IS 5807-2 (1975): Methods of test for clear finishes for wooden furniture, Part 2: Resistance to wet heat [CED 13: Building Construction Practices including Painting, Varnishing and Allied Finishing]

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Indian Standard

METHODS OF TEST FOR CLEAR FINISHES FOR WOODEN FURNITURE

PART II RESISTANCE TO WET HEAT

(First Revision)

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Indian Standard

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Indian Standard

METHODS OF TEST FOR CLEAR FINISHES FOR WOODEN FURNITURE

PART II RESISTANCE TO WET HEAT

(First Revision)

0. FOREWORD

0.1 This Indian Standard (Part II) (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 it has been decided to substitute oil for water as the heating liquid. Method for examination of test panel has also been revised.

0.3 The method is designed to test finishes for wooden furniture on which containers of hot beverages may be placed and on which spillage occurs. 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 drinking vessels, such as cups and beakers vary considerably and it has, therefore, been necessary to devise a standard vessel for testing purposes. It is emphasized that the marking produced by this vessel may be more severe than that produced by cups and beakers filled with the same liquid 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 futniture industry it is impracticable to specify a uniform standard test substrate and method of preparation of finishing system. These should, therefore, be subject of agreement between purchaser and 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.

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 2)-1971 'Methods of test for clear finishes for wooden furniture: Part II Resistance to wet 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 I) — Methods of test for clear finishes for wooden furniture : Part I Resistance to dry heat (*Revised*)

IS : 5807 (Part III) — 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) — Methods of test for clear finishes for wooden furniture: Part V Test for low angle glare.

0.7 This standard contains clause **4.1.2** and **5.1**, which calls for agreement between the purchaser and the seller.

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1. SCOPE

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

1.2 The test may be used either as a method of comparing a number of finishing systems 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 raised in temperature to a value 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 a damp-nylon cloth in contact with the surface under test. After a specified period of time the container and cloth are removed and the test area is wiped dry with a soft cloth. The test area is examined visually for signs of marking after standing for a period of at least 16 hours.

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*, Service Grade No. 2, Classification No. CNi 10b Crr. The brass cup shall weigh 440 $\pm$ 25 g.

b) *Nylon Cloth* — a square of plain weave white nylon cloth with approximately 75 mm sides.

c) *Thermometer*

d) *Insulating mat* — a suitable insulating mat not less than 100 mm square such as a 10 cm thick wooden panel.

e) *Mineral Oil* — a mineral oil with an open flashpoint of not less than 250°C.

f) *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 matt 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.

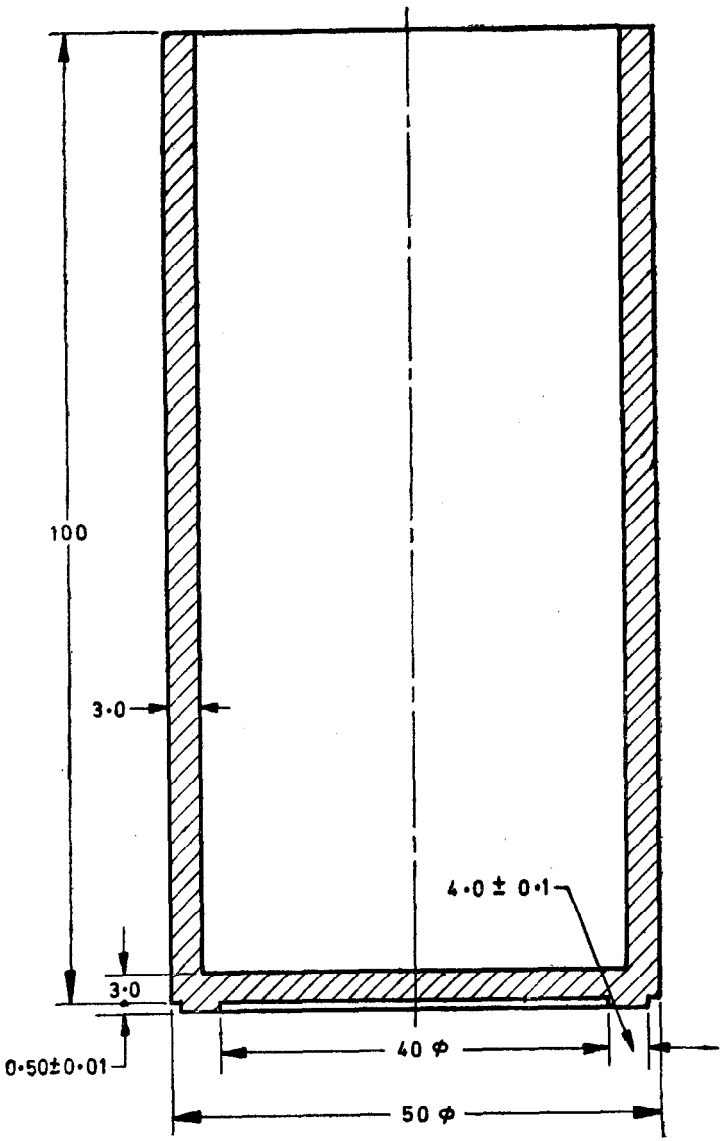
4. PREPARATION OF TEST SURFACE

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 mm $\times$ 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.

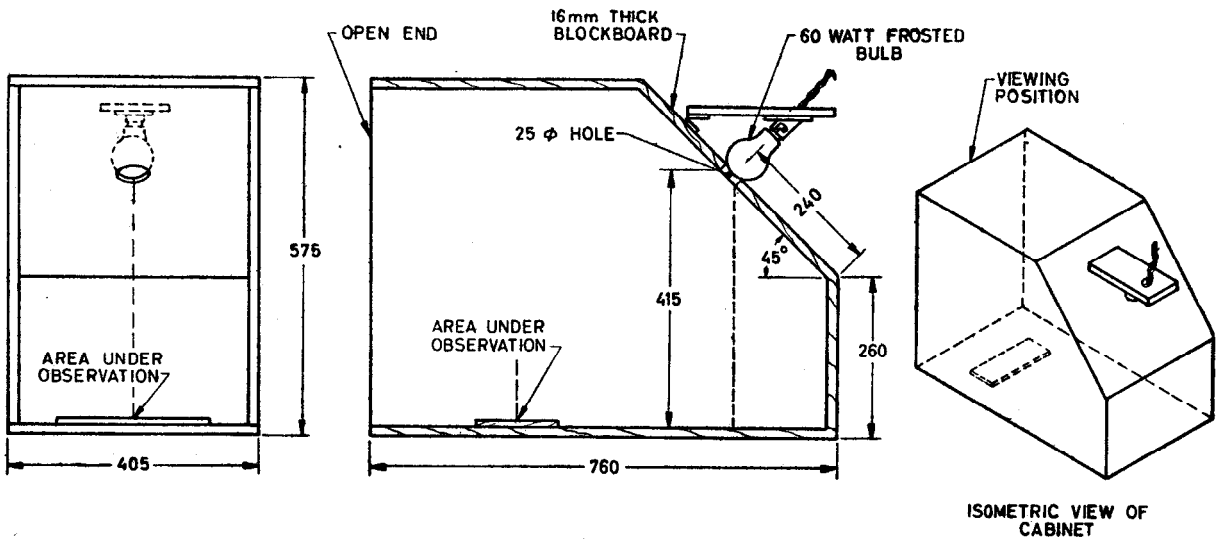
*Specification for electroplated coatings of nickel and chromium on copper and copper alloys.

†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

4.1.2 Unless otherwise specified, the final coat shall be allowed to age at a room temperature of 27 ± 2° 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 supplier. As a guide, it is suggested that the temperature may be 55 to 100°C. Tests shall be carried out in a draught-free atmosphere at a room temperature af 27 ± 2°C.

5.2 General Procedure — Fill the cup with 100 ± 1 g of mineral oil, heat the oil and 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. When the temperature of the oil recorded by the thermometer approaches that specified for the test, soak the nylon cloth in distilled water at room temperature, squeeze out the excess water, leaving the cloth thoroughly wetted but not dripping, and spread the cloth over the test panel. The centre of the 50 mm diameter test areas being not less than 65 mm apart and not less than 40 mm from any edge.

5.2.1 When the temperature of the oil in the brass cup reaches that specified for the test, transfer the cup from the mat to a central position on the nylon cloth and leave it undisturbed for 30 minutes. When the 30 minutes have elapsed, remove the cup and nylon cloth and gently wipe the test area free from moisture with a soft cloth. Indicate the test area by marking the test temperature at a suitable spot alongside but not within the actual test area.

5.2.2 The above procedure shall be repeated three times.

5.2.3 The panel should be kept undisturbed at room temperature for at least 16 hours and each test area shall be lightly rubbed with a soft cloth. The panel shall then be examined according to the procedure laid down in **5.3**.

5.3 Examination of the 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 regular pattern of the nylon cloth may be seen if present.

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 areas according to the code given in Table 1.

TABLE 1 RATING OF TEST

RATING	TERM	DESCRIPTION
(1)	(2)	(3)
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 or total change or both

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.

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 periods other than 28 days, report the duration and the reason if known, for the amended period.

INDIAN STANDARDS

ON

PAINTING, VARNISHING AND ALLIED FINISHES

IS :

1477 (Part I)-1971 Code of practice for painting of ferrous metals in buildings: Part I Pretreatment (*first revision*)

1477 (Part II)-1971 Code of practice for painting of ferrous metals in buildings: Part II Painting (*first revision*)

SP : 1650-1970 Standard colours for building and decorative finishes (*first revision*)

2338 (Part I)-1967 Code of practice for finishing of wood and wood-based materials: Part I Operations and workmanship

2338 (Part II)-1967 Code of practice for finishing of wood and wood-based materials: Part II Schedules

2395 (Part I)-1966 Code of practice for painting concrete, masonry and plaster surfaces: Part I Operations and workmanship

2395 (Part II)-1967 Code of practice for painting concrete, masonry and plaster surfaces: Part II Schedules

2524 (Part I)-1968 Code of practice for painting of non-ferrous metals in buildings : Part I Pretreatment

2524 (Part II)-1968 Code of practice for painting of non-ferrous metals in buildings: Part II Painting

3140-1965 Code of practice for painting asbestos cement building products

4597-1968 Code of practice for finishing of wood and wood based products with nitrocellulose and cold catalysed materials

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

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