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IS 5807-1 (1975): Methods of test for clear finishes for wooden furniture, Part 1: Resistance to dry heat [CED 13: Building Construction Practices including Painting, Varnishing and Allied Finishing]



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“Knowledge is such a treasure which cannot be stolen”

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

PART I RESISTANCE TO DRY HEAT

(First Revision)

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Indian Standard

METHODS OF TEST FOR CLEAR FINISHES FOR WOODEN FURNITURE

PART I RESISTANCE TO DRY HEAT

(First Revision)

0. FOREWORD

0.1 This Indian Standard (Part I) (First revision) was adopted by the Indian Standards Institution on 6 June 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 This Standard was first published in 1970 as one of a series of standard method for testing the performance of clear finishes for wooden furniture. It has now been revised to take into account the slight changes in the procedure for assessing whether the material is acceptable or not. At the same time, method for examination of test panel has also been revised.

0.3 The method is designed to test finishes for wooden furniture on which hot meals are prepared or served. It affords a method for comparing different finishes or may be used, in conjunction with an agreed approved sample, to check the standard of supplies.

0.3.1 The degrees of marking produced by foodware such as dishes, plates etc vary considerably and it has, therefore, been necessary to devise a standard container for testing purposes. It is emphasized that the marking produced by this container may be more severe than that produced by foodware at the same temperature. This fact should be borne in mind by the purchaser of the wood finish if he decides to specify the temperature at which supplies are expected to pass the test.

0.4 In view of the diversity of woods and finishing systems used in the furniture industry it is impracticable to specify a uniform standard test substrate and method of preparation of the finishing system. These should, therefore, be subject of agreement between the purchaser and the vendor and this method seeks only to lay down a standard procedure for testing a wooden panel coated with the appropriate finishing system.

0.4.1 This test procedure also applies to woods which have been stained prior to application of finishing system.

IS : 5807 (Part I) - 1975

0.5 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 III)-1971 'Methods of test for clear finishes for wooden furniture; Part III Resistance to dry heat' published by the British Standards Institution.

0.6 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 II)- 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)- Methods of test for clear finishes for wooden furniture : Part IV Resistance to marking by liquids

IS : 5807 (Part V)- Method of test for clear finishes for wooden furniture : Part V Test for low angle glare

0.7 This standard contains clauses **4.1.2**, **5.1** and **5.3** which call for agreement between the purchaser and the seller.

1. SCOPE

1.1 This standard (Part I) lays down the method of test for assessing the resistance of a wood finishing system to marking by a container of hot liquid placed in contact with the surface of the finishing system.

1.2 The test may be used either as a means of comparing a number of finishing system or as a control check test to ensure that a consistent quality of supplies is being maintained.

2. PRINCIPLE

2.1 A standard container in the form of a cylindrical brass cup of specified dimensions, containing a specified mass of mineral oil is heated to a temperature slightly in excess of that specified for the test. When the temperature of the oil in the container has fallen to that specified for the test the container is placed on the surface of the test panel. After a specified period of time the container is removed and the panel left undisturbed for at least 16 hours, after which it is examined visually for signs of marking.

3. APPARATUS

3.1 The following apparatus may be used for the test:

- a) *Brass Cup* — made from 70/30 arsenical brass with dimensions as shown in Fig. 1 which is electroplated to comply with IS : 4827-1968*, Services Grade No. 2, Classification No. C Ni10b Crr. The brass cup shall weigh 440 ± 25 g.

NOTE — Except where tolerances are given, the dimensions shown in Fig. 1 are approximate only.

- b) *Thermometer*
- c) *Insulating Mat* — A suitable insulating mat not less than 100 mm square, such as a 10-mm thick wooden panel.
- d) *Mineral Oil* — with an open flash point of not less than 250°C .
- e) *Viewing Cabinet* — A suitable viewing cabinet is shown in Fig. 2. This is constructed of 16 mm thick blockboard, or other suitable material and the interior is painted matte black. A 25-mm diameter hole is made in the sloping side and a 60-watt frosted bulb is positioned on the hinged platform so that the bulb rests directly over the hole.

4. PREPARATION OF TEST SURFACE

4.1 The test panel shall be substantially flat and of a size to ensure that the centres of the 50-mm diameter test areas are not less than 65 mm apart and not less than 40 mm from any edge. The minimum size of the test panel shall, however, be 250×150 mm.

4.1.1 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 and complying with the dimensions described above.

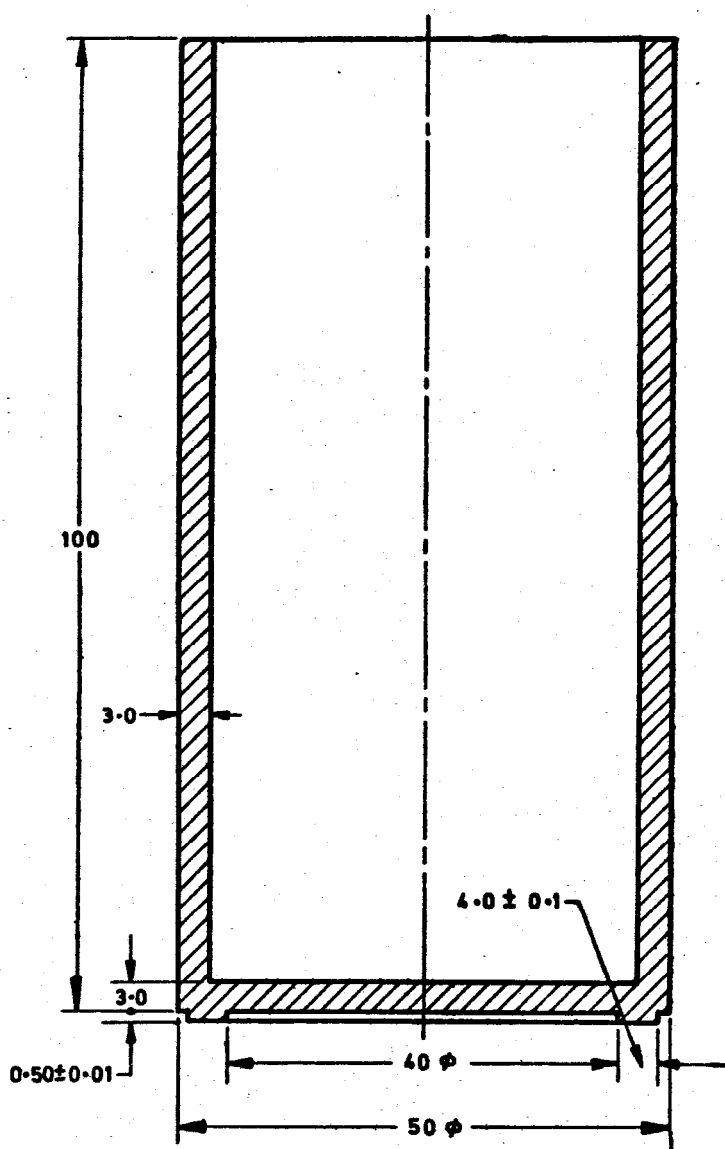
4.1.2 Unless otherwise specified, the final coat shall be allowed to age at a room temperature of $27 \pm 2^{\circ}\text{C}$ at relative humidity of 65 ± 5 percent with free access to air for a period to be not less than 28 days. The period may, however, be reduced in special cases if agreed between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

5. TEST PROCEDURE

5.1 **General** — The test shall be carried out at a temperature agreed between the purchaser and the vendor. As a guide it is suggested that the temperature may be 100 to 160°C . Where more than one temperature is specified the tests may be carried out either consecutively or concurrently. The test shall be carried out in a drought free atmosphere at a room temperature of $27 \pm 2^{\circ}\text{C}$.

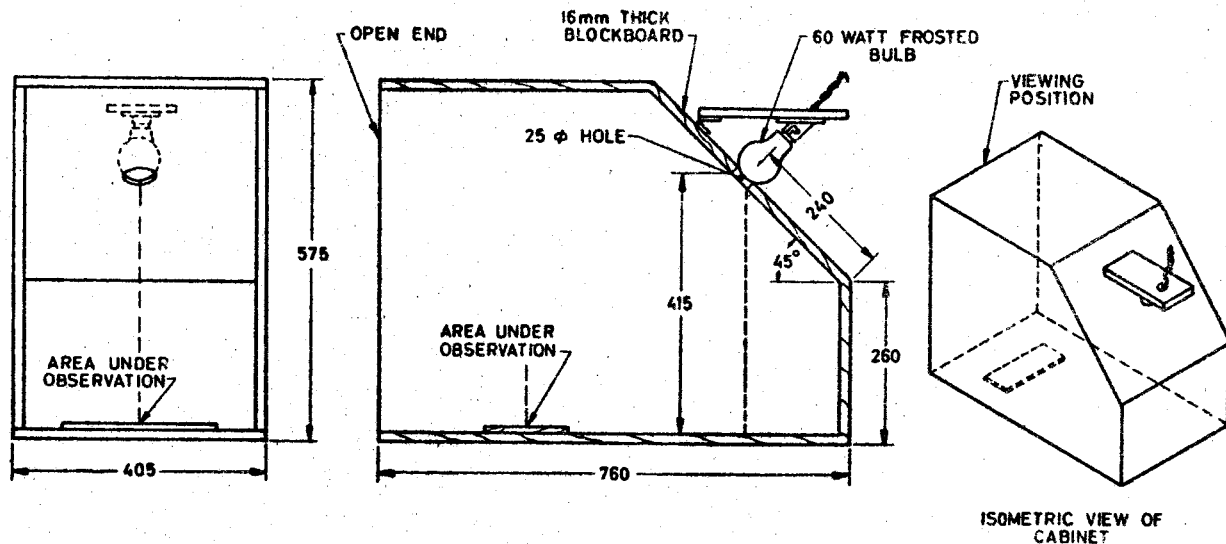
*Electroplated coatings of nickel and chromium on copper and copper alloys.

†Code of practice for finishing of wood and wood based materials: Part I Operation and workmanship.



All dimensions in millimetres.

FIG. 1 CUP FOR HEAT RESISTANCE TEST



All dimensions in millimetres.

FIG. 2 VIEWING CABINET

5.2 Fill the cup with 100 ± 1 g of mineral oil, heat the oil and the cup to a temperature higher than the specified temperature with the cup standing on the insulating mat, allow the oil to cool, stirring it to ensure an even temperature distribution.

5.2.1 When the temperature of the oil in the cup reaches that specified for the test, transfer the cup from the insulating mat to the test position and leave it undisturbed for 30 minutes.

5.2.2 When the 30 min have elapsed, remove the cup and gently wipe the test area with a soft cloth. Identify the test area and test temperature by any suitable means, taking care to avoid marking the actual test area.

5.2.3 Allow the panel to stand undisturbed at room temperature for at least 16 hours.

5.3 The above test shall be carried out at each of the temperatures agreed to between the purchaser and the vendor ensuring that the centres of the 50-mm diameter test areas are not less than 65 mm apart and not less than 40 mm from any edge.

5.4 The above procedure shall be repeated 3 times.

5.5 Examination of Test Panel — Carefully examine each test area in the viewing cabinet, using normal corrected vision, by the following procedure:

Position the panel so that the test area examined is equidistant from the sides and about 550 mm from the back of the cabinet. Move the eye to bring the reflection of the lamp bulb alongside the test area and further move it to cause the reflection to travel round the test area. In this way any markings caused by the cup, if present, may be seen.

6. ASSESSMENT AND REPORTING OF RESULTS

6.1 Surface imperfections like excessive sticking, blistering, cracking or any other disfigurement, visible marks like colour change, blushing, blistering, rings or circle, spotting and loss of gloss, etc, shall be noted.

6.2 Rate the test according to the code given in Table 1.

6.3 Operation of Rating Code — Not less than five persons shall assess each test area and the results shall be independently reported. No intermediate ratings like 2-3 or 2.5, etc, should be given.

TABLE 1 RATING OF TEST
(Clause 6.2)

RATING	TERM	DESCRIPTION
5	No change	Original condition retained
4	Trace	Least discernible change from original condition Observable only by very careful examination. May require visual aid such as — X10 magnification
3	Slight	Barely observable on examination, magnification may be helpful in confirming initial judgement
2	Moderate	Readily observable with casual examination
1	Pronounced	Prominently observable and distinctly visible
0	Severe	Complete breakdown and/or total change

7. ACCEPTABILITY

7.1 Minimum qualifying average ratings taking into account all the five person's readings, for acceptance shall be as below.

Visible marks	= R	= 3
Colour change	= R	= 3
Loss of gloss	= R	= 2
Surface imperfection	= R	= 5

7.2 In case of ageing period other than 28 days report the duration and the reason if known for the amended period.