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“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 101-3-1 (1986): Methods of sampling and test for paints, varnishes and related products, Part 3: Tests on paint film formation, Section 1: Drying time [CHD 20: Paints, Varnishes and Related Products]



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“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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Indian Standard

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**METHODS OF SAMPLING AND TEST FOR
PAINTS, VARNISHES AND RELATED PRODUCTS**
PART 3 TESTS ON PAINT FILM FORMATION
Section 1 Drying Time
(Third Revision)

1. Scope — Prescribes the method for determination of surface dry, hard dry and tack-free dry of paints, varnishes and related products.

1.1 The method is not intended to apply to stoving products.

2. Terminology — For the purpose of this standard definitions given in IS : 1303-1983 'Glossary of terms relating to paints (revised)' and the following shall apply.

2.1 Surface Dry — A condition of the paint film such that where clean dry ballotini of prescribed size sprinkled on the surface of the film and allowed to remain for about one minute, can be cleaned without injury to the paint film by means of a camel hair brush.

2.2 Hard Dry — A condition of the paint film such that a second coat of the material can be applied satisfactorily on it after slight rubbing down.

2.3 Tack-Free Dry — A condition of the paint film such that it will pass the test as given in this standard.

3. Apparatus

3.1 Ballotini (Small Transparent Glass Spheres) — The material shall be obtained by sieving from a suitable commercial grade of ballotini and shall be graded so that none passes through IS Sieve of 125 microns and passes through IS Sieve of 250 microns [see IS : 460 (Part 1) - 1978 'Specification for test sieves: Part 1 Wire cloth test sieves (second revision)'].

3.2 Brush, Soft Haired (Camel Hair)

3.3 Stop-Watch or Stop-Clock

3.4 Brush, Paint — See IS : 384 - 1979 'Specification for brushes, paints and varnishes (fourth revision)'.

3.5 Power Cable Paper — See Note under 5.3.

4. Sampling

4.1 Representative sample of the product to be tested shall be taken as specified in IS : 101 (Part 1 / Sec 1) - 1986 'Methods of sampling and test for paints, varnishes and related products : Part 1 Tests on liquid paints (general and physical), Section 1 Sampling' and the surface shall be prepared for painting as specified therein. The test panels shall be coated with the product under test by specified or agreed method of application.

5. Procedure

5.1 Surface Dry — Allow the coated test panel to dry in a vertical position shielded from air currents, in absence of direct sunlight and under standard atmospheric conditions of $27 \pm 2^\circ\text{C}$ and 60 ± 5 percent relative humidity. After the specified time place the test panel in a horizontal position. Sprinkle uniformly about 0.5 g of the ballotini on to the surface of coating and allow to remain for about one minute. Then hold the panel at an angle of 20° to the horizontal and brush the coating using a camel hair brush gently and remove the ballotini. Examine the surface of the coating under normal corrected vision. The coating is considered to be surface dry if all the ballotini can be brushed away without any injury to the paint film.

5.2 Hard Dry — A paint film shall be considered hard dry where a second coat can be applied with slight rubbing down without the development of any film irregularities such as lifting or loss of adhesion of first coat and the drying time of second coat does not exceed the maximum specified for the first coat.

Adopted 27 January 1986

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IS : 101 (Part 3/Sec 1) - 1986

5.3 Tack-Free Drying — Place a 50 × 75 mm piece of special test paper on the film and place upon it a steel cylinder 50 mm diameter and mass of 2.85 kg as to produce 140 g/cm² pressure. At the end of 5 seconds, remove the cylinder and invert the test panel. The film shall be considered tack free when the paper drops of the test film within 10 seconds.

Note — The test paper shall be *K₄* power cable paper and when conditioned in accordance with IS : 1060 (Part 1)-1966 'Methods of sampling and test for paper and allied products: Part 1 (*revised*)' conforms to the following requirements.

Grammage, g/m ²	150 ± 3.75
Thickness, mm	0.17
Air resistance, S/100 cm ² /6.25 cm ²	350
Coefficient of static friction	0.5
Friction angle, deg	22

EXPLANATORY NOTE

This Indian Standard is one of a series dealing with sampling and test of paints, varnishes and related products. In the preparation of this standard considerable assistance has been derived from ISO 1517-1973 'Paints and Varnishes — surface drying test — Ballotini method' issued by International Organization for Standardization (ISO) and ASTM-D. 1640 — 83 'Standard test method for drying, curing or film formation of organic coatings at room temperature', issued by American Society for Testing and Materials (ASTM), Philadelphia (USA). This standard supersedes 7 of IS : 101-1964 'Methods of test for ready mixed paints and enamels (*second revision*)'.

AMENDMENT NO. 1 AUGUST 1997
TO
IS 101 (Part 3/Sec 1) : 1986 METHODS OF SAMPLING
AND TEST FOR PAINTS, VARNISHES AND RELATED
PRODUCTS

PART 3 TESTS ON PAINT FILM FORMATION

Section 1 Drying Time

(Third Revision)

(Page 1, clause 2.1, line 1) — Substitute 'silver sand' for 'ballotini'.

(Page 1, clause 3.1, line 1) — Substitute '*Silver Sand*' for '*Ballotini (Small Transparent Glass Spheres)*'.

(Page 1, clause 3.1, line 2) — Substitute 'silver sand' for 'ballotini' and wherever it appears subsequently in the standard.

(Page 1, clause 3.1, line 3) — Substitute '150' for '125' and '300' for '250'.

(Page 2, clause 5.3) — Substitute the following for the existing clause:

5.3 Tack-Free Drying — Painted film on the panel can be tested by either of the two methods given below at 5.3.1 and 5.3.2.

5.3.1 Method A — Place the panel in one pan of a suitable balance and counterpoise it with weights. Place a further weight of 2.25 kg and press on the dried film surface of the panel with the thumb till the two pans are balanced. Hold for one minute and then slowly release. No sign of stickiness to the thumb shall be apparent and the thumb impression, if produced, shall be such as can be wiped away with dry cotton wool.

5.3.2 Method B — Place a 50 mm × 75 mm piece of special test paper on the film and place upon it a steel cylinder 50 mm in diameter and mass of 2.85 kg as to produce 140 g/cm² pressure. At the end of 5 seconds, remove the cylinder and invest the test panel. The film shall be considered tack free when the paper drops of the test film within 10 seconds.

**AMENDMENT NO. 2 APRIL 2006
TO
IS 101 (PART 3/SEC 1) : 1986 METHODS OF
SAMPLING AND TEST FOR PAINTS, VARNISHES AND
RELATED PRODUCTS**

PART 3 TESTS ON PAINT FILM FORMATION

Section 1 Drying Time

(Third Revision)

(Page 1, clause 5.1, line 1) — Substitute the words 'in vertical position in a well ventilated chamber' for 'in a vertical position shielded from air currents'.

(CHD 20)