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IS : 5257 - 1969

(Reaffirmed 2000)

Indian Standard

SPECIFICATION FOR EYEPIECE AND SCREEN GRATICULES FOR DETERMINATION OF PARTICLE SIZE OF POWDERS

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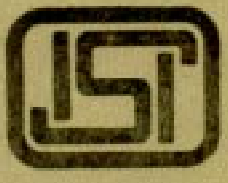

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SPECIFICATION FOR EYEPIECE AND SCREEN GRATICULES FOR DETERMINATION OF PARTICLE SIZE OF POWDERS

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SPECIFICATION FOR EYEPIECE AND SCREEN GRATICULES FOR DETERMINATION OF PARTICLE SIZE OF POWDERS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 13 August 1969, after the draft finalized by the Sieves, Sieving and Other Sizing Methods Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 Graticules are used for sizing of particles in those fractions of powders which pass through a 75-micron IS Sieve. A representative sample of powder to be sized is dispersed and placed on a glass slide and the particles are viewed through a microscope by means of transmitted light. The areas of the magnified images of the particles are compared with the areas of reference circles of known sizes inscribed on a graticule and simultaneously visible. The relative numbers of particles in each of a series of size classes are then determined.

0.3 In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country. This has been met by deriving assistance from B.S. 3625:1963 'Specification for eyepiece and screen graticules for the determination of particle size of powders' issued by the British Standards Institution.

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1. SCOPE

1.1 This standard specifies requirements for the design and construction of eyepiece and screen graticules used in optical microscope employed for determining the particle size of powders (*see* IS : 5258-1969*).

*Determination of particle size of powders by optical microscope methods (*under print*).

2. CONSTRUCTION

2.1 The graticule shall consist of black rulings to the pattern and dimensions specified in **2.2** to **2.4**. In the case of screen graticules the background to the rulings shall form a diffusing screen.

2.2 Pattern of Circles and Rulings — The graticule shall be made to the pattern (*see* Fig. 1) comprising the following:

a) A rectangular grid subdivided as shown,

b) Two calibration marks drawn across the longer axis of the grid and ringed by two units at their intersections with that axis,

c) A set of seven open circles,

d) A set of seven solid circles,

e) The numbers 1 to 7 adjacent to the circles,

f) The words GRID LENGTH followed by the actual length in millimetres of the longer dimension of the rectangular grid, and

g) The maker's name and the number of this standard (*see* **3**).

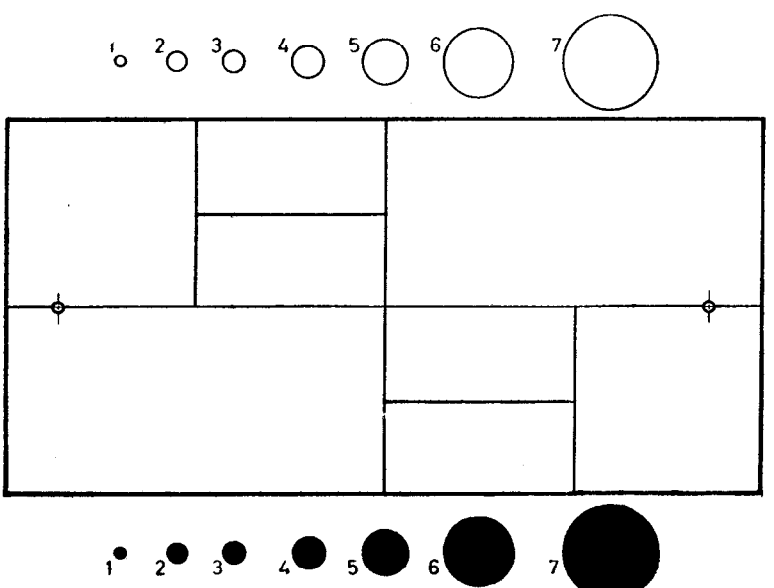

FIG. 1 INDIAN STANDARD GRATICULE

2.3 Relative Dimensions of Grid and Circles — The relative dimensions of the grid and circles are specified in Table 1. The unit of length is 1/100 of the length of the rectangular grid. Tolerances on the relative dimensions are specified in Table 1 for a screen graticule which also apply to an eyepiece graticule with the understanding that none is required to take an absolute value smaller than 5 microns.

2.3.1 The boundary lines of the rectangular grid shall be extended by 2·5 units to cross at each other. The calibration marks specified on the longer axis of the grid shall be 7·5 units in length and shall be symmetrically placed. The subdividing lines of the grid shall form the following areas in the pattern shown in Fig. 1, two each $\frac{1}{4}$ and $\frac{1}{8}$ and four each $\frac{1}{16}$ of the total area of the grid. The length and breadth of the grid (and of the sub-divisions) and the distance between the calibration marks shall be measured between the centres of the ruling lines. The diameters of the open circles shall be measured between the out side edges of the ruling lines. The width of the ruling lines shall be the same within ±20 percent in all parts of the graticule and shall not exceed 1/5 unit (that is, 1/500th of the grid length).

TABLE 1 RELATIVE DIMENSIONS OF STANDARDS GRATICULE

(*Clause* 2.3)

Components of Graticule	Numerical Value And Tolerance Units*
Grid length	100
Grid breadth	50 ± 0·25
Distance between calibration marks	85·4 ± 0·25
Diameter of circle	
1	1·41 ± 0·03
2	2·00 ± 0·04
3	2·83 ± 0·06
4	4·00 ± 0·08
5	5·66 ± 0·10
6	8·00 ± 0·12
7	11·31 ± 0·14

*The unit is 1/100th of the grid length.

2.4 Dimensions of Grid — The actual length of the longer dimension of the grid shall be within ±2 percent of the value marked on the graticule. The length of the grid of a screen graticule shall not be less than 106·1 mm.

3. MARKING

3.1 Graticules manufactured in compliance with this standard shall be marked with:

a) the name, trade-mark or other means of identification of the manufacturer; and

b) the number of this Indian Standard.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the 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 during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

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