INTERNATIONAL STANDARD 1524

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Paints and varnishes — Determination of fineness of grind

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, International Standard ISO 1524 replaces ISO Recommendation R 1524-1971, drawn up by Technical Committee ISO/TC 35, *Paints and varnishes.*

The Member Bodies of the following countries approved the Recommendation :

Austria	Israel	Spain
Chile	Italy	Sweden
Denmark	Netherlands	Switzerland
Egypt, Arab Rep. of	New Zealand	Turkey
France	Poland	United Kingdom
Germany	Portugal	U.S.S.R.
Greece	South Africa, Rep. of	Yugoslavia

No Member Body expressed disapproval of the Recommendation.

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Paints and varnishes — Determination of fineness of grind

0 INTRODUCTION

This International Standard is one of a series dealing with the sampling and testing of paints, varnishes and related products. It should be read in conjunction with ISO 1512 and ISO 1513.

1 SCOPE

This International Standard specifies a method for determining the fineness of grind of paints and related products by the use of a suitable gauge graduated in micrometres.

NOTE — Various fineness-of-grind gauges, graduated in arbitrary units (see annex), are used in industry, but these are not recommended.

2 FIELD OF APPLICATION

This International Standard is applicable to all types of paints and related products. Of the three gauges referred to in 4.1, the 0 to 100 μm gauge is suitable for general use, but the 0 to 50 μm gauge and especially the 0 to 25 μm gauge will only provide reliable results in the hands of skilled laboratory personnel.

Particular caution is necessary in interpreting readings of less than 10 μm.

3 REFERENCES

ISO 1512, *Paints and varnishes — Sampling.*

ISO 1513, *Paints and varnishes — Examination and preparation of samples for testing.*

4 DEFINITION

fineness of grind : The reading, in micrometres, obtained on a standard gauge under specified conditions of test, indicating the depth of the gauge at which discrete solid particles in the product are readily discernible.

5 APPARATUS

5.1 Gauge, consisting of a block of hardened steel 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 wide 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 μm) at one end to zero depth at the other and shall be graduated in accordance with its depth as specified in the table below. (Diagrams of typical gauges are given in figure 1.)

TABLE — **Graduation of typical gauges**

Depth range	Interval of graduation
μm	μm
100 to 0	10
50 to 0	5
25 to 0	2,5

NOTES

1 Steel gauges of the approximate dimensions stated are suitable for the test, but other gauges giving similar results may be used.

2 Since the exact value reported as fineness of grind depends in part on the gauge used (see clause 7), it is essential to identify the gauge (0 to 100 μm, 0 to 50 μm or 0 to 25 μm) when reporting results or specifying requirements.

5.2 Scraper, consisting of a single- or double-edged steel blade approximately 90 mm long, 40 mm wide and 6 mm thick. The edge or edges on the long sides shall be straight, and rounded to a radius of approximately 0,25 mm. A drawing of a suitable scraper is shown in figure 2.

NOTE — Both the gauge and the scraper shall be periodically checked for signs of wear; worn apparatus shall be discarded.

6 SAMPLING

A representative sample of the product to be tested shall be taken as specified in ISO 1512. The sample shall then be examined and prepared for testing as specified in ISO 1513.

7 PROCEDURE

Place the gauge to be used, which shall be thoroughly clean and dry, on a flat, horizontal, 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 the 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 s. Sufficient downward pressure shall be exerted on the scraper just to fill the groove with the sample and to clean the level surface of the gauge. Determine, in a time not exceeding 6 s 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.

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 figures 3 and 4). Estimate this position of the upper margin of this band and read the position as the fineness of grind to the nearest

5 μm for the 0 to 100 μm gauge;
2 μm for the 0 to 50 μm gauge;
1 μm for the 0 to 25 μm gauge.

Disregard any scattered specks which may appear prior to the point where the predominantly speckled appearance begins.

NOTE – Not more than 10 s shall elapse from the commencement of the drawdown to the completion of the reading. For this reason, it is often advisable to make a preliminary determination to establish the approximate position of the first appearance of a predominantly speckled surface. A second and more accurate reading can then be made very rapidly.

The gauge and scraper shall be cleaned carefully with a suitable solvent immediately after each reading.

Make three determinations (after the preliminary trial, if made).

8 EXPRESSION OF RESULTS

Calculate the mean of the three determinations and round the result to the same precision as the original readings.

9 TEST REPORT

The test report shall include the following information :

a) a reference to this International Standard or to a corresponding national standard;

b) the type and identification of the product under test;

c) details of the gauge used;

d) any deviation, by agreement or otherwise, from the test procedure specified;

e) the results of the test, expressed in micrometres (μm);

f) the date of the test.

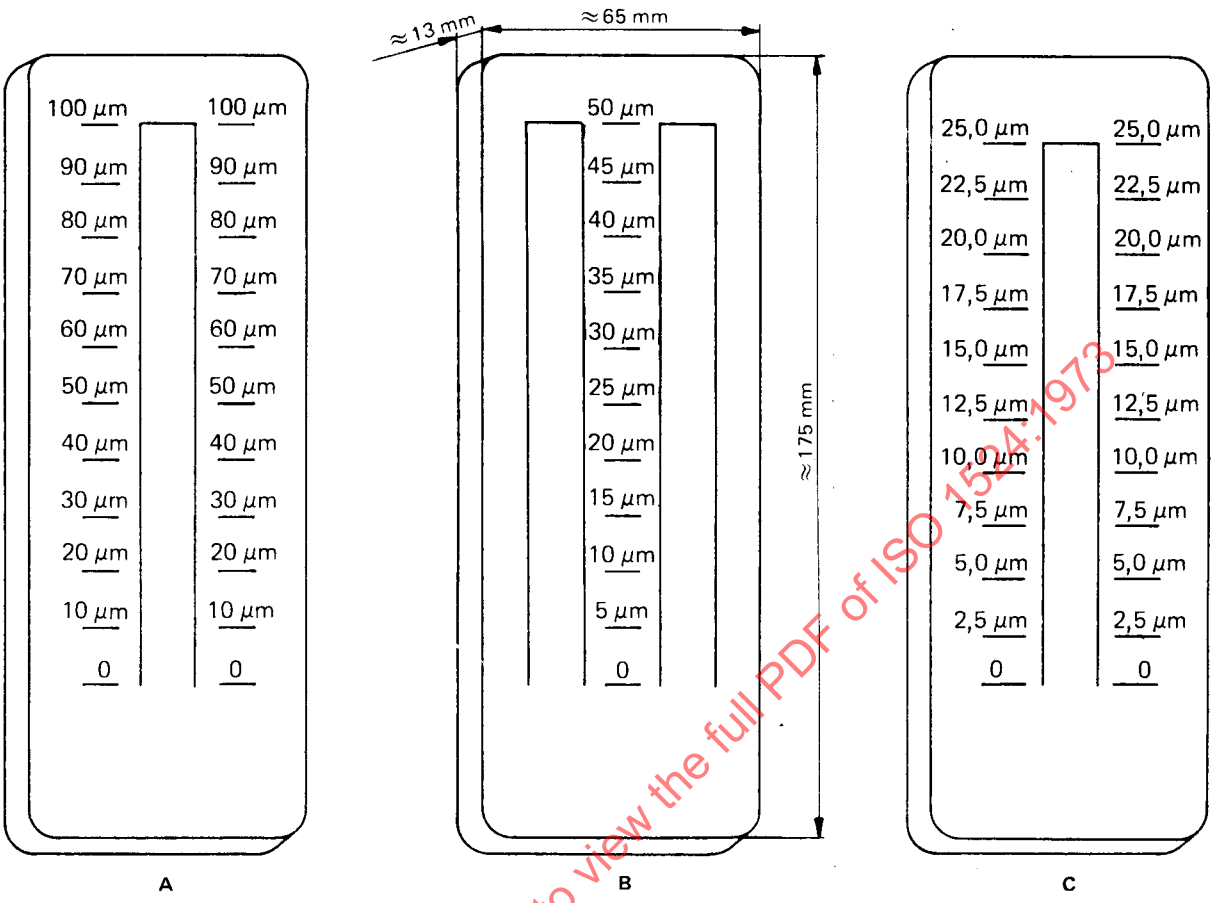

FIGURE 1 – **Typical gauges**

Approximate dimensions in millimetres

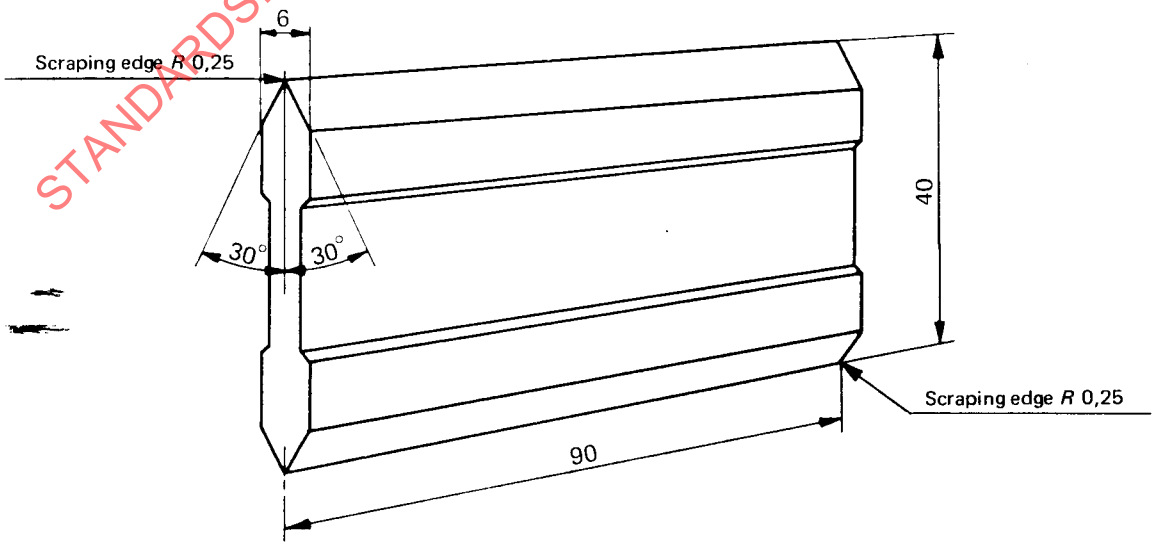

FIGURE 2 – **Scraper**

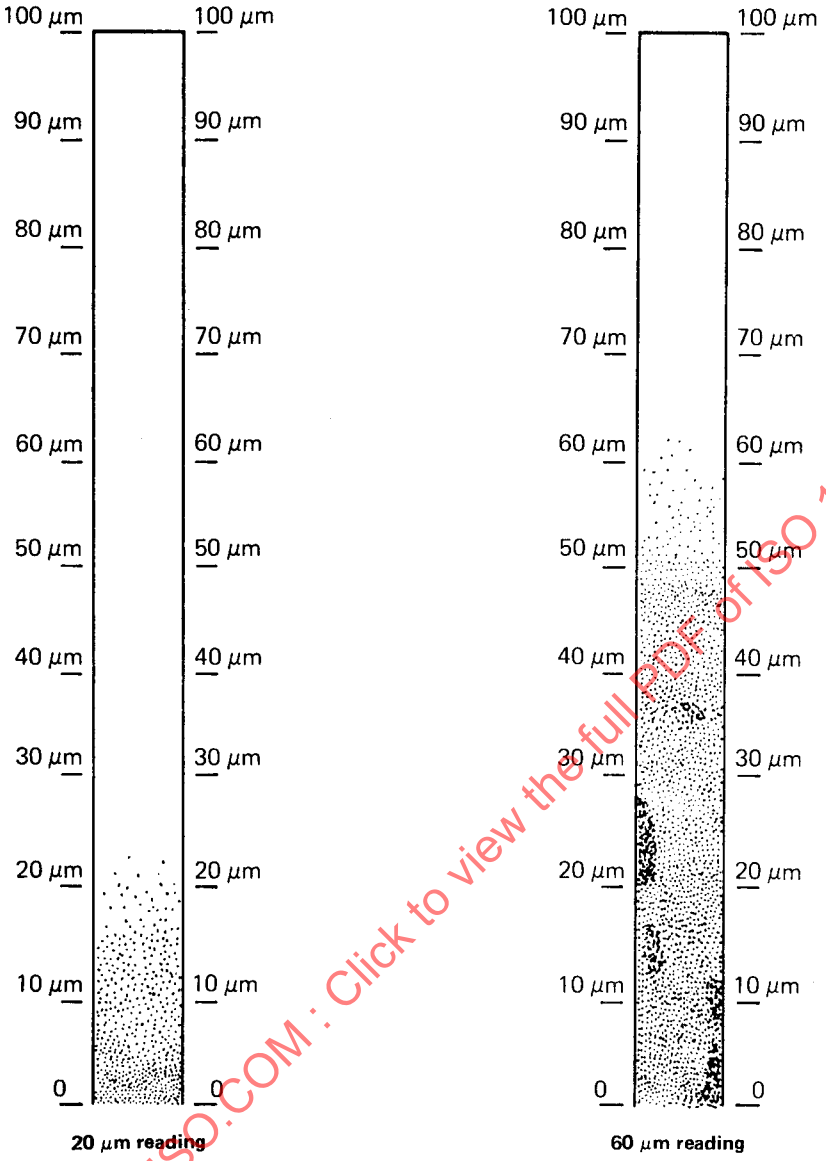

FIGURE 3 – **Typical readings on gauge**

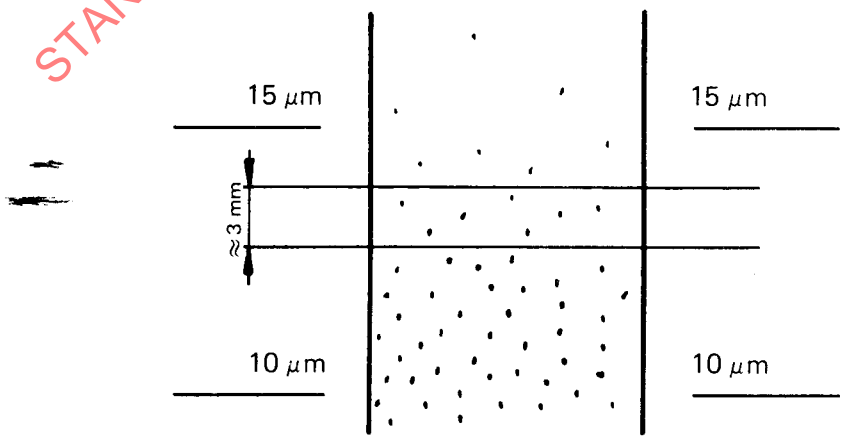

FIGURE 4 – **Enlarged view of gauge reading 15 µm**