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मानक

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Mazdoor Kisan Shakti Sangathan

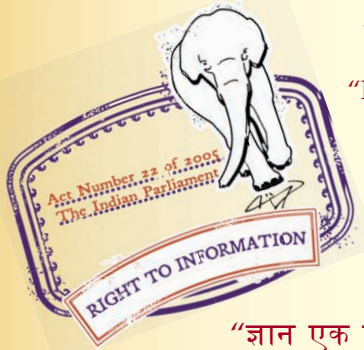
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IS 13826-7 (1993): Bitumen based felts - Methods of test, Part 7: Determination of binder content [CED 41: Waterproofing and Damp-Proofing]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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REAFFIRMED 2008

IS 13826 ( Part 7 ) : 1983

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 TEST

UDC 691.165 : 543.8

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

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Price Group 2

**AMENDMENT NO. 1 AUGUST 1999  
TO  
IS 13826 (PART 7) : 1993 BITUMEN BASED FELT —  
METHODS OF TEST**

**PART 7 DETERMINATION OF BINDER TEST**

*( First cover page and page 1, Title ) — Substitute:*

**'BITUMEN BASED FELT — METHODS OF TEST**

**PART 7 DETERMINATION OF BINDER CONTENT'**

*for*

**'BITUMEN BASED FELT — METHODS OF TEST**

**PART 7 DETERMINATION OF BINDER TEST'.**

( CED 41 )

## 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 : 1993 '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 test 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.

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 TEST****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:

<i>IS No.</i>	<i>Title</i>
245 : 1988	Trichloroethylene technical ( <i>third revision</i> )
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 mantle 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.

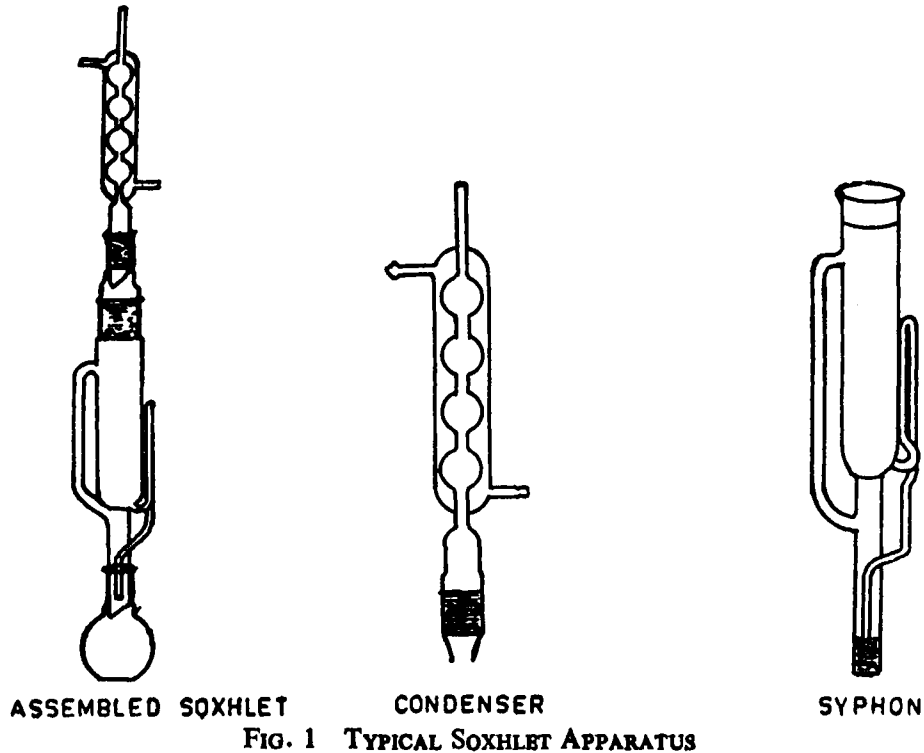


FIG. 1 TYPICAL SOXHLET APPARATUS

**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 condenser, 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 condenser 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*<sub>1</sub> = weight of the sample in g, and

*M*<sub>2</sub> = weight of the recovered hessian base 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 centrifuged. 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*<sub>1</sub> = mass of sample in g;

*M*<sub>2</sub> = mass of recovered hessian base in g;  
and

*M*<sub>3</sub> = mass of filler, if any, reclaimed from the extracted bitumen solution either by centrifuging or by decantation after settlement.



**ANNEX A**  
( *Foreword* )

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