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IS 5807-4 (1975): Methods of test for clear finishes for wooden furniture, Part 4: Resistance to marking by liquids [CED 13: Building Construction Practices including Painting, Varnishing and Allied Finishing]



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IS : 5807 ( Part IV ) - 1975

*Indian Standard*

METHODS OF TEST FOR  
CLEAR FINISHES FOR WOODEN FURNITURE

PART IV RESISTANCE TO MARKING BY LIQUIDS

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**INDIAN STANDARDS INSTITUTION**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

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

## PART IV RESISTANCE TO MARKING BY LIQUIDS

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# *Indian Standard*

## METHODS OF TEST FOR CLEAR FINISHES FOR WOODEN FURNITURE

### PART IV RESISTANCE TO MARKING BY LIQUIDS

#### 0. FOREWORD

**0.1** This Indian Standard ( Part IV ) 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** In order to assess the quality of clear finishes for wooden furniture under various situations of use, several methods of testing have been developed. One such method is to test finishes for wooden furniture on which various liquids may be spilt. This method can also be used for comparing different finishes or may be used, in conjunction with an agreed approved sample, to check the standard of supplies.

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

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

**0.4** 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 4 : 1970 'Methods of test for clear finishes for wooden furniture Part 4 Resistance to marking by liquids', published by the British Standards Institution.

**0.5** 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 )-1970 Methods of test for clear finishes for wooden furniture: Part II Resistance to wet heat (*first revision*)

## IS : 5807 ( Part IV ) - 1975

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 V )-1975 Methods of test for clear finishes for wooden furniture: Part V Test for low angle glare

**0.6** This standard contains clauses **4.1**, **5.2** and **5.3** which call for agreement between the purchaser and the seller.

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### 1. SCOPE

**1.1** This standard ( Part IV ) describes the method for assessing the resistance of a wooden finishing system to marking by a disc of material saturated with the test 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 systems or as a control check test to ensure that a consistent quality of supplies is being maintained.

### 2. PRINCIPLE

**2.1** A disc of material is saturated with the test liquid, placed on the surface of the test panel and covered with a watch-glass. After the specified period of time, the disc of material is removed and the panel is left undisturbed for 16-24 hours. Then the test area is gently rubbed with a soft cloth damped in dilute acetic acid, polished with a soft, clean, dry cloth and examined visually for signs of marking.

### 3. REAGENTS AND APPARATUS

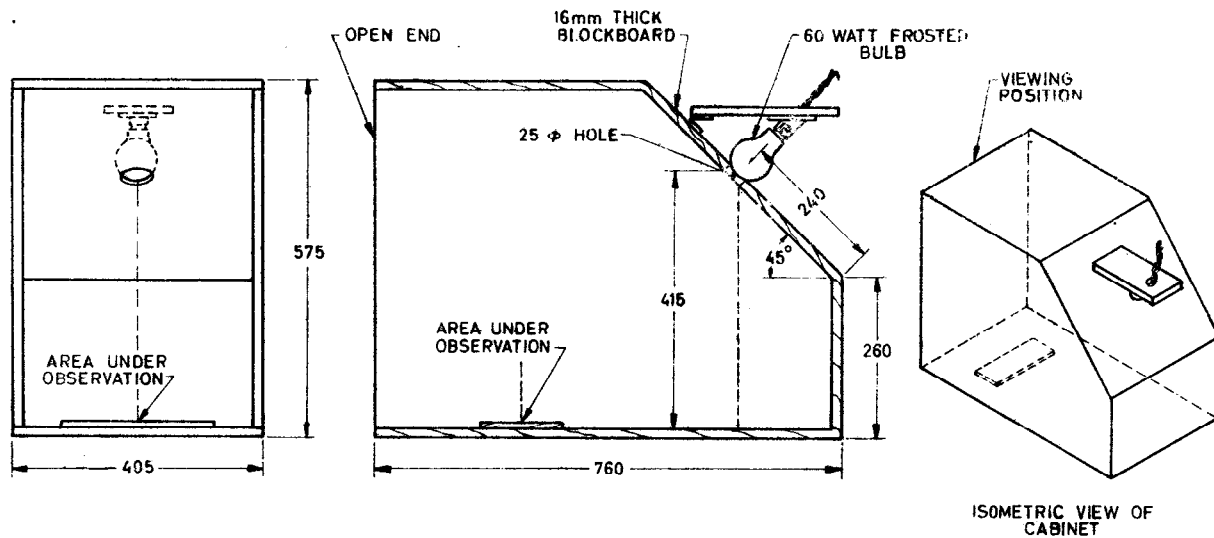
**3.1 Discs** — of paper filter-board approximately 25 mm in diameter and 1.25 mm thick.

**3.2 Watch-Glasses** — approximately 40 mm in diameter. The radius of curvature shall be such that when placed over the disc, the watch-glass does not touch the disc.

**3.3 Acetic Acid** — a 0.5 percent (*m/m*) solution of analytical grade glacial acetic acid in distilled water.

**3.4 Viewing Cabinet** — A suitable viewing cabinet is shown in Fig. 1. 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.





All dimensions in millimetres.

FIG. 1 VIEWING CABINET

#### **4. TEST LIQUIDS**

**4.1** The test liquids shall be those agreed to between the purchaser and the supplier. However, where potable spirits, toilet spirits, tea or coffee are specified the composition of such liquids shall be as given in Appendix A.

**4.1.1** Attention is drawn to the fact that the tea and coffee extracts are used at room temperature; resistance to hot liquids is covered by IS : 5807 ( Part II )-1975\*.

**4.2** It should be appreciated that certain types of liquid commonly grouped together under descriptive titles, namely, detergents, fruit juices, etc, differ appreciably in chemical composition, therefore, it may not be possible to select a test liquid which will give results that are fully representative of all members of the group.

#### **5. PREPARATION OF TEST SURFACE**

**5.1** The test panel shall be substantially flat and of a size sufficient to meet the requirements of **6.1** regarding the separation of the filter-board discs.

**5.1.1** It is recommended that a sufficient area be prepared to allow for extra tests if required.

**5.2** The full finishing system shall be applied by the appropriate method of application to an agreed wooden substrate suitably prepared and complying with the dimensions described. The application rates of the individual coats of material, the drying periods and conditions and the surface preparation, for example, sanding between coats shall be those agreed between the purchaser and the supplier.

**5.3** Unless otherwise specified the final coat shall be allowed to age at a room temperature of  $27 \pm 2^{\circ}\text{C}$  and relative humidity of  $65 \pm 5$  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.

#### **6. TEST PROCEDURE**

**6.1** Place the appropriate number of discs of filter-board, allowing at least two per test liquid, on the test panel such that no disc has its centre nearer than 40 mm to any edge of the panel and the minimum distance between disc centres is 50 mm.

**6.2** Saturate the discs with the appropriate test liquids ( approximately 0.75 ml will be sufficient, depending on the test liquid used ), noting by any

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\*Methods of test for clear finishes for wooden furniture: Part II Resistance to wet heat (*first revision*).

suitable method the test positions of each liquid and ensuring that the test positions for a particular test liquid are as random as possible and that they do not lie on the same grain structure.

**6.3** Immediately after saturation, cover each disc with a watch-glass.

**6.4** Leave the panel undisturbed in an atmosphere free from draughts at a temperature of  $27 \pm 2^\circ\text{C}$  for 1 hour.

**6.5** After this period of time, remove each watch-glass and disc. If the disc has stuck to the panel, do not remove it. Absorb any liquid remaining on the panel with filter paper and allow the test areas to remain undisturbed for 16 to 24 hours at a temperature of not less than  $15^\circ\text{C}$  and with free access of air.

**6.6** If the test area appears to be marked, gently rub it with a soft cloth dampened with the dilute acetic acid solution.

**6.7** Give the test area final light polish with a soft, clean, dry cloth.

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

**6.8.1** 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 may be seen.

## 7. ASSESSMENT AND REPORTING OF RESULTS

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

**7.2** Rate the test area according to the following rating code:

<i>Rating</i>	<i>Term</i>	<i>Description</i>
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 $\times 10$ magnification
3	Slight	Barely observable on examination, magnification may be helpful in confirming initial judgement
2	Moderate	Readily observable with casual examination

<i>Rating</i>	<i>Term</i>	<i>Description</i>
1	Pronounced	Prominently observable and distinctly visible
0	Severe	Complete breakdown and/or total change

**7.3 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, shall be given.

## 8. ACCEPTABILITY

**8.1** Minimum qualifying average ratings, taking into account all the five persons readings, for acceptance shall be as below:

<i>Characteristic</i>	<i>Acceptable Rating</i>
Visible marks	3
Colour change	3
Loss of gloss	2
Surface imperfection	5

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

## APPENDIX A

( Clause 4.1 )

### COMPOSITION OF TEST LIQUIDS

**A-1. POTABLE SPIRITS** — ( 47 PERCENT *v/v* ). Mix equal volumes of 66 OP ordinary denatured spirits conforming to IS : 324-1959\* and distilled water.

**A-2. TOILET SPIRITS** — ( 83.5 PERCENT *v/v* ). Mix eight volumes of 66 OP ordinary denatured spirits conforming to IS : 324-1959\* and one volume of distilled water.

**A-3. TEA** — Pour boiling water on to Indian tea in a hot vessel in the ratio of 100 ml of water to 1 g of tea, stirring occasionally, and decanting from the leaves after infusion for 5 minutes. Allow to cool to room temperature before use.

**A-4. COFFEE** — Pour boiling water on to ground coffee in a hot vessel in the ratio of 12 ml of water to 1 g of coffee, stirring occasionally, and decanting from the ground coffee after infusion for 5 minutes. Allow to cool to room temperature before use.

\*Specification for ordinary denatured spirit ( revised ).

# INDIAN STANDARDS

ON

## PAINTS, VARNISHES AND ALLIED FINISHES

IS :

- SP: 1650-1973 Standard colours for building and decorative finishes  
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* )  
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 nitro-  
cellulose and cold catalyzed materials  
5807 ( Part I )-1975 Methods of test for clear finishes for wooden furniture: Part I  
Resistance to dry heat ( *first revision* )  
5807 ( Part II )-1975 Methods of test for clear finishes for wooden furniture: Part II  
Resistance to wet heat ( *first revision* )  
5807 ( Part III )-1971 Methods of test for clear finishes for wooden furniture: Part III  
Resistance to marking by oils and fats  
5807 ( Part IV )-1975 Methods of test for clear finishes for wooden furniture: Part IV  
Resistance to marking by liquids  
5807 ( Part V )-1975 Methods of test for clear finishes for wooden furniture: Part V Test  
for low-angle glare

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