

भारतीय मानक

बिटुमेन नमदों का उपयोग करके नमी-रोधी  
उपचार – रीति संहिता

( तीसरा पुनरीक्षण )

*Indian Standard*

**DAMP-PROOFING TREATMENT USING  
BITUMEN FELTS — CODE OF PRACTICE**

**( *Third Revision* )**

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

**FOREWORD**

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

This is the third revision of the standard. A number of standards referred in the second revision of the standard have undergone revision since its publication in 1976. This revision is based on further experience gained in this work since its previous revision and it takes care of the latest revision of the referred standards.

Bitumen felt is extensively used for damp-proofing and waterproofing purposes both in basement and in roof finish. The specification for the material is covered in IS 1322 : 1982 and IS 7193 : 1974. IS 1346 : 1991 gives the guidance related to waterproofing of roofs with bitumen felt and the general features relating to damp-proofing and waterproofing with regard to design details, surface preparation, drainage, etc, are covered in IS 3067 : 1988. This standard is intended to cover only the execution part of the work relating to application of bitumen felt to damp-proofing treatment to foundation, walls and basement.

In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating to the practices in the field in this country.

# *Indian Standard*

## DAMP-PROOFING TREATMENT USING BITUMEN FELTS — CODE OF PRACTICE

### ( *Third Revision* )

#### 1 SCOPE

**1.1** This standard covers the methods of application of bitumen felts for damp-proofing treatment to foundations, basements and walls of buildings to prevent the penetration of moisture and water from an external source at or below ground level.

#### 2 REFERENCE

**2.1** The standard listed in Annex A are necessary adjuncts to this standard.

#### 3 TERMINOLOGY

##### 3.1 Multiple Layer Damp-Proofing Treatment

Two or more layers of bitumen felt laid with overlapping joints and bonded together with bitumen.

#### 4 NECESSARY INFORMATION

The designer of the building shall make sure that he has sufficient information as specified in IS 3067 : 1988.

#### 5 MATERIAL

**5.1** The materials used for preparing surface on which the damp-proof treatment is to be laid shall be cement-sand mortar ( 1 : 4 ). The cement shall conform to IS 269 : 1989. The sand used shall conform to IS 2116 : 1980 and shall be free from deleterious matter.

##### 5.2 Bitumen Primer

Primer shall conform to the requirements of IS 3384 : 1986.

##### 5.3 Felts

Felts shall conform to the requirements of IS 1322 : 1982 and IS 7193 : 1974.

##### 5.4 Bitumen Bonding Material

The bonding material shall be blown bitumen conforming to IS 702 : 1988. The recommended grade of bitumen are 85/25 or 90/15.

#### 6 DAMP-PROOFING TREATMENT

**6.1** The types and grades of bitumen felt referred to under 6.2 and 6.3 are those given in IS 1322 : 1982 and IS 7193 : 1974.

##### 6.2 Damp-Proofing Treatment Above Ground Level

The damp-proofing treatment for floors and for walls shall be as described below. If a bituminous primer has been recommended, this shall first be brushed over the roof surface and allowed to dry. Generally a quantity of 0.2 to 0.4 l/m<sup>2</sup> is recommended:

###### a) For Floors

- 1) Hot applied blown bitumen at the rate of 1.5 kg/m<sup>2</sup>.
- 2) Hessian base self-finished felt Type 3, Grade 2 or glass fibre base Type 2, Grade II; and
- 3) Hot applied blown bitumen at the rate of 1.5 kg/m<sup>2</sup>.

###### b) For Walls

One or two layers of hessian base self-finished felt Type 3, Grade 2 or glass fibre base felt Type 2, Grade II shall be laid according to the life of the building using the bonding bitumen between the wall and the felt.

NOTE — Adopt one layer of the felt for an expected life of building up to 10 years and two layers for more than 10 years.

##### 6.3 Damp-Proofing Treatment for Basements and Structures Below Ground Level

The multiple layer damp-proofing treatment shall be according to either of the three methods described below. It shall be noted that fibre based self-finished felt is not recommended for use in basements:

###### a) Normal Treatment ( Two Layers of Felt ):

- 1) Primer ( for vertical faces only ) at the rate of 0.27 l/m<sup>2</sup>;
- 2) Hot applied blown bitumen at the rate of 1.5 kg/m<sup>2</sup>;
- 3) Hessian base self-finished felt Type 3, Grade 2 or glass fibre base felt Type 2, Grade II;
- 4) Hot applied blown bitumen at the rate of 1.5 kg/m<sup>2</sup>;
- 5) Hessian base self-finished felt Type 3, Grade 2 or glass fibre base felt Type 2, Grade II; and

- 6) Hot applied blown bitumen at the rate of 1.5 kg/m<sup>2</sup>.

**b) Heavy Treatment ( Three Layers of Felt ):**

- 1) Primer ( for vertical faces only ) at the rate of 0.27 l/m<sup>2</sup>;
- 2) Hot applied blown bitumen at the rate of 1.5 kg/m<sup>2</sup>;
- 3) Hessian base self-finished felt Type 3, Grade 2 or glass fibre base felt Type 2, Grade II;
- 4) Hot applied blown bitumen at the rate of 1.5 kg/m<sup>2</sup>;
- 5) Hessian base self-finished felt Type 3, Grade 2, or glass fibre base felt Type 2, Grade II;
- 6) Hot applied blown bitumen at the rate of 1.5 kg/m<sup>2</sup>;
- 7) Hessian base self-finished felt Type 3, Grade 2, or glass fibre base felt Type 2, Grade II; and
- 8) Hot applied blown bitumen at the rate of 1.5 kg/m<sup>2</sup>.

**c) Extra Heavy Treatment ( Four Layers of Felt ):**

- 1) Primer ( for vertical faces only ) at the rate of 0.27 l/m<sup>2</sup>;
- 2) Hot applied blown bitumen at the rate of 1.5 kg/m<sup>2</sup>;
- 3) Hessian base self-finished felt Type 3, Grade 2 or glass fibre base felt Type 2, Grade II;
- 4) Hot applied blown bitumen at the rate of 1.5 kg/m<sup>2</sup>;
- 5) Hessian base self-finished felt Type 3, Grade 2 or glass fibre base felt Type 2, Grade II;
- 6) Hot applied blown bitumen at the rate of 1.5 kg/m<sup>2</sup>;
- 7) Hessian base self-finished felt Type 3, Grade 2 or glass fibre base felt Type 2, Grade II;
- 8) Hot applied blown bitumen at the rate of 1.5 kg/m<sup>2</sup>;
- 9) Hessian base self-finished felt Type 3, Grade 2 or glass fibre base felt Type 2, Grade II; and
- 10) Hot applied blown bitumen at the rate of 1.5 kg/m<sup>2</sup>.

**7 METHOD OF LAYING DAMP-PROOFING TREATMENT**

**7.1 General**

The damp-proofing treatment shall be laid in such a way so as to ensure an effective barrier all over against water penetration. For this purpose, the damp-proofing treatment shall be continuous throughout and the overlap joints in felts, wherever they exist, shall be correctly made.

**7.2 Preparation of Site**

In addition to the details covered in IS 3067 : 1988 the following points shall be noted:

- a) The site shall be kept free of water by continuous pumping till the whole work and the construction of required structural protection for the damp-proofing treatment is completed. To ensure good adhesion between structural surface and damp-proofing treatment, suitable methods to dry the surface shall be adopted, wherever necessary;
- b) In spite of the best arrangements made for pumping out the water, the horizontal surface on which the damp-proofing treatment is to be laid may remain wet. In such a case the first coat of bitumen which is laid hot on damp surface may not stick, however, the purpose is served if the first layer of felt adheres to the bitumen and sufficient care is taken to ensure that the overlapping joints are well stuck; and
- c) The walls shall normally remain dry so that the first course of the bitumen shall adhere without difficulty and the felt adheres to the bitumen.

**7.3 Laying of Felt**

The felt shall be laid as mentioned below:

- a) The felt shall be first cut to required lengths, brushed clean of dusting materials, and laid out flat on a level, dry and clean surface.
- b) After the surface had been prepared and the cement rendering and the corner fillets have set and a primer coat has been applied, the strip of felt prepared for laying is rolled up.
- c) The laying shall commence on the floor and shall be completed before treatment is applied to the walls.
- d) The rolled up felt is laid on one end of the floor the hot bonding material is poured on to the floor in front of it across the full width of the felt which is then unrolled gradually with a slight pressure to squeeze out the excess bitumen.
- e) After the whole floor has been covered and the overlapping joints properly sealed, the felt is laid on the vertical face of the walls in a similar manner. In this case the roll of felt is held at floor level and then gradually unrolled up the wall face as hot bitumen is poured between the roll and the wall face.
- f) The minimum overlapping joints at sides and ends of strips shall be 100 mm; and
- g) The subsequent layers of felt shall break joint midway between the joints of the layer immediately beneath it.

**ANNEX A**  
( *Clause 2.1* )

**LIST OF REFERRED INDIAN STANDARDS**

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
269 : 1989	33 Grade ordinary portland cement ( <i>fourth revision</i> )	3067 : 1988	Code of practice for general design details and preparatory work for damp-proofing and waterproofing of buildings ( <i>first revision</i> )
702 : 1988	Industrial bitumen ( <i>second revision</i> )		
1322 : 1982	Bitumen felts for waterproofing and damp-proofing ( <i>third revision</i> )	3384 : 1986	Bitumen primer for use in waterproofing and damp-proofing ( <i>first revision</i> )
1346 : 1991	Code of practice for waterproofing of roofs with bitumen felts ( <i>third revision</i> )	4911 : 1986	Glossary of terms relating to bituminous waterproofing and damp-proofing of building ( <i>first revision</i> )
2116 : 1980	Sand for masonry mortars ( <i>first revision</i> )	7193 : 1974	Glass fibre base coal tar pitch and bitumen felts

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## BUREAU OF INDIAN STANDARDS

### Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002  
Telephones: 323 01 31, 323 83 75, 323 94 02

Telegrams: Manaksanstha  
(Common to all offices)

### Regional Offices:

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

Telephone  
323 76 17, 323 38 41

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

{ 337 84 99, 337 85 61  
{ 337 86 26, 337 91 20

Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022

{ 60 38 43  
{ 60 20 25

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)  
MUMBAI 400093

{ 832 92 95, 832 78 58  
{ 832 78 91, 832 78 92

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