

इंटरनेट

मानक

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Mazdoor Kisan Shakti Sangathan

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Jawaharlal Nehru

“Step Out From the Old to the New”

IS 101-3-5 (1987): Methods of sampling and test for paints, varnishes and related products, Part 3: Tests on paint film formation, Section 5: Fineness of grind [CHD 20: Paints, Varnishes and Related Products]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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## Indian Standard

METHODS OF SAMPLING AND TEST FOR PAINTS,  
VARNISHES AND RELATED PRODUCTS

## PART 3 TESTS ON PAINT FILM FORMATION

## Section 5 Fineness of Grind

(Third Revision)

**1. Scope** — Prescribes a method for determining the fineness of grind of paints and related products by a suitable fineness of grind gauge.

**2. Principle** — This test is intended to measure the degree of dispersion of pigments in the vehicle system. The material is spread in a calibrated tapered groove. At some point in this groove, solid particles are readily discernible. A direct reading from the calibrated scale is then made at this point. The method is applicable to all types of paints and related products. Of the 3 gauges referred to in this standard, the 0 to 100  $\mu\text{m}$  gauge is suitable for general use, but the 0 to 50  $\mu\text{m}$  and especially the 0 to 25  $\mu\text{m}$  gauge will only provide reliable results in the hands of skilled laboratory personnel. Particular caution is necessary in interpreting readings of less than 10  $\mu\text{m}$ .

**3. Apparatus**

**3.1 Gauge** — Consists of a block of hardened steel (see Note) of approximately 175 mm in length, 65 mm in width and 13 mm thick. The top surface of the block shall be ground smooth and flat, and shall contain one or two grooves approximately 140 mm in length and 12.5 mm width parallel to the longer sides of the block. Each groove shall be tapered uniformly in depth lengthwise from a suitable depth (for example, 25, 50 to 100  $\mu\text{m}$ ) at one end to zero depth as specified in the Table 1.

**Note** — Use stainless steel blocks for water borne paints.

TABLE 1 GRADUATION OF TYPICAL GAUGES

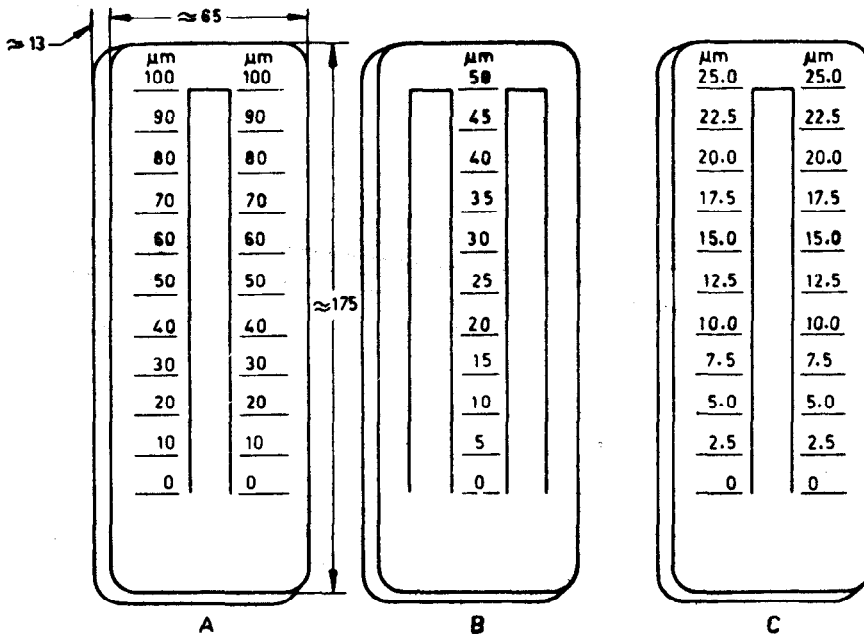
Depth of Range, $\mu\text{m}$	Interval of Graduation, $\mu\text{m}$
(1)	(2)
100 to 0	10
50 to 0	5
25 to 0	2.5

**3.2 Scraper** — Consisting of a single or double edged steel blade approximately 90 mm long, 40 mm wide and 6 mm thick. The edges on the long sides shall be straight, and rounded to a radius of approximately 0.25 mm.

**3.3** Typical gauges with scraper is shown in Fig. 1 and 2.

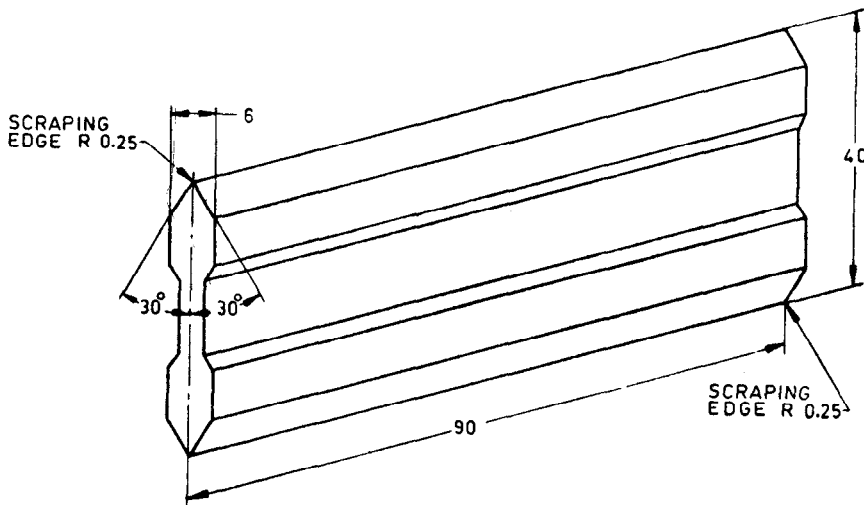
**4. Sampling** — A representative sample to be tested shall be taken as given in IS : 101 (Part 1/Sec 1)-1986 'Methods of sampling and test for paints, varnishes and related products : Part 1 Tests on liquid paints (general and physical)', Section 1 Sampling (*third revision*).

**5. Procedure** — Place the gauge to be used, which shall be thoroughly clean and dry, on a flat, horizontal and non-slipping surface. Pour a sufficient amount of sample into the deep end of the groove so that it overflows the groove slightly. Grasp the scraper between the thumbs and fingers of both hands and place it edgewise in contact with the surface of the gauge at extreme deep end of the groove with the long dimension of the scraper parallel to the short dimension of the gauge. While holding the scraper perpendicular to the surface of the gauge and at right angles to the length of the groove, draw it at a uniform rate over the surface of the gauge to a point beyond the zero end of the groove in 2 to 3 seconds. Sufficient downward pressure shall be exerted on the scraper just to fill the groove with the sample and clean the level surface of the gauge. Determine in a time not exceeding 6 seconds from the completion of the drawdown, the fineness of grind of the product by viewing the gauge from the side in such a manner that the line of vision is at right angles to the long dimension of the groove and at an angle of not more than 30° nor less than 20° to the face of the gauge while it is in a light which will make the pattern of the product in the groove readily visible.



All dimensions in millimetres.

FIG. 1 TYPICAL GAUGE



All dimensions in millimetres.

FIG. 2 SCRAPER

Observe the point along the groove where the product first shows a predominantly speckled appearance and, in particular, the two graduation marks between which the number of particles, in a band 3 mm wide across the groove, is of the order of 5 to 10. (see Fig. 3). Estimate this position as the fineness of grind to the nearest 5  $\mu\text{m}$  for 0 to 100  $\mu\text{m}$  gauge; 2  $\mu\text{m}$  for 0 to 50  $\mu\text{m}$  gauge and 1  $\mu\text{m}$  for 0 to 25  $\mu\text{m}$  gauge. Discard any scattered specks which may appear prior to the point where the predominantly speckled appearance begins. The gauge and scraper shall be cleaned carefully with a suitable solvent immediately after each reading. Make 3 determinations.

6. Expression of Results — Calculate the mean of the three determinations and round off the result to the same precision as the original reading.

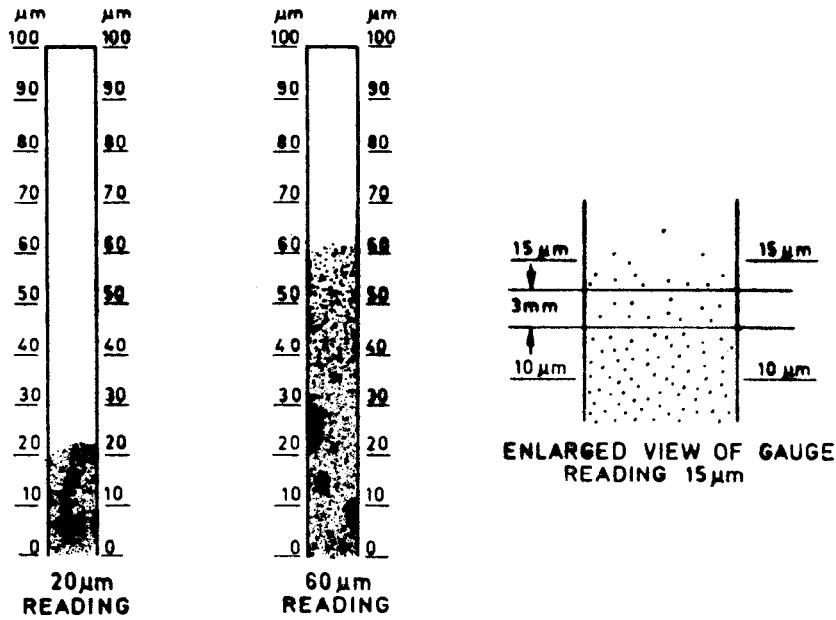


FIG. 3 TYPICAL READING OF GAUGE

### EXPLANATORY NOTE

This Indian Standard is one of a series dealing with the sampling and testing of paints, varnishes and related products. This standard supersedes 7.6 of IS : 101-1964 'Methods of test for ready mixed paints and enamels (*second revision*)'. In the preparation of this standard, considerable assistance has been derived from ISO 1524-1973 Paints and varnishes—Determination of fineness of grind, prepared by the International Organization for Standardization (ISO).