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मानक

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IS 101-8-6 (1993): Methods of sampling and test for paints, varnishes and related products, Part 8: Tests for pigments and other solids, Section 6: Volume solids [CHD 20: Paints, Varnishes and Related Products]



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“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

रोगनों, वार्निशों और सम्बद्ध उत्पादों के नमूने लेने और
परीक्षण की पद्धतियां

भाग 8 वर्णकों और अन्य ठोसों के परीक्षण

अनुभाग 6 ठोस आयतन

Indian Standard

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

PART 8 TESTS FOR PIGMENTS AND OTHER SOLIDS

Section 6 Volume Solids

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
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Price Group 1

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Paints (Other than Industrial Paints) and Allied Products Sectional Committee had been approved by the Chemical Division Council.

This standard (Part 8/Sec 6) is one of a series dealing with methods of sampling and test for paints, varnishes and related products.

In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

Indian Standard

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

PART 8 TESTS FOR PIGMENTS AND OTHER SOLIDS

Section 6 Volume Solids

1 SCOPE

This standard (Part 8/Sec 6) prescribes the method to determine volume solids in paints and allied products.

2 OUTLINE OF THE METHOD

This method is intended to provide a measure of the volume of dry coating obtainable from a given volume of liquid coating. This volume is considered to be the most equitable means of comparing the coverage and the wet film thickness of the given paint.

3 APPARATUS

3.1 Analytical Balance — Sensitive to 0.1 mg.

3.2 Stainless Steel Disc

60 mm diameter and 0.70 mm thickness with a small hole 2 to 3 mm from the edge. A fine wire such as chromel is attached through the hole for suspending the disc in a liquid.

3.3 Weight Box

3.4 Beaker — 1 litre.

3.5 Mass per Litre Cup

3.6 Hot Air Oven — capable to maintain 105 ± 2°C.

4 PROCEDURE

4.1 Dry the disc in an oven at 105°C for 10 minutes and cool. Weigh the disc in air. Let it be W_1 grams.

4.2 Suspend the disc in water and weigh again. Let it be W_2 grams.

4.3 Calculate the volume of the disc V as follows:

$$V = \frac{W_1 - W_2}{d}$$

where

d = is the density of the water at room temperature.

4.4 Determine the weight of non-volatile content of the liquid coating material by drying a known amount of paint at 105°C for 3 hours. Let it be W grams.

4.5 Determine the specific gravity of the paint to the nearest 0.001 g/ml by using mass per litre cup. Let it be P .

4.6 Dip the disc in the paint sample for 10 minutes and take out the disc. Allow the excess coating material to drain off. Blot the coating material off the bottom edge of the disc so that beads or drops do not dry on the bottom edge of the disc. Dry the disc at 105°C for 3 hours and cool. Weigh the coated disc in air. Let it be W_3 grams.

4.7 Suspend the coated disc in water and weigh again. Let it be W_4 grams.

5 CALCULATIONS

5.1 Calculate the volume of the coated disc V_1 as follows:

$$V_1 = \frac{W_3 - W_4}{d}$$

where

d = is the density of the water at room temperature

5.2 Calculate the volume of the dried coating as follows:

$$\text{Volume of dried coating, } (V_d) = V_1 - V$$

5.3 Calculate the volume of wet coating as follows:

$$V_w = \frac{W_3 - W_1}{W \times P}$$

where

W = grams of non-volatile matter in 1 g of wet coating

5.4 Calculate the percent volume solids of the paints as follows: thickness in the following manner:

$$\frac{V_t - V}{V_w} \times 100 \quad \text{OR} \quad \frac{V_d}{V_w} \times 100$$

a) Theoretical coverage (m²/l)

$$= \frac{\text{Percent Volume Solids}}{\text{Dry film thickness (micron)}} \times 10$$

b) Wet film thickness (microns)

$$= \frac{\text{Dry film thickness (microns)}}{\text{Percent Volume Solids}} \times 100$$

5.5 The percent volume solids of a paint is related to the covering capacity and wet film

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices :

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002

Telephone

{ 331 01 31
{ 331 13 75

Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola
CALCUTTA 700054

{ 37 84 99, 37 85 61,
{ 37 86 26, 37 86 62

Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036

{ 53 38 43, 53 16 40,
{ 53 23 84

Southern : C. I. T. Campus, IV Cross Road, MADRAS 600113

{ 235 02 16, 235 04 42,
{ 235 15 19, 235 23 15

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)
BOMBAY 400093

{ 632 92 95, 632 78 58,
{ 632 78 91, 632 78 92

Branches : AHMADABAD, BANGALORE, BHOPAL, BHUBANESHWAR, COIMBATORE,
FARIDABAD, GHAZIABAD, GUWAHATI, HYDERABAD, JAIPUR, KANPUR,
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