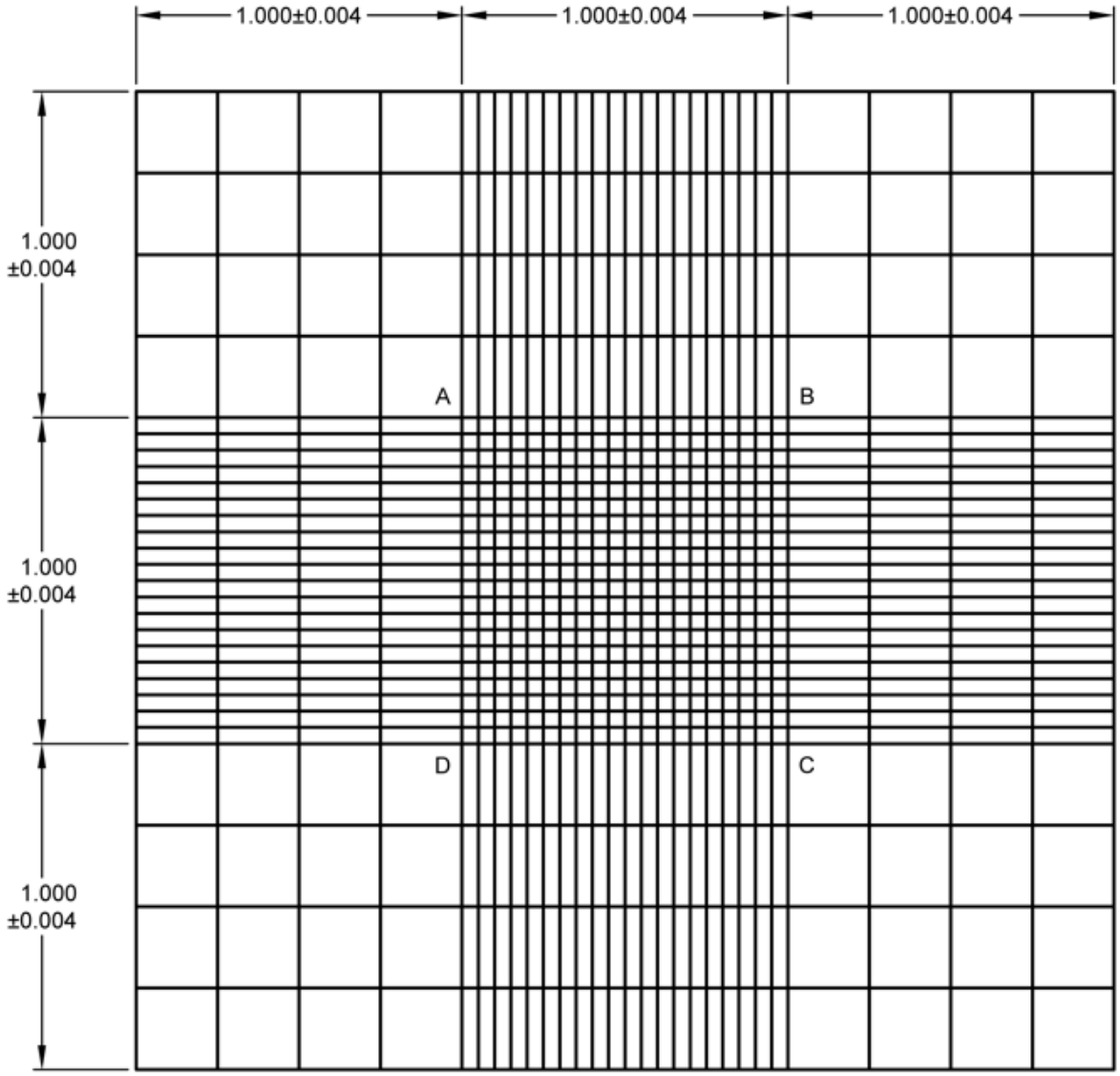
c) The lines shall be sufficiently fine and uniform in thickness to enable measurements to be taken to an accuracy compatible with the above tolerances.

9.4 Metallized Markings and Films

Any metallized markings or films shall be unaffected by contact with 2 percent acetic acid under normal conditions of use.

10 COVER GLASSES

Normally two cover-glasses are supplied by the manufacturer of the counting chambers. When they are supplied along with the counting chambers, they shall comply with the requirements specified in IS 6943.



All dimensions in millimetres.

FIG. 6 IMPROVED NEUBAUER RULING

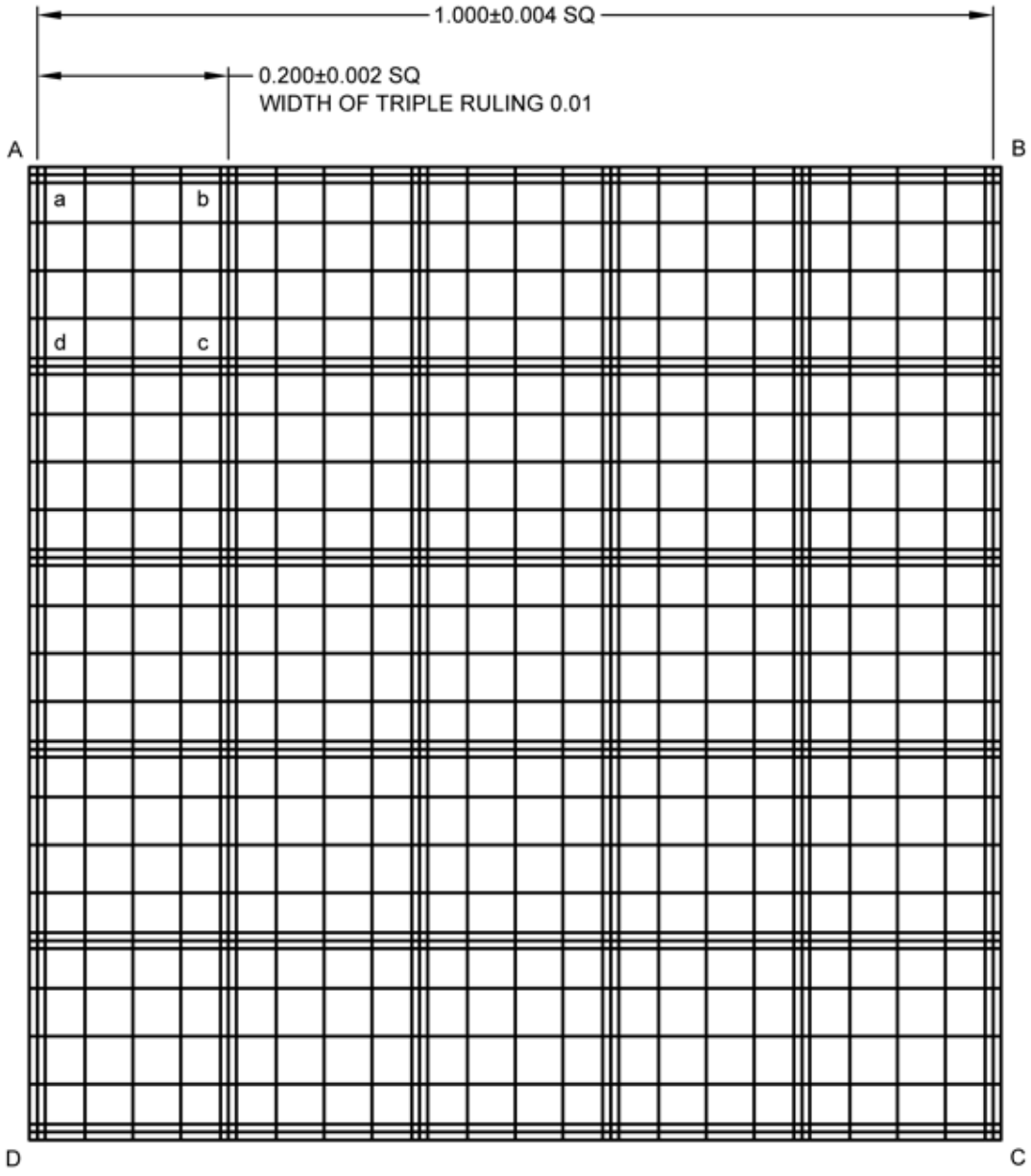
11 MARKING

11.1 Each slide shall be permanently and legibly marked on the upper surface in accordance with **11.2** to **11.6**.

Either 'depth 0.1 mm' for slides with Neubauer, Improved Neubauer or Burker rulings or for slides with Modified Fuchs-Rosenthal with four ruled chambers or 'depth 0.2 mm' for slides with modified Fuchs-Rosenthal rulings with one ruled or two ruled chambers.

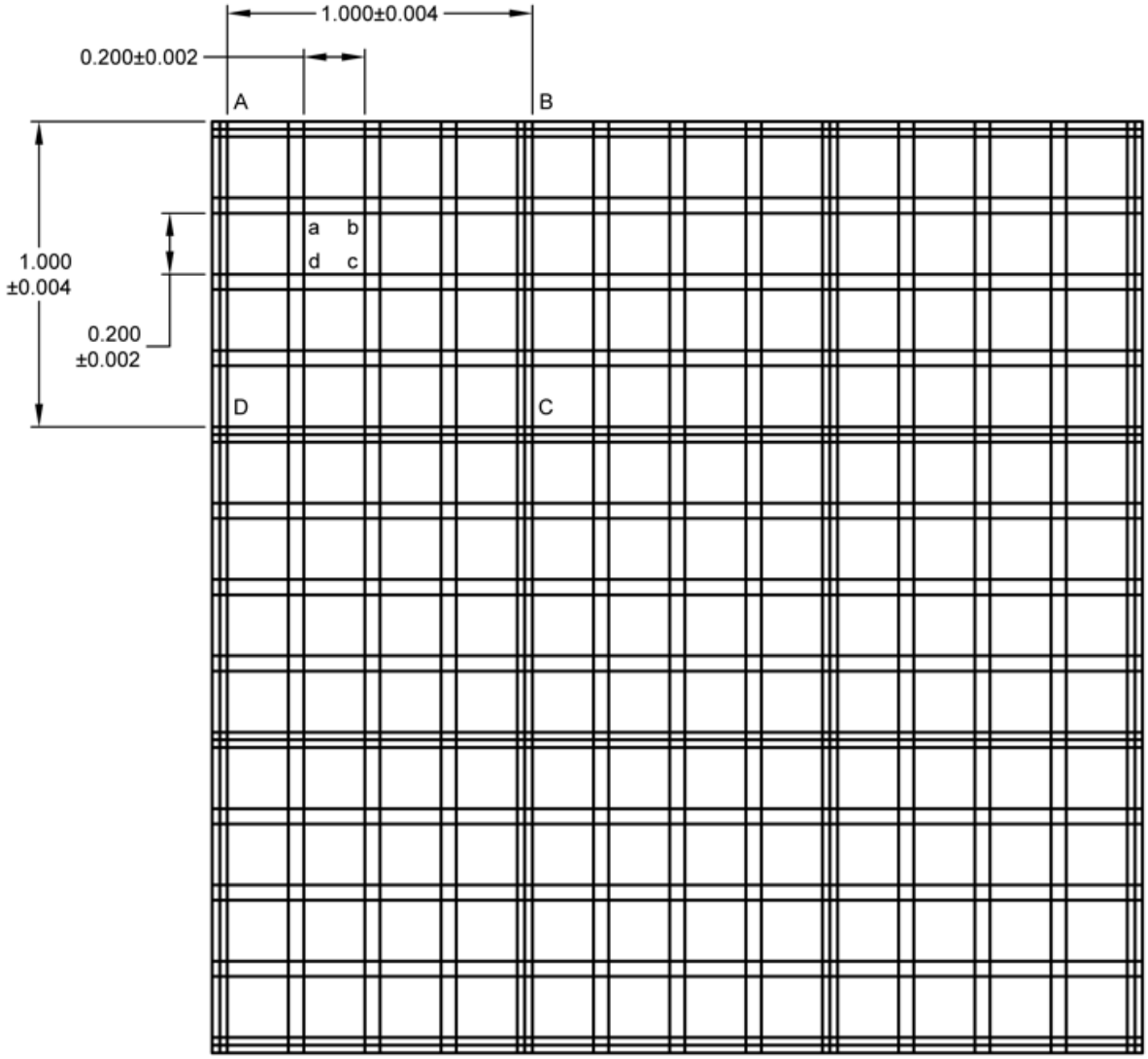
11.2 Dimensions of small squares (abcd) ruled shall be:

a) either '1/400 mm^2' for slides with Neubauer or Improved Neubauer rulings; or
b) '1/25 mm^2' for slides with Burker rulings; or
c) 'l/16 mm^2' for slides with Modified Fuchs-Rosenthal rulings.



All dimensions in millimetres.

FIG. 7 CENTRAL PORTION OF IMPROVED NEUBAUER RULING



All dimensions in millimeters.

FIG. 8 BURKER RULING

11.3 Name of the type of ruling.

11.4 Identification numbers, if required.

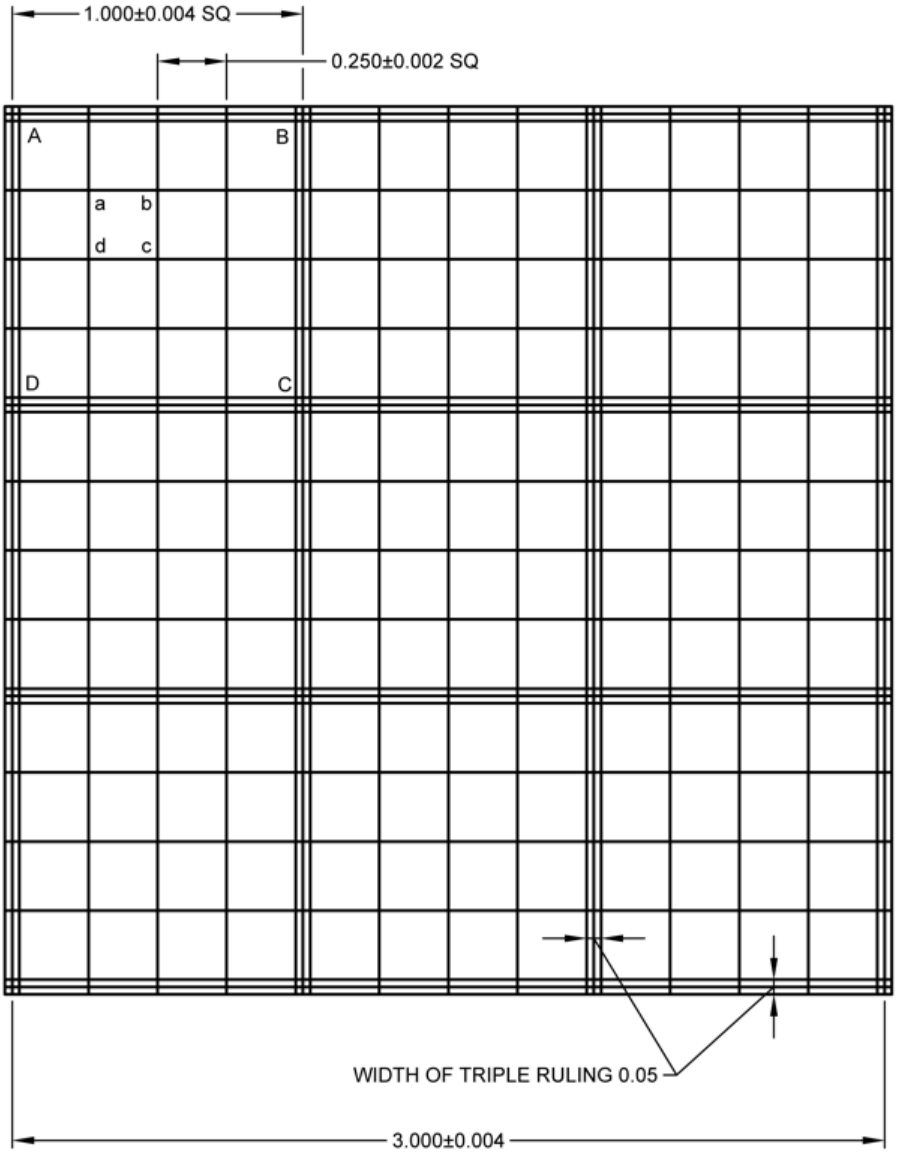
11.5 Manufacturer's name or recognized trade-mark.

11.6 BIS Certification Marking

The product(s) confirming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

12 PACKING

Packing shall be done as agreed to between the manufacturer and the purchaser.



All dimensions in millimetres.

FIG. 9 MODIFIED FUCHS-ROSENTHAL RULING

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Medical Laboratory Instruments Sectional Committee, MHD 10

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

Regional Offices:		*Telephones*
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