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(Reaffirmed 1998)
Edition 1.1
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भारतीय मानक

बिटूमैन आधारित नमदा — परीक्षण पद्धतियाँ

भाग 7 योजक अंश ज्ञात करना

Indian Standard

BITUMEN BASED FELT — METHODS OF TEST

PART 7 DETERMINATION OF BINDER CONTENT

(Incorporating Amendment No. 1)

UDC 691.165 : 543.8

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

Price Group 2

FOREWORD

This Indian Standard (Part 7) was adopted by the Bureau of Indian Standards, after the draft finalized by the Water-Proofing and Damp-Proofing Sectional Committee had been approved by the Civil Engineering Division Council.

Bitumen felts may be of different types depending upon the raw material used and their construction. IS 1322 : 1993 'Specification for bitumen felts for water-proofing and damp-proofing (*fourth revision*)' and IS 7193 : I993 'Specification for glass fibre base coal tar pitch and bitumen felts (*first revision*)', cover bitumen felts of hessian based and glass fibre base respectively. The above standards require, amongst other requirements, detailed testing of each of these products. Various methods of test relating to each product for determination of physical properties have been included in the separate standards. All types of felts have to satisfy some common essential physical requirements for which methods of tests are same. A series of standards covering methods of test have therefore been formulated to cover the determination of various physical requirements of bitumen felt. This standard covers determination of binder content. Other parts of this standard are as follows:

Part 1 Breaking strength test

Part 2 Pliability test

Part 3 Storage sticking test

Part 4 Pressure head test

Part 5 Heat resistance test

Part 6 Water absorption test

The Composition of the technical committee responsible for the formulation of this standard is given in Annex A.

This edition 1.1 incorporates Amendment No. 1 (August 1999). Side bar indicates modification of the text as the result of incorporation of the amendment.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

BITUMEN BASED FELT — METHODS OF TEST

PART 7 DETERMINATION OF BINDER CONTENT

1 SCOPE

This standard (Part 7) covers method for the determination of binder content in bitumen felts by Soxhlet apparatus.

2 REFERENCES

The Indian Standards listed below are necessary adjuncts to this standard:

IS No.	*Title*
245 : 1988	Trichloroethylene technical (*third revision*)
1840 : 1961	Benzene, reagent grade
4911 : 1986	Glossary of terms relating to bituminous water-proofing and damp-proofing of buildings

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 4911 : 1986 shall apply.

4 APPARATUS

4.1 The apparatus (*see* Fig. 1) shall consist of normal Soxhlet capable of holding extraction thimble and flask of 500 ml capacity with ground glass joint to fit the Soxhlet.

4.2 A suitable electric mentle heater with regulator or a gas ring.

4.3 Extraction thimble made of single layer filter paper (which shall not allow any filler material to pass through) of dimension generally of 25 mm dia and 80-100 mm long and properly shaped.

4.4 Solvent

4.4.1 The solvent shall be benzene (*see* IS 1840 : 1961) or trichloroethylene (*see* IS 245 : 1988).

4.4.2 *Size of Sample*

One test piece of 15 cm × 10 cm of the bitumen felt shall be taken for the test.

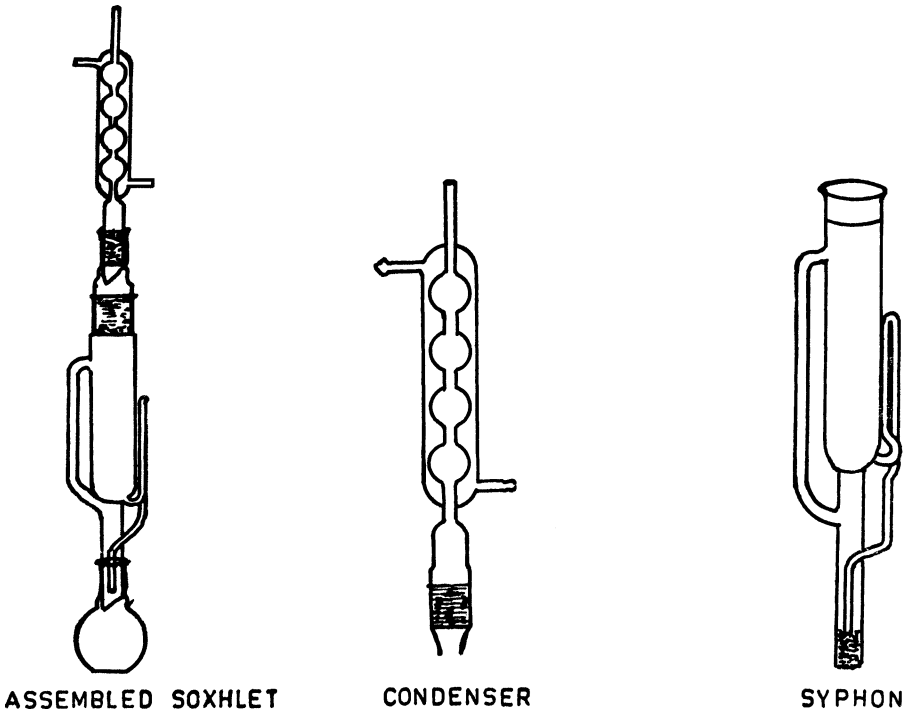

FIG. 1 TYPICAL SOXHLET APPARATUS

4.5 Procedure

4.5.1 The thimble shall be dried at 100°C to 110°C, then cooled in a desiccator and weighed. The bitumen felt sample shall be weighed nearest to 0.1 g and is folded and put in the thimble. The sample of the felt shall be cut into pieces, if necessary, to be accommodated in the thimble.

4.5.2 About 400 ml of the solvent shall be taken into the properly cleaned and dried flask and the soxhlet shall be fitted over the flask. Care should be taken that the ground glass fittings are perfect and there is no leakage.

4.5.3 After fixing the reflex condensor, heat shall be applied at the bottom of the flask slowly. The heating should be adjusted to ensure a steady reflux of 60-70 drops per minute falling from the end of the condensor on the middle of the extraction thimble. It is to be observed that at least three cycles of siphoning of solvent is taken place in 10 minutes.

4.5.4 Refluxing shall be continued until extraction is completed. This may be understood when the solvent siphoned to the flask is clear.

4.5.5 The thimble with extracted hessian and filter shall be taken out and dried to constant weight at 100°C-110°C.

4.6 Calculation

4.6.1 The binder content B shall be calculated on the dry sample by means of the following formula:

$$B = \frac{M_1 - M_2}{M_1} \times 100$$

where

M_1 = weight of the sample in g, and

M_2 = weight of the recovered hessian bass with filler in g.

In order to correct for any fine material present in the solution at the end of the test, the solvent shall be distilled off, the residue cooled down and weighed and a representative portion of it (between 2 and 3 g) treated with the solvent and filtered through a sintered silica filtering crucible or filter paper.

4.6.2 In the case of materials containing high filler content the whole of the solution at the end of the test should be filtered or centrifugalled. The binder content B shall be calculated on the dry sample by the following formula:

$$B = \frac{M_1 (M_2 - M_3)}{M_1} \times 100 \text{ percent by mass}$$

where

M_1 = mass of sample in g;

M_2 = mass of recovered hessian base in g; and

M_3 = mass of filler, if any, reclaimed from the extracted bitumen solution either by centrifuging or by decantation after settlement.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Water-Proofing and Damp-Proofing Sectional Committee, CED 41

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No. 4, Sapan Baug, Near Empress Garden, Pune 411001

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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 110002.
Telephones: 323 01 31, 323 33 75, 323 94 02

Telegrams: Manaksanstha
(Common to all offices)

Regional Offices:		Telephone
Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	323 76 17 323 38 41
Eastern	: 1/14 C. I. T. Scheme VII M, V. I. P. Road, Kankurgachi KOLKATA 700054	337 84 99, 337 85 61 337 86 26, 337 91 20
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Southern	: C. I. T. Campus, IV Cross Road, CHENNAI 600113	235 02 16, 235 04 42 235 15 19, 235 23 15
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