BRITISH STANDARD

BS 2832:1957
Incorporating Amendment No. 1

Hot applied damp resisting coatings for solums

Confirmed December 2011

Co-operating organizations

The Bituminous Products Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:—

Association of British Roofing Felt Manufacturers
Association of Tar Distillers*
D.S.I.R. — Building Research Station*
Federation of Civil Engineering Contractors*
Institute of Petroleum*
Institution of Civil Engineers*
Institution of Structural Engineers
Ministry of Housing and Local Government*
Ministry of Works*
National Association of Master Asphalters*
National Employers Federation of the Mastic Asphalt Industry*
National Federation of Building Trades Employers*
Natural Asphalte Mine-Owners' and Manufacturers Council*
Royal Institute of British Architects*
Royal Institution of Chartered Surveyors*
Society of Chemical Industry

The Government departments and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:—

Association of County Councils in Scotland
Department of Agriculture for Scotland
Department of Health for Scotland
Federation of Civil Engineering Contractors (Scottish Branch)
Institution of Municipal Engineers (Scottish Branch)
Limestone Federation
Royal Institution of Chartered Surveyors (Scottish Branch)
Scottish National Building Trades Federation (Employers)

This British Standard, having been approved by the Bituminous Products Industry Standards Committee and endorsed by the Chairman of the Building Divisional Council, was published under the authority of the General Council on 18 February 1957

The following BSI references relate to the work on this standard:
Committee references BMB/2
BMB/2/2/1
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Amendments issued since publication

Amd. No.	Date of issue	Comments
5956	July 1989	Indicated by a sideline in the margin

Contents

Foreword

This standard makes reference to the following British Standards:

BS 76, *Tars for road purposes.*

BS 144, *Coal tar creosote for the preservation of timber.*

BS 410, *Test sieves.*

BS 1310, *Coal tar pitches for building purposes.*

BS 2000, *Methods of test for petroleum and its products — Part 34: Flash point by Pensky-Martens closed tester.*

This British Standard has been issued under the Authority of the Bituminous Products Industry Standards Committee at the request of the BSI Building and Engineering Services Committee in Scotland in order to provide quality requirements for the pitch or bitumen used in Scotland as an oversite coating under floors.

Three types of coating are given in the standard, two applied in liquid form, and one containing a sandfiller, which is often referred to commercially as "unfinished asphalt" or "unfinished British asphalt". It has been found, however, that this term is frequently used to refer to coatings not containing sand and sometimes it is indiscriminately used to refer to all three types of coating. For this reason the term has not been used in this British Standard and it is hoped and strongly recommended that the description "BS 2832, Part 1", "Part 2", or "Part 3" is used to indicate the mixture required, even when it is also referred to by the commercial name mentioned above. Misunderstandings in regard to the type being specified will thus be avoided by both purchaser and supplier.

Pending the issue of a Code of Practice dealing with the use of these coatings some guidance is given in an appendix to this standard.

Since the publication of this standard, there have been considerable changes in the availability of coal-tar derived feed stocks. Tar from gas works has disappeared, whereas tar from smokeless fuel production has increased. A satisfactory hot-applied damp resistant coating for solums can be produced from tars derived from some of these low temperature carbonization processes.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 6, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Definition

For the purpose of this British Standard the term "solum" means the area of ground within the perimeter walls of a building.

Part 1: Coal tar pitch

2 Scope

Part 1 of this British Standard specifies the quality requirements for pitch of a type suitable for spreading over the solum in order to provide adequate damp proofing and prevent the evaporation of moisture.

3 Origin and preparation

The pitch shall be prepared either:—

a) directly by the distillation of crude coal tar produced as a by-product of the carbonization of coal, or,

b) by fluxing with a refined coal tar, or coal-tar oil, a harder pitch obtained directly by the distillation process.

4 Characteristics

The pitch shall be a uniform material complying with grade C54 of BS 76, *"Tars for road purposes"*, of with the following requirements:—

Softening point (R. & B.) °C	40 ± 3
Specific gravity at 15.5/15.5 °C	1.13 to 1.29
Matter insoluble in pure toluole	25 max. per cent
Ash	0.6 max. per cent
Water content	0.5 max. per cent
Distillation:—	
Below 270 °C	5 max. per cent
Below 300 °C	10 max. per cent

The latter material may be prepared by cutting back harder pitch with refined tar conforming to grade C30 of BS 76, *"Tars for road purposes"*, or with heavy tar oils conforming with the following requirements:—

Specific gravity 15.5/15.5 °C	not less than 1.01
Water	not exceeding 1.0 per cent by weight
Distillation:—	
Below 235 °C	not more than 5 per cent by weight
Below 270 °C	not more than 20 per cent by weight
Fluidity	the oil shall be completely fluid at the prevailing atmospheric temperature at the time of mixing.

The methods of test shall be those specified in BS 144, *"Coal tar creosote for the preservation of timber"*.

Flash point not lower than 82 °C (180 °F) when determined by the method described in BS 2000 *"Methods of test for petroleum and its products"* Part 34 *"Flash point by Pensky-Martens closed tester"*.

The harder pitch shall conform to the following specification:—

Softening point (R. & B.) °C	70 to 80
Specific gravity at 15.5/15.5 °C	1.15 to 1.33
Matter insoluble in pure toluole	30 max. per cent
Ash	0.8 max. per cent
Water content	0.5 max. per cent

The quantity of refined tar or tar oil required to give the standard oversite coating pitch shall be stated by the supplier of these materials or, alternatively, the requisite quantities shall be determined by preparation of a trial batch and testing.

5 Application

There are two methods:—

1) *Pitch delivered cold to the site.* This shall be heated slowly to a temperature not exceeding 120 °C (248 °F) to give a smooth homogeneous liquid. This temperature shall at no time be exceeded during the process of melting.

2) *The delivery of tested hot material in bulk, in lagged road tank wagons.* This is the desirable method and the material shall be delivered at site at a temperature agreed between contractor and supplier within the range of 132–100 °C (270–212 °F).

Whichever method is used, prolonged heating, once the pitch has melted, is likely to impair its characteristics and shall be avoided at every stage of the process.

6 Tests

The tests for the characteristics of the pitch shall be carried out in accordance with Appendices C, E, F and H of BS 1310, *"Coal-tar pitches for building purposes"*, on samples which are taken in accordance with Appendix D of that standard.

7 Certificate and marking

The supplier shall state on his quotation or invoice that the oversite pitch-coating material used complies with the requirements of this British Standard. Any labels used on containers shall carry the name or identification mark of the supplier and the number of this British Standard, i.e. BS 2832.

In the absence of these sources of information the purchaser may ask for a certificate of compliance, which shall be given by the supplier.

Part 2: Pitch-sand mixture

8 Scope

Part 2 of this British Standard specifies the composition and quality requirements for a soft pitch-sand mixture suitable for spreading over the solum in order to provide adequate damp proofing and prevent the evaporation of moisture.

9 Preparation

The proportions of the materials to be taken for the mixture shall be as follows:—

Pitch hardness	grade LT71	grade HT78
	lb	lb
Coal tar pitch (to BS 1310 of the grade indicated)	985	935
Heavy tar oil (as defined in Part 1)	225	275
Clean, dry, fine sand[a]	2,240	2,240
[a] Sea sand, if used, shall have been thoroughly washed.		

The pitch shall be heated slowly until completely fluid and until the temperature is within the range 100–120 °C (212–248 °F). The pitch shall be continuously agitated whilst first the tar oil and then the dry sand are added. The mixture shall then be agitated until a uniformly smooth consistency is obtained.

10 Characteristics

The ash content of the mixture shall not exceed 65.0 per cent by weight.

The softening point (R. and B.) of the pitch and filler content, when extracted and tested by the method given in Appendix A, shall be:—

40 ± 4 °C (104 ± 7 °F)

11 Certificate of marking

The contractor shall state on his quotation or invoice that the mixture supplied complies with the requirements of this British Standard.

In the absence of these sources of information the purchaser may ask for a certificate of compliance, which shall be given by the contractor.

Part 3: Asphaltic bitumen

12 Scope

Part 3 of this British Standard specifies the quality requirements for bitumen of a type suitable for spreading over the solum in order to provide adequate damp proofing and prevent the evaporation of moisture.

13 Material

For the purposes of this specification the type of bitumen is the semi-solid product obtained from the distillation of asphaltic-base petroleum, consisting essentially of hydrocarbons and substantially soluble in carbon disulphide.

14 Characteristics

The bitumen shall be a uniform material and, when tested by the methods specified in Clause **5**, shall conform to the following requirements:—

	Summer Grade	*Winter Grade*
Penetration at 25 °C	80 to 100 mm/10	120 to 140 mm/10
Softening point (R. and B.)	44 to 48 °C	40 to 44 °C
Ductility at 25 °C	100 cm min.	100 cm min.
Loss on heating (per cent by weight) after 5 hours at 163 °C	1 per cent max.	1 per cent max.
Drop in penetration after heating	20 per cent max.	20 per cent max.
Bitumen content (solubility in trichloroethylene)	99 per cent min.	99 per cent min.
Specific gravity at 25 °C	1.00 to 1.04	1.00 to 1.04

15 Application

There are two methods:—

1) *Asphaltic bitumen delivered cold to the site.* This shall be slowly heated to a temperature of not less than 132 °C (270 °F) and not greater than 176 °C (350 °F) to give a smooth homogeneous liquid. The higher temperature shall at no time be exceeded during the process of melting.

2) *The delivery of tested material in bulk, in lagged road tank wagons.* This is the desirable method and the material shall be delivered at site at a temperature agreed between contractor and supplier within the range of 132–100 °C (273–212 °F).

Whichever method is used, prolonged heating, once the bitumen has melted, is likely to impair its characteristics and shall be avoided at every stage of the process.

16 Tests

Pending the preparation of British Standard methods of test the tests for the characteristics of the bitumen shall be carried out in accordance with the methods specified by the Institute of Petroleum and given in the current edition of "Standard Methods of Testing Petroleum and its Products", published by the Institute of Petroleum. These are as follows:—

Penetration at 25 °C	IP 49/56
Softening point (ring and ball)	IP 58/56
Ductility at 25 °C	IP 32/55
Loss on heating	IP 45/55
Bitumen content	IP 47/55
Specific gravity	IP 59/55

17 Certificate and marking

The supplier shall state on his quotation or invoice that the bitumen complies with this British Standard. Any labels used on containers shall carry the name or identification mark of the supplier and the number of this British Standard, i.e. BS 2832.

In the absence of these sources of information the purchaser may ask for a certificate of compliance, which shall be given by the supplier.

Appendix A Softening point of the pitch and filler

Since it is difficult to ascertain the softening point of the mixture due to the presence of the sand, particles larger than 200 mesh are removed and the required softening point has been fixed accordingly, after taking account of the effects of this procedure.

A representative sample of about 200 g of the pitch-sand mixture shall be placed in a vessel of approximate dimensions $2^1/_2$ in. × $2^1/_2$ in., covered with a lid and placed in an oven maintained at a temperature of 90–100 °C (194–212 °F) for 3 hours. The top layer shall then be poured off on to a 200-mesh BS sieve[1)] resting on a suitable container, both having been previously heated in the same oven to 90 – 100 °C.

A lid is then placed on the sieve and filtration allowed to proceed in the oven. When a sufficient quantity of filtrate, consisting of pitch and filler, has accumulated it shall be mixed and the softening point determined by the ring and ball method. (Appendix B, BS 1310.)

Appendix B Notes on the use of pitch coatings

Beneath the suspended ground floors of structures, and particularly beneath timber floors, it is necessary to restrict the evaporation of ground dampness and deter the growth of vegetation over the solum, i.e. the area of ground within the perimeter walls of a building.

The treatment commonly adopted, after clearing the solum of top soil and vegetation, is to lay hardcore or bottoming 4 to 6 in. thick and to blind this with fine dry ashes up to a thickness of 2 in. and consolidate to form a firm level surface free from cracks.

The pitch is normally delivered to the site in bulk by means of lagged road tank wagons. Where such service is not available, the pitch may be prepared by melting and blending medium-soft pitch R. and B. 70 to 80 °C delivered in lump form, with tar oil or refined tar, as specified in Part 1.

This pitch coating is applied on the prepared base by one of the following methods, depending to some extent on the size of the site and the type of coating:—

1) Heated pitch from the road tank wagon is applied over the solum to a depth above the ash layer of not less than $^3/_8$ in. by means of a hose fed directly from the road tanker and having a fish-tailed delivery nozzle, so that the coating forms an unbroken layer free from cracks or other imperfections.

2) Melted pitch mixed with tar oil or refined tar is applied by a splashing action from buckets or cans so as to build up the required minimum thickness of $^3/_8$ in. over the ash bed.

With either method it is very important to ensure a continuous membrane over the whole solum and to carry the applied coating up all walls to a height of not less than 4 in.

As a guide to the approximate quantities required, if the ash blinding is well consolidated, one square yard will require about $1^1/_4$ gallons of molten pitch. If less well consolidated, the upper layer of blinding will be penetrated and each square yard will probably require at least $1^3/_4$ gallons.

When the purchaser calls for the use of the bitumen coating specified in Part 3 it may be used in the same manner as pitch.

As an alternative to the above methods, the prepared solum can be covered with a pitch-sand mixture. The composition and standard tests for this material are specified in Part 2. The mixture, if properly laid, should not crack or be subject to undue shrinkage. Should either occur, the mixture should be checked for composition and also overheating during mixing. It is laid in a sufficiently warm state to enable it to be spread by means of a hand float on the consolidated ash surface to a finished thickness of not less than $^3/_8$ in.

[1)] BS 410 *"Test sieves"*.

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British Standards

The following are available on application:—
YEARBOOK
Including subject index and numerical list of British Standards
SECTIONAL LISTS. Gratis.
Acoustics
Aircraft materials and components
Building materials and components
Chemical engineering
Chemicals, fats, oils, scientific apparatus, etc.
Cinematography and photography
Coal, coke and colliery requisites
Codes of Practice for buildings
Consumer goods
Drawing practice
Electrical engineering
Farming, dairying and allied interests
Furniture, bedding and furnishings
Gas and solid fuel
Glassware including scientific apparatus
Hospital equipment
Illumination and lighting fittings
Iron and steel
Mechanical engineering
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Non-ferrous metals
Packaging and containers
Paints, varnishes, paint materials and colours for paints
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Petroleum industry
Plastics
Printing, paper and stationery
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Textiles and clothing
Universal decimal classification
Welding

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