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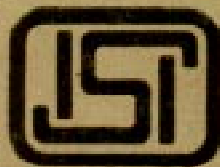


IS : 5807 (Part V) - 1975

Indian Standard

METHODS OF TEST FOR
CLEAR FINISHES FOR WOODEN FURNITURE
PART V TEST FOR LOW-ANGLE GLARE

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*Indian Standard*METHODS OF TEST FOR
CLEAR FINISHES FOR WOODEN FURNITURE

PART V TEST FOR LOW-ANGLE GLARE

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Indian Standard

METHODS OF TEST FOR CLEAR FINISHES FOR WOODEN FURNITURE

PART V TEST FOR LOW-ANGLE GLARE

0. FOREWORD

0.1 This Indian Standard (Part V) was adopted by the Indian Standards Institution on 19 August 1975, after the draft finalized by the Painting, Varnishing and Allied Finishes Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 The high level of illumination which is used in modern schools, assembly halls, etc, can produce reflected glare of sufficient intensity from the surfaces of furniture. The glare can be quite distressing to the teacher or the speaker standing in front of the class room or hall. It may, therefore, be necessary in many cases to know the glare produced from the finished surface of the furniture. The method described in this standard may be used to measure the specular reflection (glare) of a panel coated with wood finish under test or of the finished article of furniture providing a suitable flat surface is available for the test. The method gives a quantitative result expressed with the percentage of reflection obtained from the standard surface under similar conditions of the test.

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 BS : 3962 : Part I-1965 Methods of test for clear finishes for wooden furniture: Part I Test for low-angle glare, issued by the British Standards Institution.

0.4 This standard is one of a series of Indian Standards on methods of test for clear finishes for wooden furniture. Other standards in the series are:

IS : 5807 (Part I)-1975 Methods of test for clear finishes for wooden furniture: Part I Resistance to dry heat (*first revision*)

IS : 5807 (Part II)-1975 Methods of test for clear finishes for wooden furniture: Part II Resistance to wet heat (*first revision*)

IS : 5807 (Part III)-1971 Methods of test for clear finishes for wooden furniture: Part III Resistance to marking by oils and fats

IS : 5807 (Part IV)-1975 Methods of test for clear finishes for wooden furniture: Part IV Resistance to marking by liquids

0.5 This standard contains clause 4.2 which calls for agreement between the purchaser and the seller.

1. SCOPE

1.1 This standard (Part V) describes a method of test for measuring the specular reflection value by 80° glossmeter of either a wood finish applied to a test panel or flat surface of a finished article of wooden furniture.

2. PRINCIPLE

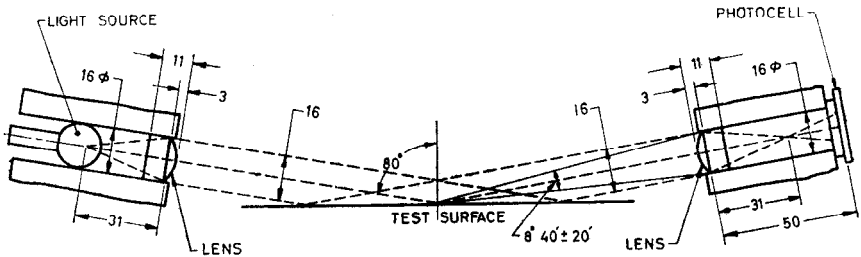
2.1 The method employs a photoelectric glossmeter consisting of a search unit and a galvanometer.

2.1.1 The search unit projects a parallel beam of light on to the test surface at an angle of 80° to the normal. The reflected beam is collected by a photocell unit whose axis is also at an angle of 80° to the normal and in the same plane as that of the incident beam. The output of the photocell is fed to a galvanometer which carries a scale marked in units from 0 to 100. The adjustment of the galvanometer is such that it gives a full scale deflection (100 units) with a gloss standard consisting of a piece of highly polished plane glass. Readings are then made on the test surface and expressed as percentages relative to this gloss standard.

3. APPARATUS

3.1 Glossmeter, consisting of a search unit and galvanometer as described below.

3.1.1 *Search Unit* — The optical arrangement of the instrument shall be as shown in Fig. 1.



All dimensions in millimetres.

FIG. 1 APPARATUS FOR MEASURING LOW-ANGLE GLARE OF CLEAR FINISHES FOR WOOD

The instrument shall be so constructed that a collimated beam of light approximately 16 mm in diameter is supplied by a stable light source and suitable lens arrangement of 31 ± 1 mm focal length. The exact position of the light source on the axis of the lens system shall be adjustable a short distance on either side of its nominally correct position approximately 31 mm from the lens arrangement. Means shall be provided for ensuring that the light source is correctly aligned on the optical axis of the instrument to produce symmetrical illumination of the receiving lens system.

The beam shall fall on to the test surface with the axis of the beam at an angle of 80° to the normal to the test surface. A suitable lens system of focal length of 31 ± 1 mm shall be placed in the path of the reflected beam so that its axis passes through the point of intersection of the test surface and the axis of the incident light beam. The angle between the axis of the receiving system and the normal shall be nominally 80° but suitable adjustment shall be provided so that this angle may be varied by one or two degrees on either side of 80° .

The effective diameter of the lens system in the path of the reflected beam shall be the same as that of the system used to produce the parallel incident beam, and shall subtend an angle of $8^\circ 40' \pm 20'$ at the point of intersection of the axis of the beams with the test surface.

A photocell shall be placed with its centre on the axis of the lens system and with its plane at right angles to it, at a distance of 50 mm from the lens system. The effective diameter of the photocell shall not be less than that of the lens system. The lens system and photocell shall be enclosed in a suitable tubular container with a blackened inner surface to prevent internal reflection and the ingress of extraneous light. There shall not be an image limiting aperture plate in the light receiving system.

A constant voltage supply is necessary to operate the search unit.

3.1.2 Galvanometer — The output of the photocell shall be shown on a suitable galvanometer having a scale graduated from 0 to 100. The galvanometer shall show a reading directly proportional to the amount of light falling on the photocell. The sensitivity of the galvanometer shall be continuously adjustable.

3.2 Gloss Standard — The standard shall be highly polished clear glass, plane to within 2 fringes/cm and with a refractive index $N_D - 1.523 \pm 0.002$. The exposed area of the upper surface of the glass shall have the same dimensions as the base of the search unit. The under surface and edges of the glass shall be roughened and coated with black paint to prevent the ingress of stray light or any internal reflection.

3.2.1 The gloss of this standard shall be taken as 100 units. Other glasses (plane polished black or blackened plate glass) may be used only

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if they have been calibrated against the gloss standard described and have given gloss values between 99 and 101 units.

4. PREPARATION OF TEST SURFACE

4.1 The full finishing system shall be applied by the appropriate method of application as described in IS : 2338 (Part I)-1967* to an agreed wooden substrate suitably prepared. The test surface shall be flat and sufficiently large for the search unit to stand on it without overlap.

4.2 Unless otherwise specified the final coat shall be allowed to age at a room temperature of $27 \pm 2^{\circ}\text{C}$ at 65 ± 5 percent relative humidity with free access to air for a period to be not less than 28 days. The period may, however, be reduced in special cases if agreed between the purchaser and the supplier.

NOTE — Where a surface finish of the required degree of mattness is to be achieved by subsequent abrasion the test should preferably be applied to the finished article of furniture.

5. TEST PROCEDURE

5.1 Align the light source to comply with 3.

5.2 Place the instrument on the gloss standard and adjust the angle between the axis of the photocell and associated lens system, and the normal to the test surface, to give the maximum reading on the galvanometer. When these adjustments are completed, set the reading to 100 by adjusting the sensitivity of the galvanometer. Place the instrument flat on the surface to be tested, taking care that the reference face of the instrument makes good contact with the surface of the finish, and note the galvanometer reading.

5.3 Take measurements on six representative areas of the test surface with the vertical plane containing the incident and reflected beams parallel to the surface grain direction of the test panel.

5.4 Repeat the procedure with the plane of the light beams at right angles to the surface grain direction of the test panel.

5.5 Calculate the mean values for each direction.

6. REPORTING OF RESULTS

6.1 Report all the individual readings and the mean values of the measurements made along the grain and across the grain.

*Code of practice for finishing of wood and wood-based materials: Part I Operations and workmanship.