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मानक

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“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

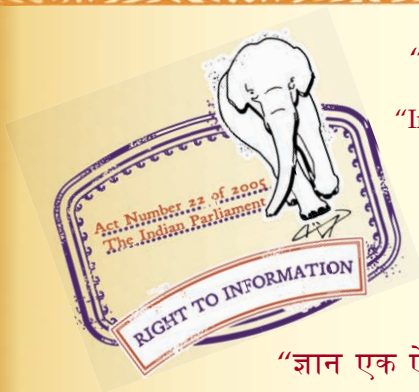
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 101-7-2 (1990): Methods of sampling and test for paints, varnishes and related products, Part 7: Environmental tests on paint films, Section 2: Resistance to liquids [CHD 20: Paints, Varnishes and Related Products]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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IS 101 (Part 7/Sec 2) : 1989
(Reaffirmed 2005)

Indian Standard
**METHODS OF SAMPLING AND TEST FOR
PAINTS, VARNISHES AND RELATED
PRODUCTS**

PART 7 ENVIRONMENTAL TESTS ON PAINT FILMS

Section 2 Resistance to Liquids

(Third Revision)

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(Including Amendment No. 1)

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

AMENDMENT NO. 1 JUNE 1997
TO
IS 101 (Part 7/Sec 2) : 1988 METHODS OF SAMPLING
AND TEST FOR PAINTS, VARNISHES AND RELATED
PRODUCTS

PART 7 ENVIRONMENTAL TESTS ON PAINT FILMS

Section 2 Resistance to Liquids

(Third Revision)

(Page 2, clause 4.4.4, line 8) — Substitute ‘ after a recovery period of one hour or unless otherwise specified’ for ‘immediately’.

(Page 2, clause 4.5.5, line 5) — Substitute ‘after a recovery period of one hour or unless otherwise specified’ for ‘immediately’.

(Page 3, clause 6.3.2) — Substitute the following for the existing clause:

‘6.3.2 Leave the panel undisturbed for the specific time with a suitable means of covering. The test area shall be used to prevent evaporation.’

(CHD 020)

FOREWORD

This Indian Standard (Part 7/Sec 2) (Third Revision) was adopted by the Bureau of Indian Standards on 29 January 1990, after the draft finalized by the Paints and Allied Products Sectional Committee had been approved by the Chemical Division Council.

This standard (Part 7/Sec 2) is one of a series dealing with sampling and testing of paints, varnishes and related products.

In the preparation of this standard, considerable assistance has been derived from ISO 2812 - 1974 'Paints and varnishes — Determination of resistance to liquids', published by the International Organisation for Standardization (ISO).

This standard supersedes clause 19, 20 and 21 of IS 101 : 1964 'Methods of test for ready mixed paints and enamels'.

Indian Standard

METHODS OF SAMPLING AND TEST FOR PAINTS, VARNISHES AND RELATED PRODUCTS

PART 7 ENVIRONMENTAL TESTS ON PAINT FILMS

Section 2 Resistance to Liquids

(Third Revision)

1 SCOPE

1.1 This standard (Part 7/Sec 2) prescribes general methods for determining the resistance of single-coat paint films, paint systems or allied products to the action of liquids.

1.1.1 Three methods of test are specified and the method to be used depends on the particular requirements of the test material. Method 1 is intended for more resistant coatings, requiring longer periods of exposure than those which may be tested by Method 2 or 3.

2 SAMPLING

2.1 A representative sample of the product to be tested shall be taken as prescribed in IS 101 (Part 1/Sec 1) : 1986 'Methods of sampling and test of paints, varnishes and related products : Part 1 Tests on liquid paints (general and physical), Sec 1 Sampling (*third revision*)'.

3 TEST PANELS

3.1 The test panels shall be of the specified material and where steel, tinplate, aluminium or glass is specified, they shall comply with the requirements of IS 101 (Part 1/Sec 3) : 1986 'Methods of sampling and test for paints, varnishes and related products : Part 1 Tests on liquid paints (general and physical), Sec 3 preparation of panels (*third revision*)'. Unless otherwise specified, the test panels shall be 150 mm × 100 mm × 1.25 mm.

3.1.1 For Method 1, the use of rods is preferred to eliminate edge effects. One end of each rod shall be rounded to approximately the radius of the rod itself. Unless otherwise specified, the rods shall be of steel or aluminium. Suitable dimensions for the rods are 150 mm × 15 mm diameter. It shall be coated by the specified method with the product.

3.2 For Method 1, it is normally preferable to

paint both faces of the panel and to protect the edges. It will be necessary to specify whether the back of the panel is to be coated with a suitable protective paint or whether both sides of the panel are to be coated with the product or system under test. The edges of the test panel, after coating with the product under test, shall be sealed by suitable means.

3.3 The coated test pieces shall be dried (or stoved and aged) for the specified time and unless otherwise agreed, shall be conditioned at a temperature of $27 \pm 2^\circ\text{C}$ and a relative humidity of 65 ± 5 percent for a minimum of 16 hours. The appropriate test procedure shall then be carried out as soon as possible.

3.4 Thickness of Coating

The thickness, in micrometres, of dry coating shall be determined by the method prescribed in IS 101 (Part 3/Sec 2) : 1989 'Method of sampling and test for paints, varnishes and related products : Part 3 Tests on paint film formation, Section 2 Film thickness (*third revision*)'.

4 TEST PROCEDURE — METHOD 1 (IMMERSION METHOD)

4.1 Reagents

Test liquid as specified.

4.2 The test shall be carried out at a temperature of $27 \pm 2^\circ\text{C}$ unless otherwise specified.

4.3 It is preferable to immerse the test pieces individually in the test liquid, particularly when using liquids of high electrical conductivity in which electrolytic effects could be of some importance. In certain cases however, it may be more convenient to immerse several test pieces in a single tank; in these cases, the nature of the test pieces shall be identical and every precaution shall be taken to ensure that the test liquid is unaffected by the test pieces.

4.3.1 The test pieces shall be at least 30 mm from the sides of the tank and if several pieces are immersed in the same tank, they shall be at least 30 mm apart. The test pieces shall be electrically insulated from their supports.

4.4 Procedure A (Using a Single-Phase Liquid)

4.4.1 Place sufficient amount of liquid in a suitable vessel to completely or partially immerse the test pieces (rod or panel). Immerse the test piece in an approximately vertical position using suitable supports, if necessary.

4.4.2 Cover the container for the duration of the test to minimize the loss of liquid by evaporation or splashing.

4.4.3 If specified, aerate, agitate or circulate the liquid. Aeration shall be carried out by means of a slow stream of air free from oil and grease. Make good any liquid losses by the addition of the test liquid or distilled water at suitable intervals in order to maintain the original volume or concentration.

4.4.4 At the end of the specified immersion period, wash the test piece thoroughly in running water if an aqueous test solution has been used or with a solvent known to be non-injurious to the coating if a non-aqueous test liquid has been used. Remove any residual liquid from the surface by dabbing with a suitable absorbent paper or cloth and examine the test piece immediately for any sign of deterioration of the coating, and if necessary, comparing with an identically prepared but unimmersed test piece. Examination and comparison shall be repeated after a recovery period if so specified.

4.5 Procedure B (Using a Two-Phase Liquid)

4.5.1 Insert the coated test piece into a suitable vessel so that it rests by means of suitable supports in an approximately vertical position and in the case of panels, with the 100 mm side horizontal.

4.5.2 Prepare each of the test liquids by saturating it, with the other liquid immediately before use.

4.5.3 Carefully pour the liquid of higher density down the side of the vessel until the test piece (rod or panel) is immersed to a depth of 75 mm unless otherwise specified.

NOTE — Care must be taken not to contaminate the test piece above this level.

4.5.4 Add the second liquid in the same manner until the test piece is immersed to a further depth of 75 mm unless otherwise specified. Cover the vessel and allow to stand without agitation.

4.5.5 At the end of the specified immersion period, remove the test piece from the test liquids, remove any test liquid from the surface by dabbing with a suitable absorbent paper or cloth and examine the test piece immediately for any sign of deterioration of coating in contact with each liquid phase, and comparing it, if necessary with an identically prepared but unimmersed test piece. Examination and comparison shall be repeated after a recovery period if so specified.

NOTE — Specimens must not be removed for intermediate examination without subsequent cleaning and repetition of the immersion procedure (see 4.5.1, 4.5.2 and 4.5.3).

5 TEST PROCEDURE — METHOD 2 (USING AN ABSORBENT MEDIUM)

5.1 Discs of Absorbent Material, not affected by the test liquid approximately 25 mm in diameter. For most purposes, compressed paper board 1.25 mm thick shall be suitable.

5.2 Test Liquid, as specified.

5.3 Watch Glasses, of suitable size.

5.4 The test shall be carried out at a temperature of $27 \pm 2^\circ\text{C}$ unless otherwise specified.

5.5 Procedure

5.5.1 Dip the appropriate number of absorbent discs in the test liquid and allow the excess liquid to drain. Place the discs on the test panel, ensuring that they are evenly distributed and at least 12 mm from the edge of the panel. Cover the discs individually with watch glasses of approximately 40 mm diameter and of such a curvature that they do not touch the discs. Leave the panel undistributed in an atmosphere free from draughts for the period of test (this period shall not exceed 7 days for this test) except that in the case of volatile liquids, it may be necessary to replace the discs with further saturated ones (if so, this shall be recorded in the test report).

5.5.2 After the specified period, remove the discs and wash the panel thoroughly and proceed as in 4.4.4.

6 TEST PROCEDURE — METHOD 3 (SPOTTING METHOD)

6.1 Reagents

Test liquid, as specified.

6.2 The test shall be carried out at a temperature of $27 \pm 2^\circ\text{C}$, unless otherwise specified.

6.3 Procedure

6.3.1 Place the test panel in a horizontal position and apply to the coating, an appropriate number of drops of the test liquid, each approximately 0.1 ml in volume. The centres of the drops shall be at least 20 mm apart and at least 12 mm from the edge of the panel.

6.3.2 Leave the panel undisturbed for the specified time with free access to air, at a temperature of $27 \pm 2^\circ\text{C}$ unless otherwise stated. If specified, a suitable means of covering the test area shall be used to prevent excessive evaporation.

6.3.3 At the end of the specified period, wash the panel thoroughly and proceed as in 4.4.4.

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Amendments Issued Since Publication

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002

Telephones: 2323 0131, 2323 3375, 2323 9402 Website: www.bis.org.in

Regional Offices:

	Telephones
Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110 002	{ 2323 7617 2323 3841
Eastern : 1/14, C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi KOLKATA 700 054	{ 2337 8499, 2337 8561 2337 8626, 2337 9120
Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160 022	{ 260 3843 260 9285
Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600 113	{ 2254 1216, 2254 1442 2254 2519, 2254 2315
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